

Ohio Public Employees Retirement System

Actuarial Valuation of Defined Benefit Allowances –
Traditional, Combined and Member Directed Plans
December 31, 2022



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August 30, 2023

The Retirement Board
Ohio Public Employees Retirement System
Columbus, Ohio

Ladies and Gentlemen:

The results of the **December 31, 2022 Annual Actuarial Valuation of Defined Benefit Allowances** of the Ohio Public Employees Retirement System (OPERS), based upon Chapter 145 of the Revised Code of Ohio (ORC) as amended, are presented in this report. The gain/loss analysis of experience by division, the annual actuarial valuation of retiree health and Medicare benefits, projections of defined benefit allowances and projections of retiree health and Medicare benefits are covered in separate reports. In conjunction with Chapter 145 of the ORC, the purposes of performing the annual valuation are as follows:

- Measure the financial position of OPERS,
- Assist the Board in establishing employer and employee contribution rates subject to statutory limits,
 - Employer contribution rates for the State are established for a two-year period based upon the results of odd-year valuations. The December 31, 2021 valuation was used to establish the contribution rates for the two-year period beginning July 1, 2023.
 - Employer contribution rates for local governments are established annually. The December 31, 2022 valuation establishes employer contribution rates for calendar year 2025.
- Assist the Board in establishing the employer rate allocation between pension and retiree health,
- Determine the number of years required to amortize the unfunded actuarial accrued liabilities based upon established contribution rates,
- Provide actuarial reporting and disclosure information for the System's financial report, and
- Analyze the experience of the System over the past year.

This report should not be relied on for any purpose other than those described above. It was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The signing actuaries are independent of the plan sponsor.

The individual member statistical data required for the valuations was furnished by your Executive Director and Staff, together with pertinent data on financial operations. Their cooperation in furnishing these materials is acknowledged with appreciation. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the data.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

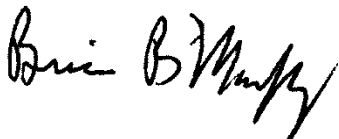
The actuarial assumptions used in the valuation are summarized in Section X of this report. The assumptions are established by the Retirement Board after consulting with the actuary.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the Ohio Public Employees Retirement System as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

Brian B. Murphy and Mita D. Drazilov are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,
Gabriel, Roeder, Smith & Company



Brian B. Murphy, FSA, EA, FCA, MAAA, PhD



Mita D. Drazilov, ASA, FCA, MAAA

BBM/MDD:rmn



SECTION I

EXECUTIVE SUMMARY

Introduction

Section 145.22 of the Revised Code of Ohio (ORC) provides in part as follows:

“(A) The public employees retirement board shall have prepared annually by or under the supervision of an actuary an actuarial valuation of the pension assets, liabilities, and funding requirements of the public employees retirement system as established pursuant to this chapter.”

This report presents the results of the December 31, 2022 annual actuarial valuation of the Ohio Public Employees Retirement System (OPERS) Defined Benefit Allowances of the Traditional, Combined and Member Directed Plans. In conjunction with Chapter 145 of the ORC, the purposes of performing the annual valuation are as follows:

- Measure the financial position of OPERS,
- Assist the Board in establishing employer and employee contribution rates subject to statutory limits,
 - Employer contribution rates for the State are established for a two-year period based upon the results of odd-year valuations. The December 31, 2021 valuation was used to establish the contribution rates for the two-year period beginning July 1, 2023.
 - Employer contribution rates for local governments are established annually. The December 31, 2022 valuation establishes employer contribution rates for calendar year 2025.
- Assist the Board in establishing the employer rate allocation between pension and retiree health,
- Determine the number of years required to amortize the unfunded actuarial accrued liabilities based upon established contribution rates,
- Provide actuarial reporting and disclosure information for the System’s financial report, and
- Analyze the experience of the System over the past year.

The report is presented as follows:

Section I	-	Executive Summary
Section II	-	Financial Information
Section III	-	Benefits and Conditions Evaluated
Section IV	-	Recommendations for Reserve Transfers
Section V	-	Valuation Results for State
Section VI	-	Valuation Results for Local Government
Section VII	-	Valuation Results for Public Safety
Section VIII	-	Valuation Results for Law Enforcement
Section IX	-	Allowances Being Paid to Retirees and Beneficiaries
Section X	-	Actuarial Methods and Assumptions
Section XI	-	Financial Principles
Section XII	-	Additional Schedules

There have been no significant benefit changes since the last valuation. Please see Section III for a detailed description of the benefit provisions.

Total employer and member contribution rates by division, as well as the allocation of the employer contribution rate between pension and retiree health was based upon information known as of the valuation date.



Summary of Pension Defined Benefit Valuation Results

Traditional, Combined, and Member Directed Plans

December 31

(\$ in Millions)

	2022						2021	
	General			Law			Grand Total	Grand Total
	State	Local	Total General	Public Safety	Law Enforcement	Total Law		
A. Demographic Information								
1. Number Counts								
a. Active Members								
i. Traditional Plan (TP)	102,706	171,354	274,060	45	7,861	7,906	281,966	274,449
ii. Combined Plan (CP)	2,457	4,125	6,582	0	0	0	6,582	7,122
iii. Member Directed Plan (MD)	3,747	6,503	10,250	0	0	0	10,250	9,987
iv. Total	108,910	181,982	290,892	45	7,861	7,906	298,798	291,558
b. Retired Number Counts								
i. Retired Number Counts	77,687	144,691	222,378	185	5,927	6,112	228,490	227,036
c. Deferred/Inactive Number Counts								
i. Deferred/Inactive Number Counts	332,248	374,783	707,031	63	1,611	1,674	708,705	680,703
ii. Total Number Counts	518,845	701,456	1,220,301	293	15,399	15,692	1,235,993	1,199,297
2. Active Payroll								
a. DB Active Members								
i. Traditional Plan (TP)	\$ 5,922	\$ 8,527	\$ 14,449	\$ 2	\$ 623	\$ 625	\$ 15,075	\$ 13,932
ii. Combined Plan (CP)	195	263	458	0	0	0	458	451
b. Other Payroll								
i. Reemployed Retirees	\$ 103	\$ 332	\$ 434	\$ 0	\$ 1	\$ 1	\$ 435	\$ 404
ii. Member Directed Plan (MD)	266	426	692				692	635
iii. Alternative Retirement Plan (ARP)	595	0	595				595	574
B. Defined Benefit Assets								
1. Market Value (MV)	\$ 35,255	\$ 53,240	\$ 88,495	\$ 27	\$ 4,630	\$ 4,657	\$ 93,151	\$ 110,211
2. Rate of Return on MV							(12.31)%	15.46 %
3. Funding Value (FV)	\$ 38,926	\$ 58,784	\$ 97,710	\$ 30	\$ 5,112	\$ 5,141	\$ 102,852	\$ 99,710
4. Rate of Return on FV							7.01 %	10.18 %
5. Ratio of FV to MV							110.4%	90.5%
C. Defined Benefit Actuarial Results								
1. TP & CP Normal Cost as a % of Payroll	14.07%	14.07%	14.08%	18.54%	20.38%	20.36%	14.33%	14.37%
2. Actuarial Accrued Liability (AAL)								
a. Active	\$ 16,166	\$ 23,277	\$ 39,443	\$ 7	\$ 2,199	\$ 2,206	\$ 41,650	\$ 39,885
b. Retired	30,693	43,235	73,929	58	3,320	3,378	77,307	75,353
c. Deferred/Inactive	1,423	2,027	3,450	1	55	57	3,506	3,279
d. Total	\$ 48,282	\$ 68,540	\$ 116,822	\$ 66	\$ 5,575	\$ 5,641	\$ 122,463	\$ 118,517
3. Unfunded AAL (UAAL) (FV Basis)	\$ 9,356	\$ 9,756	\$ 19,112	\$ 37	\$ 463	\$ 500	\$ 19,611	\$ 18,807
4. Unfunded AAL (UAAL) (MV Basis)	\$ 13,027	\$ 15,300	\$ 28,327	\$ 39	\$ 945	\$ 984	\$ 29,312	\$ 8,306
5. Funded Ratio (FV Basis)	80.6 %	85.8 %	83.6 %	44.5 %	91.7 %	91.1 %	84.0 %	84.1 %
D. Amortization Years to Fully Amortize UAAL *								
	21	13	16	N/A	7	8	16	16
E. Defined Benefit Contribution Rates (Percents of Payroll)								
1. Pension Contributions								
a. Employer Normal Cost	4.43%	4.40%	4.42%	6.54%	7.38%	7.36%	4.54%	4.59%
b. Member Contribution Rate #	9.64%	9.67%	9.66%	12.00%	13.00%	13.00%	9.79%	9.78%
c. UAAL Contribution Rate	9.51%	9.55%	9.52%	11.56%	10.72%	10.74%	9.57%	9.52%
d. Total	23.58%	23.62%	23.60%	30.10%	31.10%	31.10%	23.90%	23.89%
2. Retiree Health Contribution Rate ^								
	0.06%	0.05%	0.06%	0.00%	0.00%	0.00%	0.05%	0.06%
3. Total Employer Contribution Rate								
	14.00%	14.00%	14.00%	18.10%	18.10%	18.10%	14.17%	14.17%

* Based on i) schedule of employer and member contribution rates shown on page III-4 and ii) Entry age actuarial cost method reflecting additional future normal cost savings anticipated to occur as Group A and B members are replaced by new hires subject to Group C benefit provisions. For the December 31, 2022 results, the amortization years shown are from December 31, 2023. Amortization years are determined based upon scheduled contribution rate changes, if any, through calendar year 2025.

CY 2024 and 2025 rates reflect 0% for Combined Plan members.

^ CY 2024 and 2025 rates reflect Combined Plan Members contributing 2.0% of payroll to Retiree Health.



Summary of Pension Defined Benefit Valuation Results

Traditional Plan

December 31

(\$ in Millions)

	2022						2021	
	General			Law			Grand Total	Grand Total
	State	Local	Total General	Public Safety	Law Enforcement	Total Law		
A. Demographic Information								
1. Number Counts								
a. Active Members	102,706	171,354	274,060	45	7,861	7,906	281,966	274,449
b. Retired Number Counts	77,246	143,690	220,936	185	5,927	6,112	227,048	225,740
c. Deferred/Inactive Number Counts	331,188	373,314	704,502	63	1,611	1,674	706,176	678,187
d. Total Number Counts	511,140	688,358	1,199,498	293	15,399	15,692	1,215,190	1,178,376
2. Active Payroll								
a. DB Active Members	\$ 5,922	\$ 8,527	\$ 14,449	\$ 2	\$ 623	\$ 625	\$ 15,075	\$ 13,932
b. Other Payroll								
i. Reemployed Retirees	\$ 103	\$ 332	\$ 434	\$ 0	\$ 1	\$ 1	\$ 435	\$ 404
ii. Member Directed Plan (MD)	266	426	692				692	635
iii. Alternative Retirement Plan (ARP)	595	0	595				595	574
B. Defined Benefit Assets								
1. Market Value (MV)	\$ 34,881	\$ 52,706	\$ 87,587	\$ 27	\$ 4,630	\$ 4,657	\$ 92,244	\$ 109,210
2. Rate of Return on MV							(12.31)%	15.46 %
3. Funding Value (FV)	\$ 38,512	\$ 58,194	\$ 96,706	\$ 30	\$ 5,112	\$ 5,141	\$ 101,847	\$ 98,796
4. Rate of Return on FV							7.02 %	10.18 %
5. Ratio of FV to MV							110.4%	90.5%
C. Defined Benefit Actuarial Results								
1. Normal Cost as a % of Payroll	14.32%	14.28%	14.29%	18.54%	20.38%	20.36%	14.56%	14.63%
2. Actuarial Accrued Liability (AAL)								
a. Active	\$ 15,929	\$ 22,977	\$ 38,906	\$ 7	\$ 2,199	\$ 2,206	\$ 41,112	\$ 39,407
b. Retired	30,653	43,164	73,817	58	3,320	3,378	77,195	75,251
c. Deferred/Inactive	1,409	2,011	3,420	1	55	57	3,476	3,251
d. Total	\$ 47,991	\$ 68,152	\$ 116,143	\$ 66	\$ 5,575	\$ 5,641	\$ 121,784	\$ 117,910
3. Unfunded AAL (UAAL) (FV Basis)	\$ 9,478	\$ 9,958	\$ 19,437	\$ 37	\$ 463	\$ 500	\$ 19,936	\$ 19,114
4. Unfunded AAL (UAAL) (MV Basis)	\$ 13,110	\$ 15,446	\$ 28,556	\$ 39	\$ 945	\$ 984	\$ 29,540	\$ 8,700
5. Funded Ratio (FV Basis)	80.2 %	85.4 %	83.3 %	44.5 %	91.7 %	91.1 %	83.6 %	83.8 %
D. Amortization Years to Fully Amortize UAAL *	22	13	16	N/A	7	8	16	17
E. Contribution Rates (Percents of Payroll)								
	CY 2025						CY 2024	
1. Pension Contributions								
a. Employer Normal Cost	4.32%	4.28%	4.29%	6.54%	7.38%	7.36%	4.44%	4.50%
b. Member Contribution Rate	10.00%	10.00%	10.00%	12.00%	13.00%	13.00%	10.12%	10.13%
c. UAAL Contribution Rate	9.68%	9.72%	9.71%	11.56%	10.72%	10.74%	9.73%	9.67%
d. Total	24.00%	24.00%	24.00%	30.10%	31.10%	31.10%	24.29%	24.30%
2. Retiree Health Contribution Rate	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3. Total Employer Contribution Rate	14.00%	14.00%	14.00%	18.10%	18.10%	18.10%	14.17%	14.17%

* Based on i) schedule of employer and member contribution rates shown on page III-4 and ii) Entry age actuarial cost method reflecting additional future normal cost savings anticipated to occur as Group A and B members are replaced by new hires subject to Group C benefit provisions. For the December 31, 2022 results, the amortization years shown are from December 31, 2023. Amortization years are determined based upon scheduled contribution rate changes, if any, through calendar year 2025.



Summary of Pension Defined Benefit Valuation Results

Combined Plan

December 31

(\$ in Millions)

	2022			2021
	General		Grand Total	Grand Total
	State	Local		
A. Demographic Information				
1. Number Counts				
a. Active Members	2,457	4,125	6,582	7,122
b. Retired Number Counts	325	694	1,019	914
c. Deferred/Inactive Number Counts	1,060	1,469	2,529	2,516
d. Total Number Counts	3,842	6,288	10,130	10,552
2. Active Payroll	\$ 195	\$ 263	\$ 458	\$ 451
B. Defined Benefit Assets				
1. Market Value (MV)	\$ 360	\$ 510	\$ 870	\$ 958
2. Rate of Return on MV			(12.38)%	15.42 %
3. Funding Value (FV)	\$ 398	\$ 565	\$ 963	\$ 875
4. Rate of Return on FV			6.18 %	10.28 %
5. Ratio of FV to MV			111%	91%
C. Defined Benefit Actuarial Results				
1. Normal Cost as a % of Payroll	7.30%	7.44%	7.38%	7.41%
2. Actuarial Accrued Liability (AAL)				
a. Active	\$ 237	\$ 300	\$ 537	\$ 478
b. Retired	25	45	71	62
c. Deferred/Inactive	14	17	30	28
d. Total	\$ 276	\$ 362	\$ 638	\$ 567
3. Unfunded AAL (UAAL) (FV Basis)	\$ (122)	\$ (203)	\$ (325)	\$ (307)
4. Unfunded AAL (UAAL) (MV Basis)	\$ (84)	\$ (148)	\$ (232)	\$ (391)
5. Funded Ratio (FV Basis)	144.2 %	156.0 %	150.9 %	154.2 %
D. Amortization Years to Fully Amortize UAAL *	0	0	0	0
E. Contribution Rates (Percents of Payroll)				
	CY 2025		CY 2024	
1. Total Normal Cost	7.30%	7.44%	7.38%	7.41%
2. Member Contribution Rate	0.00%	0.00%	0.00%	0.00%
3. Employer Normal Cost	7.30%	7.44%	7.38%	7.41%
4. Other Contributions #	6.70%	6.56%	6.62%	6.59%
5. Total Employer Contribution Rate	14.00%	14.00%	14.00%	14.00%

* Based on schedule of employer and member contribution rates shown on page III-4. For the December 31, 2022 results, the amortization years shown are from December 31, 2023. Amortization years are determined based upon scheduled contribution rate changes, if any, through calendar year 2025.

Other contributions include: amortization payments for the pension UAAL, mitigating contributions, and contributions to the retiree health care fund. Combined Plan members contribute 2.00% of payroll to the retiree health care fund beginning July 1, 2023.



Summary of Pension Defined Benefit Valuation Results

DB Portion of Member Directed Plan

December 31

	2022			2021	
	General			Grand Total	Grand Total
	State	Local	Total General		
A. Demographic Information					
1. Number Counts					
a. Active Members	3,747	6,503	10,250	10,250	9,987
b. Retired Number Counts	116	307	423	423	382
c. Deferred/Inactive Number Counts	0	0	0	0	0
d. Total Number Counts	3,863	6,810	10,673	10,673	10,369
2. Active Payroll (\$ in Millions)	\$ 266	\$ 426	\$ 692	\$ 692	\$ 635
B. Defined Benefit Assets					
1. Market Value (MV)	\$ 13,810,010	\$ 23,250,533	\$ 37,060,543	\$ 37,060,543	\$ 43,428,459
2. Rate of Return on MV				(12.79)%	16.02 %
3. Funding Value (FV)	\$ 15,285,461	\$ 25,734,602	\$ 41,020,063	\$ 41,020,063	\$ 39,430,681
4. Rate of Return on FV				6.31 %	10.59 %
5. Ratio of FV to MV				110.7%	90.8%
C. Defined Benefit Actuarial Results					
1. Normal Cost as a % of Payroll					
2. Actuarial Accrued Liability (AAL)					
a. Active	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
b. Retired	15,285,461	25,734,602	41,020,063	41,020,063	39,430,681
c. Deferred/Inactive	0	0	0	0	0
d. Total	\$ 15,285,461	\$ 25,734,602	\$ 41,020,063	\$ 41,020,063	\$ 39,430,681
3. Unfunded AAL (UAAL) (FV Basis)	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
4. Unfunded AAL (UAAL) (MV Basis)*	\$ 0	\$ 0	\$ 0	\$ 0	\$ (3,997,778)
5. Funded Ratio (FV Basis)				100.0 %	100.0 %

* As of December 31, 2022, the Reserve for Future Adverse Experience is sufficient to cover the difference between the Funding Value of Assets and the Market Value of Assets. Therefore, the UAAL on an MV Basis is shown as \$0.

Comments and Conclusion

The December 31, 2022 actuarial valuations of members indicate the following about the portion of employer contribution rates allocated to financing retirement allowances:

- The employer rates, when combined with the member rates, are sufficient to fully fund the cost of benefit commitments being made to members for service currently being rendered (i.e., normal cost); and
- After satisfying normal cost requirements, the remaining portion of the employer rates provides sufficient funds to amortize unfunded actuarial accrued liabilities over a period of 16 years for the System in total.

Experience. The computed amortization period, taking into account all scheduled increases in contribution rates (currently none), is 16 years compared with the 16-year period that had been reported in the December 31, 2021 valuation. In aggregate, experience was less favorable than expectations during the 2022 calendar year. Primary factors which contributed to the change in the amortization years were:

- Year over year increases in pay for the active membership was higher than expected, placing upward pressure on the computed amortization period.
- Measured on a market value basis, investment return was -12.31%. This figure is based upon an actuarial calculation and may not agree with figures reported elsewhere. The return on the funding value was 7.01%. The funding rate of return was higher than the market rate of return due to the four-year smoothing of gains and losses. Since the return on funding value of assets was higher than the 6.90% assumed return, there was downward pressure on the computed amortization period.
- Active member decrement experience (e.g., retirement, disablement, death-in-service and other separations) resulted in a net liability gain, placing downward pressure on the computed amortization period.
- Retirees who retired after 1/7/2013 receive a 3.00% Cost-of-Living Adjustment (COLA) for the calendar year 2023, which is higher than the 2.05% COLA increase assumption for such retirees. This resulted in a liability loss, placing upward pressure on the computed amortization period.
- Retiree mortality was more than expected. This resulted in a liability gain, placing downward pressure on the computed amortization period.

Information concerning 2022 experience including other sources of gains and losses is presented on pages I-16 through I-19.

Conclusion. Based on the results of the December 31, 2022 regular annual actuarial valuation, it is our opinion that the Ohio Public Employees Retirement System continues to operate in accordance with actuarial principles of level percent of payroll financing.

Other Observations

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 6.90% on the funding value of assets), it is expected that:

- (1) The employer normal cost as a percentage of pay will decrease to the level of the Group C normal cost as time passes and more of the active population is comprised of Group C members,
- (2) The unfunded actuarial accrued liabilities will be fully amortized after 16 years, and
- (3) The funded status of the plan will increase gradually towards a 100% funded ratio.

When selecting a contribution allocation procedure, the following three items should be considered, including the balance amongst the three items: (1) benefit security, (2) intergenerational equity, and (3) contribution stability and predictability. Generally, given the nature of public employee retirement systems (e.g., level contribution financing objective and perceived ongoing nature of the plan or plan sponsor), intergenerational equity and contribution stability and predictability have received more consideration than benefit security when contribution allocation procedures are selected. However, given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

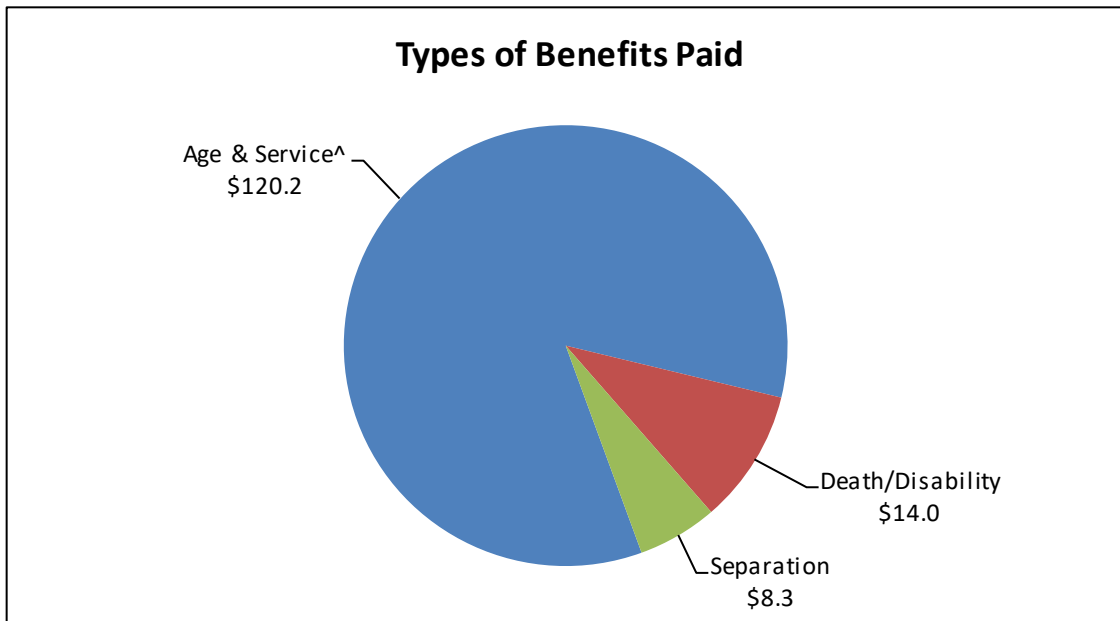
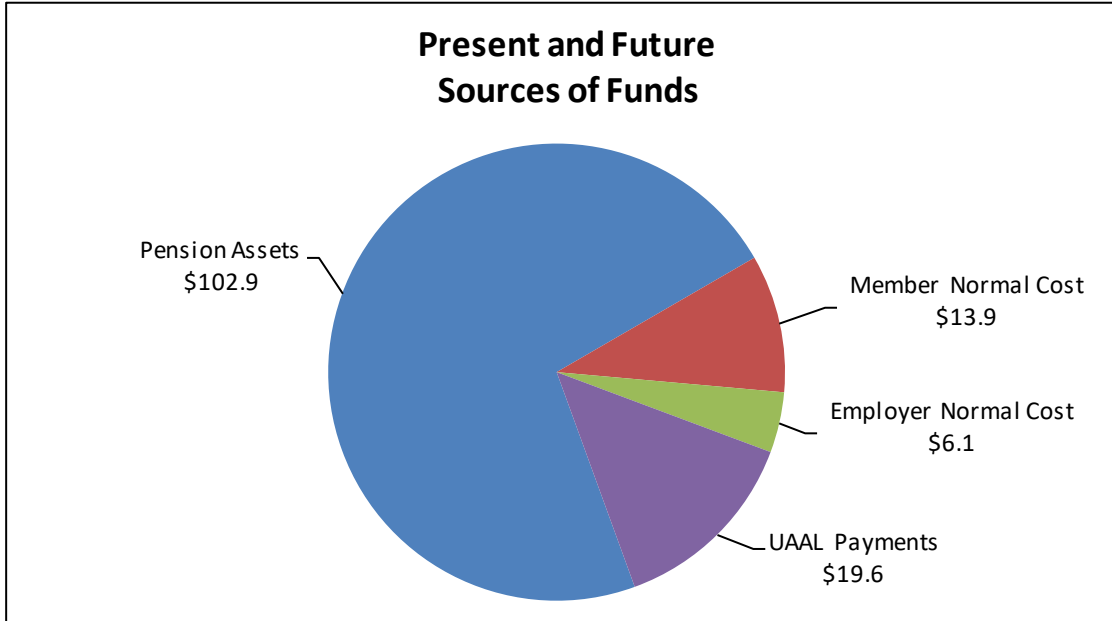
This valuation assumes the continuing ability of the employers to make the contributions necessary to fund the System. A determination regarding whether or not the employers are actually able to do so is outside our scope of expertise and was not performed.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the funding value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, for transferring the obligations to an unrelated third party (e.g., insurance company) in a market value type transaction. In addition, the measurement is inappropriate for assessing benefit security for the membership.
- (2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
- (3) The measurement would produce a different result if the market value of assets were used instead of the funding value of assets, unless the market value of assets is used in the measurement.

Financing \$142.5 Billion* of Defined Benefit Promises for Present Active and Retired Members December 31, 2022 (Dollar Amounts in Billions)



* Present value of future benefits – all divisions combined.

^ Includes administrative expenses.

Defined Benefit Active Members in Valuation Group Averages - Comparative Statement

Valuation Group	Dec. 31	No. of Active Members	Group Averages				
			Attained Age	Accrued Service Yrs.	Annual Payroll		
					Average	Increase	
STATE	1975	83,220	40.6 yrs.	6.5 yrs.	\$ 9,441	6.4 %	@
	1980	92,872	39.4	7.3	13,934	8.1 %	@
	1985	89,256	39.2	8.4	18,677	6.0 %	@
	1990	98,939	40.7	8.1	25,281	6.2 %	@
	1995	114,596	40.4	8.8	27,962	2.0 %	@
	2000	113,099	41.6	9.7	34,201	4.1 %	@
	2005	114,620	42.0	10.1	37,858	2.1 %	@
	2010	118,240	41.0	9.6	40,691	1.5 %	@
	2015	118,372	39.9	8.9	41,911	0.6 %	@
	2020	97,744	42.2	10.4	55,410	5.7 %	@#
	2021	100,996	41.7	9.9	55,026	(0.7)%	
	2022	105,163	41.1	9.4	58,170	5.7 %	
LOCAL GOV'T	1975	149,557	40.8 yrs.	6.1 yrs.	8,771	4.3 %	@
	1980	160,797	40.7	7.4	13,035	8.2 %	@
	1985	158,285	40.1	8.3	15,983	4.2 %	@
	1990	173,220	41.5	7.9	19,506	4.1 %	@
	1995	223,431	41.2	7.6	20,384	0.9 %	@
	2000	245,831	41.8	8.1	24,401	3.7 %	@
	2005	236,073	43.3	9.2	29,933	4.2 %	@
	2010	215,144	44.6	10.1	33,447	2.2 %	@
	2015	202,779	44.4	10.0	37,008	2.0 %	@
	2020	172,805	46.6	11.0	45,954	4.4 %	@#
	2021	172,602	46.4	10.8	47,686	3.8 %	
	2022	175,479	46.2	10.4	50,092	5.1 %	
LAW * (Includes Public Safety and Law Enforcement)	1975	2,111	35.0 yrs.	4.9 yrs.	10,467	-	
	1980	3,019	36.1	6.8	16,846	10.0 %	@
	1985	4,207	36.5	8.4	20,103	3.6 %	@
	1990	5,804	38.6	9.9	26,936	6.0 %	@
	1995	6,605	39.3	11.1	32,441	3.8 %	@
	2000	8,045	39.3	11.7	40,387	4.5 %	@
	2005	8,111	39.9	12.6	49,472	4.1 %	@
	2010	7,790	41.2	14.0	56,801	2.8 %	@
	2015	7,858	41.3	14.2	61,710	1.7 %	@
	2020	8,060	41.4	14.6	72,060	3.1 %	@#
	2021	7,973	41.3	14.3	74,592	3.5 %	
	2022	7,906	41.1	14.0	79,110	6.1 %	
TOTAL	2005	358,804	42.8 yrs.	9.5 yrs.	32,906	3.5 %	@
	2010	341,174	43.3	10.0	36,491	2.1 %	@
	2015	329,009	42.7	9.7	39,362	1.5 %	@
	2020	278,609	44.9	10.9	50,027	4.9 %	@#
	2021	281,571	44.6	10.6	51,081	2.1 %	
	2022	288,548	44.2	10.1	53,831	5.4 %	

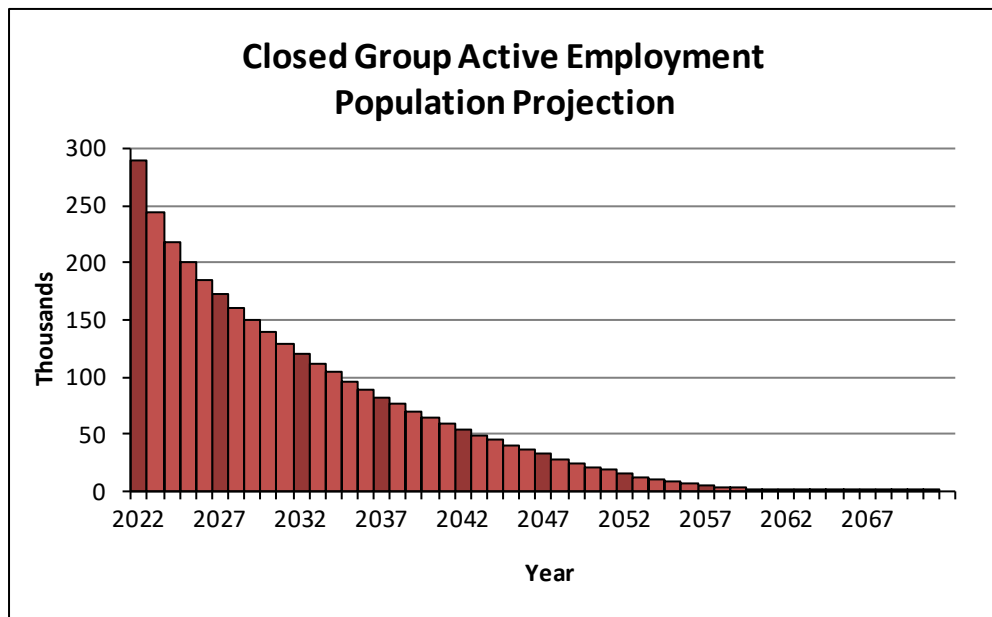
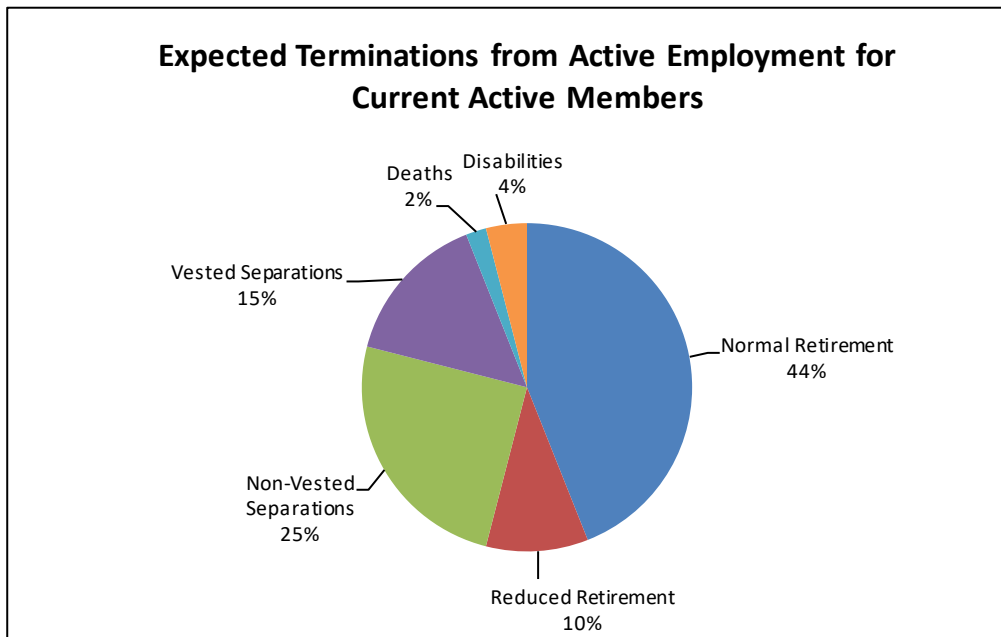
@ 5-year annual compound rate.

* Beginning with the December 31, 2005 valuation report, valuation results for the Law division are shown separately for Public Safety and Law Enforcement.

Reflects approximately 30,000 to 40,000 active members reclassified as inactive in the December 31, 2018 actuarial valuation.



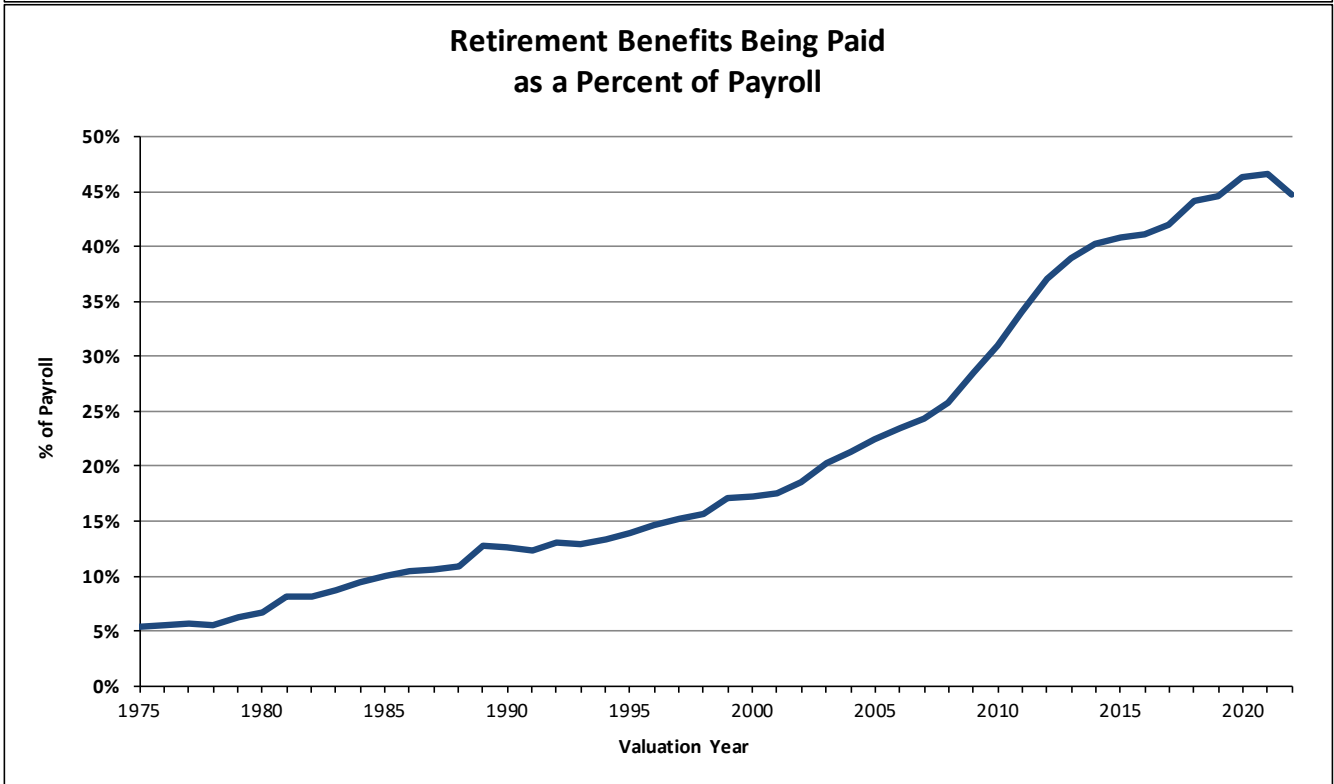
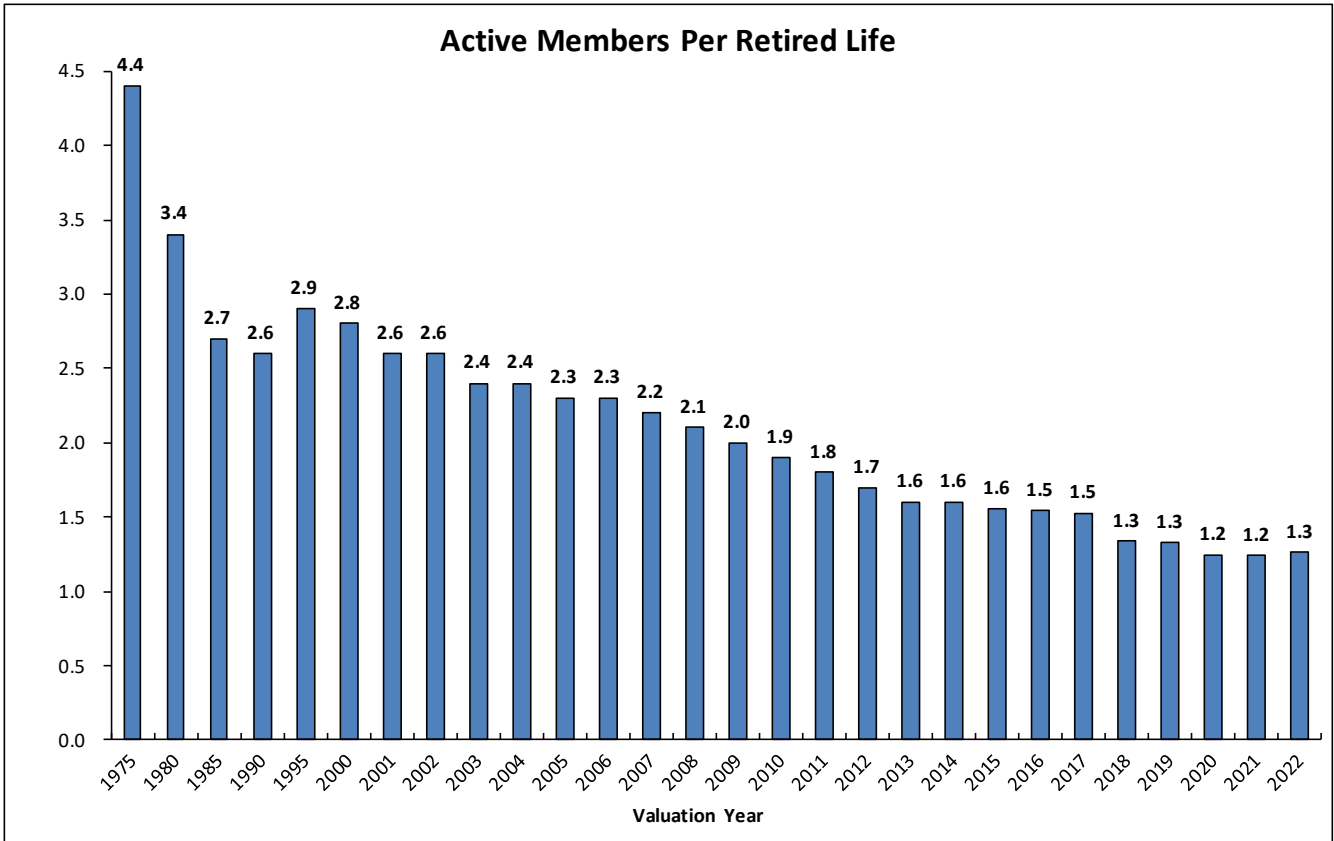
Development of Present Defined Benefit Population December 31, 2022



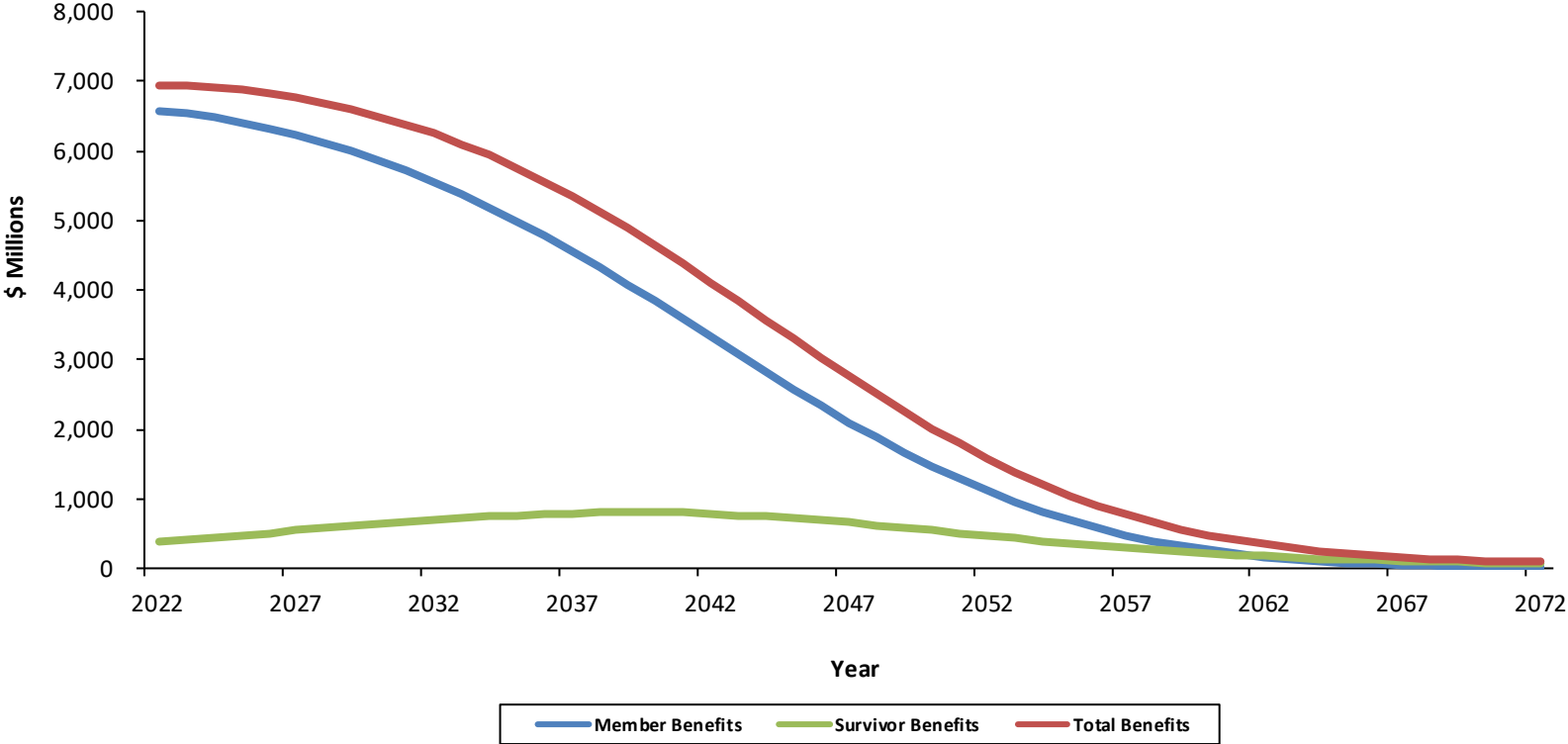
The charts above show the expected future development of the present population in simplified terms. The defined benefit portion of the Retirement System presently covers 288,548 active members. Eventually, 25% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for a monthly benefit. 69% of the present population is expected to receive monthly retirement benefits either by retiring directly from active service, or by separating from service without withdrawing contributions. 6% of the present population is expected to become eligible for death-in-service or disability benefits. Within 8 years, over half of the covered membership is expected to consist of new hires.

Active/Retired Member Statistics

December 31, 2022



Projected Future Benefit Payments on Behalf of Present Retired Lives



Total future payments:	\$162.7 billion
From present assets:	\$ 77.3 billion
From future earnings:	\$ 85.4 billion

All Divisions

Defined Benefit Active Members in Valuation

December 31, 2022

by Attained Age and Years of Service

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19	6,330							6,330
Tot. Pay	\$74,879,898							\$74,879,898
Avg. Pay	\$11,829							\$11,829
20-24	24,462	134						24,596
Tot. Pay	\$550,675,760	\$6,282,415						\$556,958,175
Avg. Pay	\$22,511	\$46,884						\$22,644
25-29	20,722	4,126	83					24,931
Tot. Pay	\$867,247,520	\$229,130,603	\$4,421,811					\$1,100,799,934
Avg. Pay	\$41,852	\$55,533	\$53,275					\$44,154
30-34	15,940	9,933	2,372	107				28,352
Tot. Pay	\$718,348,029	\$600,115,152	\$155,854,860	\$6,601,926				\$1,480,919,967
Avg. Pay	\$45,066	\$60,416	\$65,706	\$61,700				\$52,233
35-39	11,752	8,213	5,763	2,583	132			28,443
Tot. Pay	\$550,835,301	\$508,235,926	\$404,073,368	\$182,886,922	\$8,630,536			\$1,654,662,053
Avg. Pay	\$46,872	\$61,882	\$70,115	\$70,804	\$65,383			\$58,175
40-44	10,054	6,578	4,679	6,034	2,722	147		30,214
Tot. Pay	\$454,940,116	\$402,197,765	\$329,283,214	\$451,318,737	\$201,993,146	\$10,164,493		\$1,849,897,471
Avg. Pay	\$45,250	\$61,143	\$70,375	\$74,796	\$74,208	\$69,146		\$61,227
45-49	8,303	5,302	3,671	4,763	6,116	2,224	107	30,486
Tot. Pay	\$372,174,093	\$315,036,299	\$252,681,516	\$354,807,079	\$479,415,083	\$172,474,129	\$7,543,413	\$1,954,131,612
Avg. Pay	\$44,824	\$59,418	\$68,832	\$74,492	\$78,387	\$77,551	\$70,499	\$64,099
50-54	8,066	5,245	3,764	4,460	5,791	6,272	1,930	35,528
Tot. Pay	\$350,639,058	\$307,691,916	\$248,592,945	\$319,235,533	\$441,221,207	\$510,361,066	\$157,335,866	\$2,335,077,591
Avg. Pay	\$43,471	\$58,664	\$66,045	\$71,577	\$76,191	\$81,371	\$81,521	\$65,725
55-59	6,684	4,312	3,447	4,128	4,921	5,056	3,954	32,502
Tot. Pay	\$270,721,607	\$239,018,735	\$214,868,626	\$273,811,938	\$348,614,106	\$392,672,851	\$330,352,910	\$2,070,060,773
Avg. Pay	\$40,503	\$55,431	\$62,335	\$66,330	\$70,842	\$77,665	\$83,549	\$63,690
60-64	5,077	3,465	2,934	3,731	4,421	4,108	3,264	27,000
Tot. Pay	\$177,007,982	\$175,793,182	\$170,088,129	\$232,474,750	\$293,549,389	\$287,959,109	\$262,066,853	\$1,598,939,394
Avg. Pay	\$34,865	\$50,734	\$57,971	\$62,309	\$66,399	\$70,097	\$80,290	\$59,220
65-69	3,392	1,668	1,341	1,668	1,676	1,450	1,462	12,657
Tot. Pay	\$78,349,825	\$74,297,838	\$69,252,424	\$96,545,675	\$102,247,281	\$99,032,674	\$107,731,737	\$627,457,454
Avg. Pay	\$23,098	\$44,543	\$51,642	\$57,881	\$61,007	\$68,298	\$73,688	\$49,574
70 & Over	3,257	1,185	717	681	551	467	651	7,509
Tot. Pay	\$50,002,010	\$27,940,112	\$25,460,212	\$29,481,970	\$27,280,571	\$25,437,004	\$43,484,833	\$229,086,712
Avg. Pay	\$15,352	\$23,578	\$35,509	\$43,292	\$49,511	\$54,469	\$66,797	\$30,508
Totals	124,039	50,161	28,771	28,155	26,330	19,724	11,368	288,548
Tot. Pay	\$4,515,821,199	\$2,885,739,943	\$1,874,577,105	\$1,947,164,530	\$1,902,951,319	\$1,498,101,326	\$908,515,612	\$15,532,871,034
Avg. Pay	\$36,406	\$57,530	\$65,155	\$69,159	\$72,273	\$75,953	\$79,919	\$53,831

All Divisions
Defined Benefit Active Members in Valuation
December 31, 2022
by Gender and Years of Service

Service Years	Active Member Count			Active Member Pays	
	Males	Females	Total	Total	Average
0	23,492	30,449	53,941	\$ 1,406,647,847	\$26,078
1	11,908	14,401	26,309	1,013,029,478	38,505
2	6,849	8,170	15,019	659,321,631	43,899
3	7,031	8,384	15,415	747,189,699	48,472
4	6,162	7,193	13,355	689,632,544	51,639
5	5,477	6,528	12,005	646,163,666	53,825
6	4,927	6,138	11,065	625,960,998	56,571
7	4,506	5,456	9,962	576,760,792	57,896
8	4,224	4,616	8,840	530,334,515	59,993
9	3,907	4,382	8,289	506,519,972	61,107
10	3,405	3,982	7,387	468,210,162	63,383
11	3,011	3,076	6,087	393,170,597	64,592
12	2,640	2,905	5,545	369,316,804	66,604
13	2,249	2,152	4,401	290,960,537	66,112
14	2,436	2,915	5,351	352,919,005	65,954
15 & Up	41,346	44,231	85,577	6,256,732,787	73,112
Totals	133,570	154,978	288,548	\$ 15,532,871,034	\$53,831

All Divisions Defined Benefit Members in Valuation December 31, 2022

Active & Inactive Members by Transition Group

	Traditional Plan	Combined Plan	Total
Active Counts			
Transition Group A	14,004	252	14,256
Transition Group B	29,183	611	29,794
Transition Group C	238,779	5,719	244,498
Total	281,966	6,582	288,548
Payroll			
Transition Group A	\$ 870,024,443	\$ 14,652,607	\$ 884,677,050
Transition Group B	2,052,112,460	44,781,965	2,096,894,425
Transition Group C	12,152,464,946	398,834,613	12,551,299,559
Total	\$ 15,074,601,849	\$ 458,269,185	\$ 15,532,871,034
Inactive Counts			
Transition Group A	3,737	34	3,771
Transition Group B	8,512	127	8,639
Transition Group C	686,255	2,368	688,623
Other*	7,672	-	7,672
Total	706,176	2,529	708,705

* Inactive members with reported service of 0 years or Final Average Salary of \$0.

Please refer to page III-2 for the definition of transition groups.

Retired Members by COLA Provision

	December 31, 2022	
	Number Receiving	Monthly Benefits
3% Fixed Simple COLA	137,569	\$ 365,667,649
CPI Indexed Simple COLA	86,601	212,021,642
No COLA (Money Purchase)	4,320	1,917,710
Total	228,490	\$ 579,607,001

Summary of Pension Experience

Traditional, Combined, and DB Portion of Member Directed Plan

(\$ in Millions)

	2022		2021	
	Total \$	% of Accrued Liabilities	Total \$	% of Accrued Liabilities
Beginning of Year				
1. Total Actuarial Accrued Liabilities	\$118,516.96	100.00 %	\$115,241.25	100.00 %
2. Valuation Assets	99,710.19	84.13 %	93,969.09	81.54 %
3. Unfunded Actuarial Accrued Liabilities	\$18,806.77	15.87 %	\$21,272.16	18.46 %
Experience Gains (Losses)				
4. Gains (losses) in economic risk areas				
a. Pay increases	\$(1,351.06)	(1.14)%	\$(427.58)	(0.37)%
b. Investment return	106.36	0.09 %	3,023.79	2.62 %
c. Total	\$(1,244.70)	(1.05)%	\$2,596.21	2.25 %
5. Gains (losses) from active member decrement experience				
a. Service retirement	\$(78.97)	(0.07)%	\$(99.75)	(0.09)%
b. Disability retirement	45.70	0.04 %	61.43	0.05 %
c. Death-in-service	41.32	0.03 %	35.76	0.03 %
d. Other separations	164.75	0.14 %	100.72	0.09 %
e. Total	\$172.80	0.14 %	\$98.16	0.08 %
6. Gains (losses) from retiree COLA experience	\$(203.15)	(0.17)%	\$(178.71)	(0.16)%
7. Gains (losses) from retiree mortality	\$218.59	0.18 %	\$139.83	0.12 %
8. Total experience gains (losses): (4c) + (5e) + (6) + (7)	\$(1,056.46)	(0.90)%	\$2,655.49	2.29 %
End of Year				
9. Total Actuarial Accrued Liabilities	\$122,463.02	100.00 %	\$118,516.96	100.00 %
10. Valuation Assets	102,851.68	83.99 %	99,710.19	84.13 %
11. Unfunded Actuarial Accrued Liabilities	\$19,611.34	16.01 %	\$18,806.77	15.87 %

Summary of Pension Experience Traditional Plan (\$ in Millions)

	2022		2021	
	Total \$	% of Accrued Liabilities	Total \$	% of Accrued Liabilities
Beginning of Year				
1. Total Actuarial Accrued Liabilities	\$117,910.07	100.00 %	\$114,696.42	100.00 %
2. Valuation Assets	98,795.85	83.79 %	93,180.17	81.24 %
3. Unfunded Actuarial Accrued Liabilities	\$19,114.22	16.21 %	\$21,516.25	18.76 %
Experience Gains (Losses)				
4. Gains (losses) in economic risk areas				
a. Pay increases	\$(1,336.47)	(1.13)%	\$(424.58)	(0.37)%
b. Investment return	112.99	0.10 %	2,996.30	2.61 %
c. Total	\$(1,223.48)	(1.03)%	\$2,571.72	2.24 %
5. Gains (losses) from active member decrement experience				
a. Service retirement	\$(78.76)	(0.07)%	\$(99.67)	(0.09)%
b. Disability retirement	41.98	0.04 %	57.84	0.05 %
c. Death-in-service	39.99	0.03 %	34.72	0.03 %
d. Other separations	159.45	0.14 %	96.56	0.08 %
e. Total	\$162.66	0.14 %	\$89.45	0.08 %
6. Gains (losses) from retiree COLA experience	\$(202.56)	(0.17)%	\$(178.19)	(0.16)%
7. Gains (losses) from retiree mortality	\$218.56	0.19 %	\$139.88	0.12 %
8. Total experience gains (losses): (4c) + (5e) + (6) + (7)	\$(1,044.82)	(0.87)%	\$2,622.86	2.28 %
End of Year				
9. Total Actuarial Accrued Liabilities	\$121,783.76	100.00 %	\$117,910.07	100.00 %
10. Valuation Assets	101,847.47	83.63 %	98,795.85	83.79 %
11. Unfunded Actuarial Accrued Liabilities	\$19,936.29	16.37 %	\$19,114.22	16.21 %

Summary of Pension Experience Combined Plan (\$ in Millions)

	2022		2021	
	Total \$	% of Accrued Liabilities	Total \$	% of Accrued Liabilities
Beginning of Year				
1. Total Actuarial Accrued Liabilities	\$567.46	100.00 %	\$507.68	100.00 %
2. Valuation Assets	874.91	154.18 %	751.77	148.08 %
3. Unfunded Actuarial Accrued Liabilities	\$(307.45)	(54.18)%	\$(244.09)	(48.08)%
Experience Gains (Losses)				
4. Gains (losses) in economic risk areas				
a. Pay increases	\$(14.59)	(2.57)%	\$(3.00)	(0.59)%
b. Investment return	(6.40)	(1.13)%	26.15	5.15 %
c. Total	\$(20.99)	(3.70)%	\$23.15	4.56 %
5. Gains (losses) from active member decrement experience				
a. Service retirement	\$(0.21)	(0.04)%	\$(0.08)	(0.02)%
b. Disability retirement	3.72	0.66 %	3.59	0.71 %
c. Death-in-service	1.33	0.23 %	1.04	0.20 %
d. Other separations	5.30	0.93 %	4.16	0.82 %
e. Total	\$10.14	1.78 %	\$8.71	1.71 %
6. Gains (losses) from retiree COLA experience	\$(0.42)	(0.07)%	\$(0.37)	(0.07)%
7. Gains (losses) from retiree mortality	\$0.07	0.01 %	\$0.06	0.01 %
8. Total experience gains (losses): (4c) + (5e) + (6) + (7)	\$(11.20)	(1.98)%	\$31.55	6.21 %
End of Year				
9. Total Actuarial Accrued Liabilities	\$638.24	100.00 %	\$567.46	100.00 %
10. Valuation Assets	963.19	150.91 %	874.91	154.18 %
11. Unfunded Actuarial Accrued Liabilities	\$(324.95)	(50.91)%	\$(307.45)	(54.18)%

Summary of Pension Experience DB Portion of Member Directed Plan (\$ in Millions)

	2022		2021	
	Total \$	% of Accrued Liabilities	Total \$	% of Accrued Liabilities
Beginning of Year				
1. Total Actuarial Accrued Liabilities	\$39.43	100.00 %	\$37.15	100.00 %
2. Valuation Assets	39.43	100.00 %	37.15	100.00 %
3. Unfunded Actuarial Accrued Liabilities	\$0.00	0.00 %	\$0.00	0.00 %
Experience Gains (Losses)				
4. Gains (losses) in economic risk areas				
a. Pay increases				
b. Investment return	\$(0.23)	(0.58)%	\$1.34	3.61 %
c. Total	\$(0.23)	(0.58)%	\$1.34	3.61 %
5. Gains (losses) from active member decrement experience				
a. Service retirement				
b. Disability retirement				
c. Death-in-service				
d. Other separations				
e. Total	N/A	N/A	N/A	N/A
6. Gains (losses) from retiree COLA experience	\$(0.17)	(0.43)%	\$(0.15)	(0.40)%
7. Gains (losses) from retiree mortality	\$(0.04)	(0.10)%	\$(0.11)	(0.30)%
8. Total experience gains (losses): (4c) + (5e) + (6) + (7)	\$(0.44)	(1.11)%	\$1.08	2.91 %
End of Year				
9. Total Actuarial Accrued Liabilities	\$41.02	100.00 %	\$39.43	100.00 %
10. Valuation Assets	41.02	100.00 %	39.43	100.00 %
11. Unfunded Actuarial Accrued Liabilities	\$0.00	0.00 %	\$0.00	0.00 %

Risk Commentary

Determination of the actuarial accrued liability, the computed amortization period, and the funded ratio requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in actuarial measurements that results from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

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

- (1) **Investment Risk** – The risk that actual investment returns may differ from the expected investment returns. Plans such as OPERS whose members are not in Social Security typically provide higher benefits than other plans, resulting in a larger asset base and, hence, increased investment risk.
- (2) **Contribution Risk** – OPERS is a plan that has fixed maximum employer and employee contribution rates in the Revised Code of Ohio. The Board may establish employer and employee contribution rates up to the maximums. Currently, OPERS is at the maximum employer and employee contributions rates. In addition, the Board makes the determination of how much of the contributions are allocated to the pension and retiree health portions of OPERS. Currently, all of the contributions are allocated to the pension program. Contribution risk is the risk that the current level of contributions may be insufficient to fund the current pension benefit structure of OPERS while maintaining the Revised Code of Ohio requirement of an amortization period of no greater than 30 years.
- (3) **Participation Risk** – The risk that a significant portion of the active population participates in the Member Directed Plan as opposed to the Traditional Plan. This would reduce contribution income to the Traditional Plan and increase the risk that scheduled contributions would be insufficient to provide scheduled benefits.

Plan maturity measures are presented on pages I-11 and I-21 of this section.

Summary of Risk/Maturity Measures

Traditional Plan

Valuation Year	Funded Ratio		UAAL	UAAL / Total Payroll	Funding Value	Total AAL / Total Payroll	Standard Deviation of
	Based on FVA	Based on MVA	Amortization Period		of Assets / Total Payroll		Investment Return / Total Payroll
2013	82 %	86 %	25	1.3	5.9	7.2	80 %
2014	84	86	21	1.2	6.1	7.2	83
2015*	80	77	20	1.5	6.2	7.7	83
2016	80	77	20	1.5	6.1	7.7	72
2017	81	85	19	1.5	6.2	7.7	78
2018	77	75	28	1.9	6.4	8.2	75
2019	79	82	23	1.7	6.5	8.2	82
2020*	81	85	22	1.6	6.9	8.5	92
2021	84	93	17	1.4	7.1	8.5	100
2022	84	76	16	1.3	6.8	8.1	78

Combined Plan

Valuation Year	Funded Ratio		UAAL	UAAL / Total Payroll	Funding Value	Total AAL / Total Payroll	Standard Deviation of
	Based on FVA	Based on MVA	Amortization Period		of Assets / Total Payroll		Investment Return / Total Payroll
2013	100 %	105 %	0	0.0	0.7	0.7	9 %
2014	111	115	0	-0.1	0.8	0.7	11
2015*	116	111	0	-0.1	0.9	0.8	13
2016	120	117	0	-0.2	1.0	0.8	12
2017	131	137	0	-0.3	1.1	0.9	14
2018	131	127	0	-0.3	1.3	1.0	15
2019	140	145	0	-0.4	1.5	1.1	19
2020*	148	155	0	-0.6	1.7	1.2	23
2021	154	169	0	-0.7	1.9	1.3	27
2022	151	136	0	-0.7	2.1	1.4	24

DB Portion of Member Directed Plan

Valuation Year	Funded Ratio		UAAL	UAAL / Total Payroll	Funding Value	Total AAL / Total Payroll	Standard Deviation of
	Based on FVA	Based on MVA	Amortization Period		of Assets / Total Payroll		Investment Return / Total Payroll
2013	99 %	103 %	N/A	0.0	0.0	0.0	N/A
2014	106	107	N/A	0.0	0.0	0.0	N/A
2015*	103	99	N/A	0.0	0.0	0.0	N/A
2016	100	98	N/A	0.0	0.0	0.0	N/A
2017	100	106	N/A	0.0	0.0	0.0	N/A
2018	100	97	N/A	0.0	0.0	0.0	N/A
2019	100	104	N/A	0.0	0.0	0.0	N/A
2020*	100	105	N/A	0.0	0.1	0.1	N/A
2021	100	110	N/A	0.0	0.1	0.1	N/A
2022	100	90	N/A	0.0	0.1	0.1	N/A

* Based upon revised actuarial assumptions.

Summary of Risk/Maturity Measures (Concluded)

An explanation of the significance of the risk metrics presented on the preceding page follows:

- (1) **Funded Ratio (Funding Value of Assets basis)** – This is the most widely known measure of a plan's financial strength. The trend in the funded ratio is much more important than the absolute ratio. A trend approaching 100% is desirable.
- (2) **Funded Ratio (Market Value of Assets basis)** – This is similar to the above, except that the asset value used is the market value.
- (3) **UAAL Amortization Period** – Periods above 17 to 20 years indicate that the UAAL payment is less than the interest on the UAAL. This situation is referred to as “negative amortization.” Negative amortization is increasingly viewed as undesirable.
- (4) **UAAL / Total Payroll** – The ratio of UAAL to payroll gives an indication of the plan sponsor's ability to pay off the UAAL. A declining ratio is desirable. A ratio above approximately 3.0 or 4.0 may indicate difficulty in discharging the unfunded liability in some circumstances.
- (5) **Funding Value of Assets / Total Payroll** – The ratio of assets to payroll gives an indication of both maturity and volatility. Many systems have ratios between 5.0 and 7.0. Social Security Replacement Plans may fall above that range. A high ratio can indicate volatility of contribution rates or amortization period.
- (6) **Total AAL / Total Payroll** – This is similar to above. It illustrates the expected ratio of assets to payroll when the plan has a funded ratio of 100%.
- (7) **Standard Deviation of Investment Return / Total Payroll** – The portfolio standard deviation measures the volatility of investment return. When divided by payroll it gives the effect of a one standard deviation asset gain or loss as a percent of payroll. This theoretically may happen once every 6 years.

SECTION II

FINANCIAL INFORMATION

Financial Data for Calendar Year 2022

Consolidated Asset Reconciliation

All Plans, All Divisions

	<u>Traditional Pension Plan</u>	<u>DB Portion of Combined Pension Plan</u>	<u>DB Portion of Member-Directed Plan</u>	<u>2022 Total Defined Pension Benefit</u>	<u>Total Health Care</u>	<u>DC Portion of Combined Pension Plan</u>	<u>DC Portion of Member Directed</u>	<u>2022 Total Defined Contribution</u>	<u>Total 2022</u>
Beginning Market Value @ 12/31/2021									
Assets Held in Trust for Benefits	\$ 109,085,546,607	\$ 957,853,357	\$ 43,428,456	\$ 110,086,828,420	\$ 14,225,339,304	\$ 861,752,556	\$ 1,658,769,271	\$ 2,520,521,827	\$ 126,832,689,551
Rounding (Prior Year File)	-	(4)	3	(1)	-	3	(3)	-	(1)
Assets Held for Upcoming Year Budget	124,113,261	-	-	124,113,261	-	-	-	-	124,113,261
Total Beginning Market Value @ 1/1/2022	109,209,659,868	957,853,353	43,428,459	110,210,941,680	14,225,339,304	861,752,559	1,658,769,268	2,520,521,827	126,956,802,811
External Cash Flows:									
Revenues:									
Member Contributions / Deposits	1,553,362,013	-	-	1,553,362,013	-	46,703,853	69,486,616	116,190,469	1,669,552,482
Employer Contributions	2,174,135,884	60,027,104	-	2,234,162,988	29,899,481	-	70,930,396	70,930,396	2,334,992,865
Employer Contributions - Administrative Expenses	-	480,420	1,119,268	1,599,688	-	-	-	-	1,599,688
Contract and Other Receipts	75,474,137	244,136	-	75,718,273	371,000	8,221	1,514,799	1,523,020	77,612,293
Federal Subsidies	-	-	-	-	1,284,731	-	-	-	1,284,731
Refund from HC Vendors (Guarantees)	-	-	-	-	269,017	-	-	-	269,017
Other Income / Cancelled Warrants	583,828	-	-	583,828	(269,017)	-	-	-	314,811
Total Revenues	3,803,555,862	60,751,660	1,119,268	3,865,426,790	31,555,212	46,712,074	141,931,811	188,643,885	4,085,625,887
Disbursements:									
Refunds of Member Accounts	(520,523,234)	(6,263,001)	(3,003,646)	(529,789,881)	-	(17,983,716)	(65,945,748)	(83,929,464)	(613,719,345)
Retirement Benefits	(7,020,851,312)	(6,240,288)	(2,518,636)	(7,029,610,236)	-	(6,070,744)	(2,301,618)	(8,372,362)	(7,037,982,598)
Health Care Expenses	-	-	-	-	(59,349,537)	-	-	-	(59,349,537)
Retiree-Paid Health Care & Formulary Rebates	-	-	-	-	64,523,293	-	-	-	64,523,293
ER Paid PCORI	-	-	-	-	(561,718)	-	-	-	(561,718)
ER Paid Medicare	-	-	-	-	(33,482,298)	-	-	-	(33,482,298)
Wellness RMA Claims	-	-	-	-	(118,597)	-	-	-	(118,597)
MD-RMA Claims	-	-	-	-	(5,970,555)	-	-	-	(5,970,555)
HRA Claims	-	-	-	-	(556,131,287)	-	-	-	(556,131,287)
Non-Investment Related Admin Expenses	(54,378,488)	-	-	(54,378,488)	(12,172,915)	(2,835,387)	(2,349,103)	(5,184,490)	(71,735,893)
Investment Administrative Expense	(40,067,138)	-	-	(40,067,138)	(5,690,077)	(592,298)	(589,855)	(1,182,153)	(46,939,368)
Total Disbursements	(7,635,820,172)	(12,503,289)	(5,522,282)	(7,653,845,743)	(608,953,691)	(27,482,145)	(71,186,324)	(98,668,469)	(8,361,467,903)
Net External Cash Flow	(3,832,264,310)	48,248,371	(4,403,014)	(3,788,418,953)	(577,398,479)	19,229,929	70,745,487	89,975,416	(4,275,842,016)
Inter-Plan Activity									
Member Balance Transfers & Plan Switches	2,573,235	(1,729,958)	-	843,277	-	(124,165)	(719,112)	(843,277)	-
Mitigation Rate	40,676,824	(16,354,034)	(3,019,256)	21,303,534	-	-	(21,303,534)	(21,303,534)	-
Intraplan Transfer (DC to DB)	-	3,001,369	6,552,781	9,554,150	-	(3,001,369)	(6,552,781)	(9,554,150)	-
Total Inter-Plan Activity	43,250,059	(15,082,623)	3,533,525	31,700,961	-	(3,125,534)	(28,575,427)	(31,700,961)	-
Investment (Income) Loss:									
Gross Investment (Income) Loss	(12,919,955,055)	(118,342,156)	(5,392,003)	(13,043,689,214)	(2,171,808,819)	(143,793,823)	(273,828,626)	(417,622,449)	(15,633,120,482)
Unrealized (Income) Loss on Security Lending	778,796	7,079	323	786,198	175,778	-	-	-	961,976
External Asset Management Fees	(257,755,068)	(2,342,855)	(106,747)	(260,204,670)	(10,968,546)	(173,197)	(335,397)	(508,594)	(271,681,810)
Net Investment Income	(13,176,931,327)	(120,677,932)	(5,498,427)	(13,303,107,686)	(2,182,601,587)	(143,967,020)	(274,164,023)	(418,131,043)	(15,903,840,316)
Ending Market Value @ 12/31/22	92,243,714,290	870,341,169	37,060,543	93,151,116,002	11,465,339,238	733,889,934	1,426,775,305	2,160,665,239	106,777,120,479



Development of Funding Value of Pension Defined Benefit Assets Traditional, Combined, and Member Directed Plans

Year Ended December 31	2021	2022	2023	2024	2025
A. Funding Value Beginning of Year	\$ 93,969,087,876	\$ 99,710,188,773			
B. Market Value End of Year	110,210,941,680	93,151,116,002			
C. Market Value Beginning of Year	98,852,785,690	110,210,941,680			
D. Non-Investment Net Cash Flow					
D1. Member Contributions	1,454,613,138	1,553,362,013			
D2. Employer and other Non-Member Contributions	2,206,459,973	2,333,368,311			
D3. Refund of Member Accounts	(502,254,129)	(529,789,881)			
D4. Retirement Benefits	(6,764,501,884)	(7,029,610,236)			
D5. Member Balance Transfers / Intraplan Transfers / Other	17,164,127	10,397,427			
D6. Admin Expenses	(52,425,051)	(54,378,488)			
D7. Total Net Cash Flow: D1+D2+D3+D4+D5+D6	(3,640,943,826)	(3,716,650,854)			
E. Investment Return					
E1. Market Total: B-C-D7	14,999,099,816	(13,343,174,824)			
E2. Assumed Rate of Return	6.90%	6.90%			
E3. Assumed Amount of Return	6,358,254,501	6,751,778,571			
E4. Amount Subject to Phase-In: E1-E3	8,640,845,315	(20,094,953,395)			
F. Phased-In Recognition of Investment Return					
F1. Current Year: 0.25 x E4	2,160,211,329	(5,023,738,349)			
F2. First Prior Year	1,050,233,380	2,160,211,329	\$ (5,023,738,349)		
F3. Second Prior Year	1,919,652,162	1,050,233,380	2,160,211,329	\$ (5,023,738,349)	
F4. Third Prior Year	(2,106,306,649)	1,919,652,162	1,050,233,379	2,160,211,328	\$ (5,023,738,348)
F5. Total Phase-Ins	3,023,790,222	106,358,522	(1,813,293,641)	(2,863,527,021)	(5,023,738,348)
G. Funding Value End of Year					
G1. Preliminary Funding Value End of Year: A+D7+E3+F5	\$ 99,710,188,773	\$ 102,851,675,012			
G2. Upper Corridor Limit: 112% x B	123,436,254,681	104,329,249,922			
G3. Lower Corridor Limit: 88% x B	96,985,628,679	81,972,982,082			
G4. Funding Value End of Year	\$ 99,710,188,773	\$ 102,851,675,012			
H. Difference Between Market and Funding Value	10,500,752,907	(9,700,559,010)	(7,887,265,369)	(5,023,738,348)	-
I. Recognized Rate of Return	10.18 %	7.01 %			
J. Market Rate of Return	15.46 %	(12.31)%			
K. Ratio of Funding Value to Market Value	90 %	110 %			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value.

Development of Funding Value of Pension Defined Benefit Assets Traditional Plan

Year Ended December 31	2021	2022	2023	2024	2025
A. Funding Value Beginning of Year	\$ 93,180,162,731	\$ 98,795,851,764			
B. Market Value End of Year	109,209,659,868	92,243,714,290			
C. Market Value Beginning of Year	98,024,718,613	109,209,659,868			
D. Non-Investment Net Cash Flow					
D1. Member Contributions	1,454,613,138	1,553,362,013			
D2. Employer and other Non-Member Contributions	2,163,519,684	2,290,870,673			
D3. Refund of Member Accounts	(494,540,626)	(520,523,234)			
D4. Retirement Benefits	(6,757,308,526)	(7,020,851,312)			
D5. Member Balance Transfers / Intraplan Transfers / Other	3,159,097	2,573,235			
D6. Admin Expenses	(52,425,051)	(54,378,488)			
D7. Total Net Cash Flow: D1+D2+D3+D4+D5+D6	(3,682,982,284)	(3,748,947,113)			
E. Investment Return					
E1. Market Total: B-C-D7	14,867,923,539	(\$13,216,998,465)			
E2. Assumed Rate of Return	6.90%	6.90%			
E3. Assumed Amount of Return	6,302,368,339	6,687,575,096			
E4. Amount Subject to Phase-In: E1-E3	8,565,555,200	(\$19,904,573,561)			
F. Phased-In Recognition of Investment Return					
F1. Current Year: 0.25 x E4	2,141,388,800	(\$4,976,143,390)			
F2. First Prior Year	1,041,898,409	2,141,388,800	\$ (4,976,143,390)		
F3. Second Prior Year	1,905,844,885	1,041,898,409	2,141,388,800	\$ (4,976,143,390)	
F4. Third Prior Year	(2,092,829,116)	1,905,844,886	1,041,898,409	2,141,388,800	\$ (4,976,143,391)
F5. Total Phase-Ins	2,996,302,978	112,988,705	(1,792,856,181)	(2,834,754,590)	(4,976,143,391)
G. Funding Value End of Year					
G1. Preliminary Funding Value End of Year: A+D7+E3+F5	\$ 98,795,851,764	\$ 101,847,468,452			
G2. Upper Corridor Limit: 112% x B	122,314,819,052	103,312,960,005			
G3. Lower Corridor Limit: 88% x B	96,104,500,684	81,174,468,575			
G4. Funding Value End of Year	\$ 98,795,851,764	\$ 101,847,468,452			
H. Difference Between Market and Funding Value	10,413,808,104	(9,603,754,162)	(7,810,897,981)	(4,976,143,391)	-
I. Recognized Rate of Return	10.18 %	7.02 %			
J. Market Rate of Return	15.46 %	(12.31)%			
K. Ratio of Funding Value to Market Value	90 %	110 %			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value.



Development of Funding Value of Pension Defined Benefit Assets Combined Plan

Year Ended December 31	2021	2022	2023	2024	2025
A. Funding Value Beginning of Year	\$ 751,774,426	\$ 874,906,328			
B. Market Value End of Year	957,853,353	870,341,169			
C. Market Value Beginning of Year	789,171,793	957,853,353			
D. Non-Investment Net Cash Flow					
D1. Member Contributions	-	-			
D2. Employer and other Non-Member Contributions	48,918,326	44,397,626			
D3. Refund of Member Accounts	(4,935,390)	(6,263,001)			
D4. Retirement Benefits	(4,962,243)	(6,240,288)			
D5. Member Balance Transfers / Intraplan Transfers / Other	4,589,154	1,271,411			
D6. Admin Expenses	-	-			
D7. Total Net Cash Flow: D1+D2+D3+D4+D5+D6	43,609,847	33,165,748			
E. Investment Return					
E1. Market Total: B-C-D7	125,071,713	(120,677,932)			
E2. Assumed Rate of Return	6.90%	6.90%			
E3. Assumed Amount of Return	53,376,975	61,512,755			
E4. Amount Subject to Phase-In: E1-E3	71,694,738	(182,190,687)			
F. Phased-In Recognition of Investment Return					
F1. Current Year: 0.25 x E4	17,923,685	(45,547,672)			
F2. First Prior Year	7,950,320	17,923,685	\$ (45,547,672)		
F3. Second Prior Year	13,275,333	7,950,320	17,923,685	\$ (45,547,672)	
F4. Third Prior Year	(13,004,258)	13,275,333	7,950,319	17,923,683	\$ (45,547,671)
F5. Total Phase-Ins	26,145,080	(6,398,334)	(19,673,668)	(27,623,989)	(45,547,671)
G. Funding Value End of Year					
G1. Preliminary Funding Value End of Year: A+D7+E3+F5	\$ 874,906,328	\$ 963,186,497			
G2. Upper Corridor Limit: 112% x B	1,072,795,755	974,782,109			
G3. Lower Corridor Limit: 88% x B	842,910,951	765,900,229			
G4. Funding Value End of Year	\$ 874,906,328	\$ 963,186,497			
H. Difference Between Market and Funding Value	82,947,025	(92,845,328)	(73,171,660)	(45,547,671)	-
I. Recognized Rate of Return	10.28 %	6.18 %			
J. Market Rate of Return	15.42 %	(12.38)%			
K. Ratio of Funding Value to Market Value	91 %	111 %			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value.

Development of Funding Value of Pension Defined Benefit Assets DB Portion of Member Directed Plan

Year Ended December 31	2021	2022	2023	2024	2025
A. Funding Value Beginning of Year	\$ 37,150,719	\$ 39,430,681			
B. Market Value End of Year	43,428,459	37,060,543			
C. Market Value Beginning of Year	38,895,284	43,428,459			
D. Non-Investment Net Cash Flow					
D1. Member Contributions	-	-			
D2. Employer and other Non-Member Contributions	(5,978,037)	(1,899,988)			
D3. Refund of Member Accounts	(2,778,113)	(3,003,646)			
D4. Retirement Benefits	(2,231,115)	(2,518,636)			
D5. Member Balance Transfers / Intraplan Transfers / Other	9,415,876	6,552,781			
D6. Admin Expenses	-	-			
D7. Total Net Cash Flow: D1+D2+D3+D4+D5+D6	(1,571,389)	(869,489)			
E. Investment Return					
E1. Market Total: B-C-D7	6,104,564	(5,498,427)			
E2. Assumed Rate of Return	6.90%	6.90%			
E3. Assumed Amount of Return	2,509,187	2,690,720			
E4. Amount Subject to Phase-In: E1-E3	3,595,377	(8,189,147)			
F. Phased-In Recognition of Investment Return					
F1. Current Year: 0.25 x E4	898,844	(2,047,287)			
F2. First Prior Year	384,651	898,844	\$ (2,047,287)		
F3. Second Prior Year	531,944	384,651	898,844	\$ (2,047,287)	
F4. Third Prior Year	(473,275)	531,943	384,651	898,845	\$ (2,047,286)
F5. Total Phase-Ins	1,342,164	(231,849)	(763,792)	(1,148,442)	(2,047,286)
G. Funding Value End of Year					
G1. Preliminary Funding Value End of Year: A+D7+E3+F5	\$ 39,430,681	\$ 41,020,063			
G2. Upper Corridor Limit: 112% x B	48,639,874	41,507,808			
G3. Lower Corridor Limit: 88% x B	38,217,044	32,613,278			
G4. Funding Value End of Year	\$ 39,430,681	\$ 41,020,063			
H. Difference Between Market and Funding Value	3,997,778	(3,959,520)	(3,195,728)	(2,047,286)	-
I. Recognized Rate of Return	10.59 %	6.31 %			
J. Market Rate of Return	16.02 %	(12.79)%			
K. Ratio of Funding Value to Market Value	91 %	111 %			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value.

Allocation of Funding Value of Assets Among Divisions

December 31, 2022

Traditional, Combined and Member Directed Plans

	Total DB System				
	State	Local	Public Safety	Law Enforcement	Total
(1) Employer Accumulation Fund					
(a) Allocated Amounts	\$ 530,417,329	\$ 3,646,685,180	\$ (26,520,790)	\$ 713,024,332	\$ 4,863,606,051
(b) Unallocated Amounts Allocated by (1)(a)	5,057,142	83,557,020	(696,397)	18,722,968	106,640,733
(c) OPERS Directed Asset Reallocation	0	0	0	0	0
(d) Total EAF (1)(a) + (1)(b) + (1)(c)	<u>\$ 535,474,471</u>	<u>\$ 3,730,242,200</u>	<u>\$ (27,217,187)</u>	<u>\$ 731,747,300</u>	<u>\$ 4,970,246,784</u>
(2) Employee Savings Fund (ESF)					
(a) Total Member Deposits	\$ 6,510,849,301	\$ 9,625,889,646	\$ 3,641,049	\$ 857,324,931	\$ 16,997,704,927
(b) ESF Allocated by (2)(a)	\$ 6,190,500,137	\$ 9,155,481,456	\$ 3,461,158	\$ 814,967,705	\$ 16,164,410,456
(3) Retired Assets					
(a) Allocated Amounts	\$ 28,479,449,260	\$ 40,222,773,384	\$ 50,475,237	\$ 3,076,638,823	\$ 71,829,336,704
(b) Additional Annuities and No Division	373,438	57,524,620	0	0	57,898,058
(c) Total Retiree Assets	<u>\$ 28,479,822,698</u>	<u>\$ 40,280,298,004</u>	<u>\$ 50,475,237</u>	<u>\$ 3,076,638,823</u>	<u>\$ 71,887,234,762</u>
(4) Subtotal: (1)(d) + (2)(b) + (3)(c)	<u>\$ 35,205,797,306</u>	<u>\$ 53,166,021,660</u>	<u>\$ 26,719,208</u>	<u>\$ 4,623,353,828</u>	<u>\$ 93,021,892,002</u>
(5) Assets Held for Upcoming Year Budget Allocated According to (4)	48,864,449	73,836,136	37,483	6,485,932	129,224,000
(6) Total Employer + Employee Defined Benefit Assets: (4)+(5)	<u>\$ 35,254,661,755</u>	<u>\$ 53,239,857,796</u>	<u>\$ 26,756,691</u>	<u>\$ 4,629,839,760</u>	<u>\$ 93,151,116,002</u>
(7) Market Value Adjustment Allocated According to (6)	3,671,423,440	5,544,324,134	2,785,715	482,025,721	9,700,559,010
(8) Funding Value of Defined Benefit Assets (6)+(7)	<u>\$ 38,926,085,195</u>	<u>\$ 58,784,181,930</u>	<u>\$ 29,542,406</u>	<u>\$ 5,111,865,481</u>	<u>\$ 102,851,675,012</u>

Amounts in rows 1b, 2b, and 5 were provided by OPERS in total and allocated to each division by the actuary.

Allocation of Funding Value of Assets Among Divisions

December 31, 2022

Traditional Plan

	Traditional Plan				
	State	Local	Public Safety	Law Enforcement	Total
(1) Employer Accumulation Fund (EAF)					
(a) Allocated Amounts	\$ 192,796,300	\$ 3,180,160,304	\$ (26,520,790)	\$ 713,024,332	\$ 4,059,460,146
(b) Unallocated Amounts Allocated by (1)(a)	5,062,547	83,506,321	(696,397)	18,722,968	106,595,439
(c) OPERS Directed Asset Reallocation	0	0	0	0	0
(d) Total EAF (1)(a) + (1)(b) + (1)(c)	<u>\$ 197,858,847</u>	<u>\$ 3,263,666,625</u>	<u>\$ (27,217,187)</u>	<u>\$ 731,747,300</u>	<u>\$ 4,166,055,585</u>
(2) Employee Savings Fund (ESF)					
(a) Total Member Deposits	\$ 6,509,889,438	\$ 9,627,848,038	\$ 3,641,049	\$ 857,324,931	\$ 16,998,703,456
(b) ESF Allocated by (2)(a)	\$ 6,188,260,088	\$ 9,152,171,986	\$ 3,461,158	\$ 814,967,705	\$ 16,158,860,937
(3) Retired Assets					
(a) Allocated Amounts	\$ 28,445,456,992	\$ 40,159,104,658	\$ 50,475,237	\$ 3,076,638,823	\$ 71,731,675,710
(b) Additional Annuities	373,438	57,524,620	0	0	57,898,058
(c) Total Retiree Assets	<u>\$ 28,445,830,430</u>	<u>\$ 40,216,629,278</u>	<u>\$ 50,475,237</u>	<u>\$ 3,076,638,823</u>	<u>\$ 71,789,573,768</u>
(4) Subtotal: (1)(d) + (2)(b) + (3)(c)	<u>\$ 34,831,949,365</u>	<u>\$ 52,632,467,889</u>	<u>\$ 26,719,208</u>	<u>\$ 4,623,353,828</u>	<u>\$ 92,114,490,290</u>
(5) Assets Held for Upcoming Year Budget Allocated According to (4)	48,864,449	73,836,136	37,483	6,485,932	129,224,000
(6) Total Employer + Employee Defined Benefit Assets: (4)+(5)	<u>\$ 34,880,813,814</u>	<u>\$ 52,706,304,025</u>	<u>\$ 26,756,691</u>	<u>\$ 4,629,839,760</u>	<u>\$ 92,243,714,290</u>
(7) Market Value Adjustment Allocated According to (6)	3,631,540,246	5,487,402,480	2,785,715	482,025,721	9,603,754,162
(8) Funding Value of Defined Benefit Assets (6)+(7)	<u>\$ 38,512,354,060</u>	<u>\$ 58,193,706,505</u>	<u>\$ 29,542,406</u>	<u>\$ 5,111,865,481</u>	<u>\$ 101,847,468,452</u>

Amounts in rows 1b, 2b, and 5 were provided by OPERS in total and allocated to each division by the actuary.

Allocation of Funding Value of Assets Among Divisions

December 31, 2022

Combined Plan

	Combined Plan				
	State	Local	Public Safety	Law Enforcement	Total
(1) Employer Accumulation Fund					
(a) Allocated Amounts	\$ 333,956,005	\$ 464,786,339	\$0	\$0	\$ 798,742,344
(b) Unallocated Amounts Allocated by (1)(a)	58,059	80,804	0	0	138,863
(c) OPERS Directed Asset Reallocation	0	0	0	0	0
(d) Total EAF (1)(a) + (1)(b) + (1)(c)	<u>\$ 334,014,064</u>	<u>\$ 464,867,143</u>	<u>\$0</u>	<u>\$0</u>	<u>\$ 798,881,207</u>
(2) Employee Savings Fund					
(a) Total Member Deposits	\$ 1,227,010	\$ 1,674,189	\$0	\$0	\$ 2,901,199
(b) ESF Allocated by (2)(a)	\$ 2,219,364	\$ 3,028,200	\$0	\$0	\$ 5,247,564
(3) Retired Assets					
(a) Allocated Amounts	\$ 23,804,503	\$ 42,407,895	\$0	\$0	\$ 66,212,398
(b) No Division	0	0	0	0	0
(c) Total Retiree Assets	<u>\$ 23,804,503</u>	<u>\$ 42,407,895</u>	<u>\$0</u>	<u>\$0</u>	<u>\$ 66,212,398</u>
(4) Subtotal: (1)(d) + (2)(b) + (3)(c)	\$ 360,037,931	\$ 510,303,238	\$0	\$0	\$ 870,341,169
(5) Assets Held for Upcoming Year Budget Allocated According to (4)	0	0	0	0	0
(6) Total Employer + Employee Defined Benefit Assets: (4)+(5)	<u>\$ 360,037,931</u>	<u>\$ 510,303,238</u>	<u>\$0</u>	<u>\$0</u>	<u>\$ 870,341,169</u>
(7) Market Value Adjustment Allocated According to (6)	38,407,743	54,437,585	0	0	92,845,328
(8) Funding Value of Defined Benefit Assets (6)+(7)	<u>\$ 398,445,674</u>	<u>\$ 564,740,823</u>	<u>\$0</u>	<u>\$0</u>	<u>\$ 963,186,497</u>

Amounts in rows 1b, 2b, and 5 were provided by OPERS in total and allocated to each division by the actuary.

Allocation of Funding Value of Assets Among Divisions

December 31, 2022

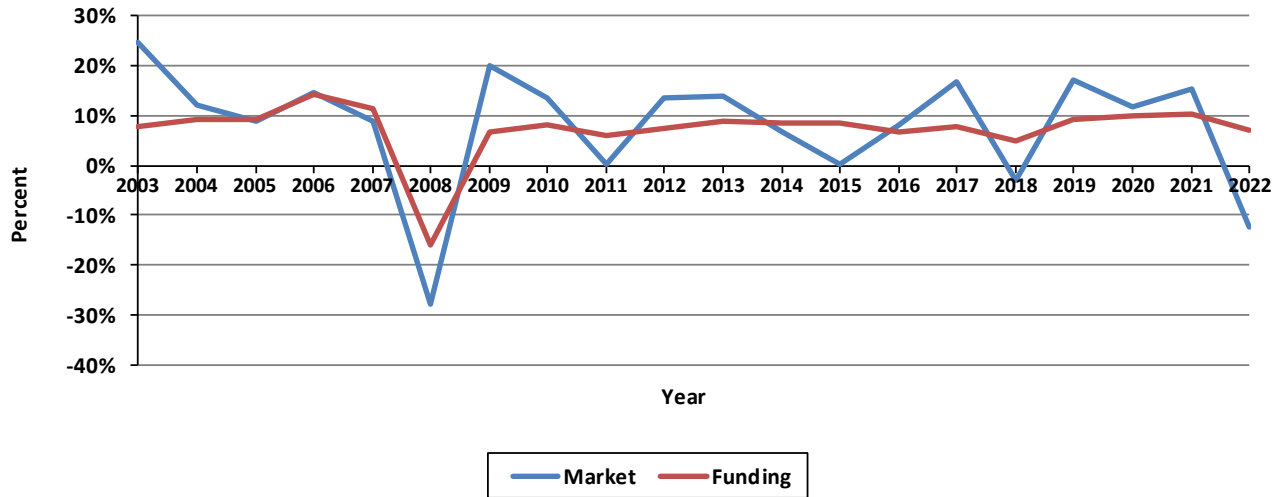
DB Portion of Member Directed Plan

	Member-Directed Plan				Total
	State	Local	Public Safety	Law Enforcement	
(1) Employer Accumulation Fund					
(a) Allocated Amounts	\$ 3,665,024	\$ 1,738,537	\$0	\$0	\$ 5,403,561
(b) Unallocated Amounts Allocated by 1(a)	(63,464)	(30,105)	0	0	(93,569)
(c) OPERS Directed Asset Reallocation	0	0	0	0	0
(d) Total EAF (1)(a) + (1)(b) + (1)(c)	<u>\$ 3,601,560</u>	<u>\$ 1,708,432</u>	<u>\$0</u>	<u>\$0</u>	<u>\$ 5,309,992</u>
(2) Employee Savings Fund					
(a) Total Member Deposits	\$ (267,147)	\$ (3,632,581)	\$0	\$0	\$ (3,899,728)
(b) ESF Allocated by (2)(a)	\$ 20,685	\$ 281,270	\$0	\$0	\$ 301,955
(3) Retired Assets					
(a) Allocated Amounts	\$ 10,187,765	\$ 21,260,831	\$0	\$0	\$ 31,448,596
(b) No Division	0	0	0	0	0
(c) Total Retiree Assets	<u>\$ 10,187,765</u>	<u>\$ 21,260,831</u>	<u>\$0</u>	<u>\$0</u>	<u>\$ 31,448,596</u>
(4) Subtotal: (1)(d) + (2)(b) + (3)(c)	<u>\$ 13,810,010</u>	<u>\$ 23,250,533</u>	<u>\$0</u>	<u>\$0</u>	<u>\$ 37,060,543</u>
(5) Assets Held for Upcoming Year Budget Allocated According to (4)	0	0	0	0	0
(6) Total Employer + Employee Defined Benefit Assets: (4)+(5)	<u>\$ 13,810,010</u>	<u>\$ 23,250,533</u>	<u>\$0</u>	<u>\$0</u>	<u>\$ 37,060,543</u>
(7) Market Value Adjustment Allocated According to (6)	1,475,451	2,484,069	0	0	3,959,520
(8) Funding Value of Defined Benefit Assets (6)+(7)	<u>\$ 15,285,461</u>	<u>\$ 25,734,602</u>	<u>\$0</u>	<u>\$0</u>	<u>\$ 41,020,063</u>

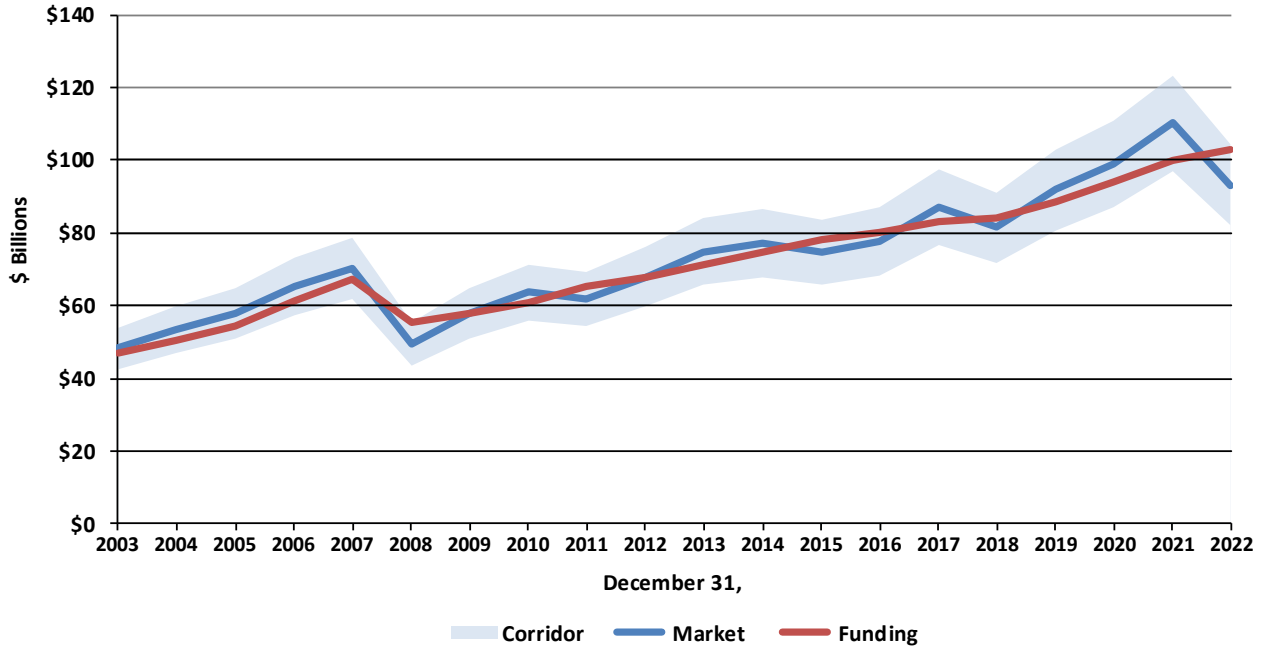
Amounts in rows 1b, 2b, and 5 were provided by OPERS in total and allocated to each division by the actuary.

Defined Benefit Pension Assets

Comparison of Rates of Return



Comparison of Asset Values



SECTION III

BENEFITS AND CONDITIONS EVALUATED

Benefits and Conditions Evaluated

Retirement Plans

Traditional Pension Plan. The Traditional Pension Plan is a defined benefit plan under which a member's retirement benefit is based on a formula. The formula is determined by years of contributing service and the average of the three (or five if a member of Transition Group C) highest years of earnable salary (or final average salary). OPERS investment professionals manage the investment of employee and employer contributions to ensure that funds are available to pay the formula benefit.

Combined Plan. The Combined Plan is a retirement plan with both a defined benefit and a defined contribution component. Under the defined benefit portion of the Combined Plan, the member's benefit is determined by a reduced formula. OPERS investment professionals manage the investment of employer contributions to ensure that funds are available to pay the reduced formula benefit. Under the defined contribution portion of the Combined Plan, employee contributions are deposited into the member's individual defined contribution account and invested as directed by the member. The member's retirement benefit under this portion of the Combined Plan is based on employee contributions and the gains and losses on those contributions. The member directs the investment by selecting from among the nine professionally-managed OPERS Investment Options.

Member-Directed Plan. The Member-Directed Plan is a defined contribution plan under which employee and employer contributions are deposited into a member's individual defined contribution account and invested as directed by the member. The member's retirement benefit is based on employee and employer contributions and the gains and losses on those contributions. Under the Member-Directed Plan, the member directs the investment by selecting from several professionally-managed OPERS Investment Options.

Benefits and Conditions Evaluated

Senate Bill 343

Senate Bill 343. Senate Bill (SB) 343 became effective January 7, 2013. The benefit changes enacted by SB 343 do not apply to members who retired with an effective date of January 1, 2013 or earlier.

Transition Groups. A transition plan was developed as part of the SB 343 benefit changes. The transition group to which a member belongs is dependent upon the date at which that member is first eligible to retire with a reduced or unreduced benefit.

A member is in Group A if the member is eligible to retire under the retirement eligibility conditions in place prior to the passage of SB 343 on or before January 7, 2018.

A member is in Group B if the member is not in Group A and satisfies either of the following conditions:

- (1) The member has 20 years of service credit as of January 7, 2013, or
- (2) The member is eligible to retire under the retirement eligibility conditions in place prior to the passage of SB 343 on or before January 7, 2023.

A member is in Group C if the member satisfies either of the following conditions:

- (1) The member was hired prior to January 7, 2013 but was not in Group A or Group B, or
- (2) The member was hired on or after January 7, 2013.

Key Benefit Changes. There are five key components that were affected by SB 343:

- (1) Age and service retirement eligibility conditions,
- (2) Benefit formula,
- (3) Cost-of-living Allowance (COLA),
- (4) Final Average Salary (FAS) period, and
- (5) Early retirement reduction factors

Benefits and Conditions Evaluated

Key Terms

Final Average Salary (“FAS”) means the average of the annual earnings for the 3 highest calendar years of compensation (or the last 36 months of earnable salary) for Transition Group A and B members. The highest 5 calendar years (or the last 60 months of earnable salary) is used for Transition Group C members.

Participant Contribution Account is the account for each Participant in the Combined or Member-Directed Plan to which shall be credited the employee contributions.

Miscellaneous Contribution Account is the account to which shall be credited any voluntary after-tax contributions for members in the Combined and Member-Directed Plans.

Rollover Account is the account to which shall be credited any rollover amounts for members in the Combined or Member-Directed Plans.

Employers’ Accumulation Fund is the fund to which shall be credited employer contributions for members in the Traditional or Combined Plan. There are separate accounts in the Employers’ Accumulation Fund for the Combined Plan and the Traditional Pension Plan.

Employer Contribution Account is the fund to which shall be credited a portion of the employer contributions for members in the Member-Directed Plan.

Traditional Pension Plan Contributions

Employer Contributions. Employer contributions are expressed as a percent of member-covered payroll. The maximum statutory rate for state and local government employers is 14.0%. The maximum statutory rate for law enforcement employers is 18.1% (H.B. 416, effective 1/1/2001). Retiree Health funding portion of the contribution rates are determined by Board adoption.

Member Contributions. Traditional Plan members contribute rates as a percent of earnable salary presented below.

Scheduled Contributions. The following table shows total scheduled employer contribution rates (including the allocation of the employer contribution rate between the pension and retiree health programs) and scheduled member contribution rates. Employer contribution rates for the State division have been adopted through July 1, 2025. Employer contribution rates for the Local Government, Law Enforcement and Public Safety divisions have been adopted through December 31, 2024.

For valuation purposes, it is assumed that the contribution rates as a percent of earnable salary presented below are applicable in calendar years 2023 and thereafter.

	State	Local Government	Law Enforcement	Public Safety
Employer Contributions				
-Pension	14.00%	14.00%	18.10%	18.10%
-Retiree Health	0.00%	0.00%	0.00%	0.00%
-Total	14.00%	14.00%	18.10%	18.10%
Member Contributions				
Total Contributions	24.00%	24.00%	31.10%	30.10%

Traditional Pension Plan Age & Service Benefits

Unreduced Age and service eligibility. The table below shows retirement eligibility conditions by division and transition group for unreduced age and service retirement.

Division	Group A		Group B		Group C	
	Age	Service	Age	Service	Age	Service
State and Local Government	Any	30	52	31	55	32
			Any	32		
	65	5	66	5	67	5
Law Enforcement	48	25	50	25	52	25
	62	15	64	15	64	15
Public Safety	52	25	54	25	56	25
	62	15	64	15	64	15
Law and Public Safety	52	25	54	25	56	25

Reduced Age and service eligibility. The table below shows retirement eligibility conditions by division and transition group for reduced age and service retirement.

Division	Group A		Group B		Group C	
	Age	Service	Age	Service	Age	Service
State and Local Government	55	25	55	25	57	25
	60	5	60	5	62	5
Law Enforcement	52	15	52	15	56	15
			48	25	48	25
Public Safety	52	15	52	15	56	15
	48	25	48	25	52	25
Law and Public Safety	48	25	48	25	52	25

Unreduced Age and service allowance – State and Local Government. A retiring member's age and service allowance is equal to Ohio service credit times 2.2% of FAS for the first 30 years of service (35 years for Transition Group C) plus 2.5% for years of service over 30 years (35 years for Transition Group C). Maximum allowance is 100% of FAS or the limits under IRC Section 415(b).

Traditional Pension Plan Age & Service Benefits (Continued)

Reduced Age and service allowance – State and Local Government. If a member retires before reaching age and service eligibility for an unreduced benefit, an early retirement reduction will be applied to the computed unreduced benefit. Below is a summary of the early retirement reduction factors:

Transition Group A			
Attained Age	OR*	Years of Service Credit	Percentage of Base Amount
58		25	75%
59		26	80
60		27	85
61		N/A	88
N/A		28	90
62		N/A	91
63		N/A	94
N/A		29	95
64		N/A	97
65		30 or more	100

* Whichever yields the higher percentage.

Transition Group B											
Service	Age										
	55	56	57	58	59	60	61	62	63	64	65
30	75%	76%	78%	79%	80%	82%	83%	85%	86%	88%	89%
29	69	70	72	73	74	75	76	78	79	80	89
28	64	65	66	67	68	69	70	71	72	80	89
27	59	60	61	62	62	63	64	65	72	80	89
26	55	55	56	57	57	58	59	65	72	80	89
25	50	51	51	52	52	53	59	65	72	80	89
24 & Under						53	59	65	72	80	89

Transition Group C										
Service	Ages									
	57	58	59	60	61	62	63	64	65	66
31	80%	80%	81%	82%	83%	85%	86%	87%	88%	89%
30	73	74	75	75	76	77	78	79	80	89
29	67	68	68	69	70	70	71	72	80	89
28	61	62	62	63	63	64	64	72	80	89
27	56	57	57	57	58	58	64	72	80	89
26	51	52	52	52	52	58	64	72	80	89
25	47	47	47	47	52	58	64	72	80	89
24 & Under						58	64	72	80	89

Traditional Pension Plan Age & Service Benefits (Continued)

Unreduced Age and service allowance – Law Members (Law Enforcement and Public Safety). A retiring member’s age and service allowance (if attained 25 years of service) is equal to 2.5% of FAS times the first 25 years of service plus 2.1% of FAS times service credit in excess of 25 years. A retiring member’s age and service allowance (if attained 15 years of service, but less than 25 years of service) is equal to 1.5% of FAS times years of service credit. Maximum allowance is 90% of FAS or the limits under IRC Section 415(b).

Reduced Age and service allowance – Law Members (Law Enforcement and Public Safety). If a member retires before reaching age and service eligibility for an unreduced benefit, an early retirement reduction will be applied to the computed unreduced benefit. Below is a summary of the early retirement reduction factors:

Transition Group A	
Public Safety	
Attained Age	Percentage of Base Amount
48	75%
49	80
50	86
51	93
52	100

Transition Group B			
Public Safety		Law Enforcement	
Attained Age	Percentage of Base Amount	Attained Age	Percentage of Base Amount
48	58%	48	84%
49	64	49	92
50	70	50	100
51	76		
52	83		
53	91		
54	100		

Transition Group C			
Public Safety		Law Enforcement	
Attained Age	Percentage of Base Amount	Attained Age	Percentage of Base Amount
52	69%	48	70%
53	76	49	76
54	83	50	84
55	91	51	91
56	100	52	100

Traditional Pension Plan Disability Retirement

The disability program was revised in 1992, in order to comply with the Older Workers Benefit Protection Act. Employees becoming members after July 29, 1992 are covered by the post July 29, 1992 program. Other members were able to elect coverage under the pre July 29, 1992 program (original plan) or elect to be covered by the post July 29, 1992 program (revised plan).

Features of the original plan are:

- a) Upon becoming permanently disabled after completion of at least 5 years or 60 contributing months of service but before attaining age 60, a member is eligible for a disability allowance. The service requirement is waived for Law Enforcement members with an on-duty illness or injury.
- b) The amount of the allowance is the service the member would have had if employment had continued to age 60 times 2.2% of FAS.
- c) Maximum allowance is 75% of FAS, minimum allowance is 30% of FAS.

Features of the revised plan are:

- a) A member may apply at any age after completion of 5 years or 60 contributing months of service. The service requirement is waived for Law Enforcement members with an on-duty illness or injury.
- b) A disability benefit equal to the greater of 45% of FAS or the actual service credit times 2.2% of FAS with no early retirement reduction (maximum 60% of FAS). The disability benefit period is to age 65 if the member is disabled prior to age 60. The benefit period declines gradually from 60 months for members disabled at ages 60 and 61, to 12 months for members disabled at age 69 or older.
- c) After the disability benefit ends, a service retirement benefit equal to the greater of (i) the accrued benefit based on actual service, or (ii) 2.2% of FAS times service credit including the period of disability (maximum 45% of FAS). In addition, an amount equal to the cost-of-living increases the member would have received had the member retired on the basis of age and service is paid.

Traditional Pension Plan

Survivor Benefits

Death while eligible to retire. If a member dies in service after becoming eligible to retire with an age and service allowance and leaves a surviving spouse or other sole dependent beneficiary, the survivor receives the same amount that would have been paid had the member retired the last day of the month of death and elected the 100% joint and survivor form of payment.

Survivor (death-in-service) allowances. If a deceased member had at least 1-1/2 years of contributing service credit, with at least 1/4 year of such service occurring within the 2-1/2 years prior to death, or was receiving a disability benefit, qualified survivors may receive the following monthly benefits. The benefit paid will be the greater of the applicable benefits paid under the following two schedules:

Schedule 1

Number of Qualified Survivors Affecting the Benefit	Annual Benefit as a % of Deceased Member's FAS	Minimum Monthly Benefit
1	25%	\$250
2	40%	\$400
3	50%	\$500
4	55%	\$500
5 or more	60%	\$500

Schedule 2

Years of Service	Annual Benefit as a % of Deceased Member's FAS
20	29%
21	33%
22	37%
23	41%
24	45%
25	48%
26	51%
27	54%
28	57%
29 or more	60%

Qualifying survivors who are paid benefits under Schedule 2 share equally in the benefits, except that if there is a surviving spouse, the spouse receives the greater of 25% of FAS or \$250.

Traditional Pension Plan Survivor Benefits (Continued)

A **qualified spouse** is the surviving spouse of a deceased member who is age 62 or at any age if the deceased member had 10 or more years of Ohio service credit or if the surviving spouse is caring for a qualified child or is adjudged physically or mentally incompetent.

A **qualified child** is a child who has never been married and under the age of 18 (or 22 if attending an approved school), or regardless of age is adjudged physically or mentally incompetent at the time of the member's death.

A **qualified parent** is a dependent parent aged 65 or older (earlier if mentally or physically incompetent) who received at least one-half support from the member during the 12-month period immediately preceding the member's death.

Qualified **survivors of disability benefit recipients** have the FAS used in calculating their benefits adjusted for each year between the effective date of the disability benefit and the recipient's date of death. The FAS is adjusted by the lesser of (1) 3% or (2) the actual average percentage change in the CPI.

Traditional Pension Plan Benefits at Retirement

Optional Benefit Forms. Retiring members may elect to have benefits paid in straight life form, in a form that guarantees a minimum number of monthly payments, or in a form that provides a continuation of all or a portion of the monthly benefit to a beneficiary after the death of the retiree. If a retiring member elects benefits in other than straight life form, the monthly amount is adjusted. The adjustment is based upon interest, COLA, and mortality assumptions (with a blend of male and female mortality rates to produce unisex election factors consistent with the gender distribution of members electing optional forms of payment).

PLOP. Effective 01/01/2004, retiring members may also elect to receive a Partial Lump Sum Option Payment (PLOP) (S.B.247). The PLOP is an option that allows a retiree to initially receive a partial lump sum benefit payment along with a reduced monthly retirement allowance. The lump sum payment cannot be less than 6 times or more than 36 times the monthly amount that would be payable to the member under the plan of payment selected and shall not result in a monthly allowance that is less than 50% of the monthly benefit. The total amount paid as a lump sum and monthly benefit shall be the actuarial equivalent of the amount that would have been paid had the lump sum not been selected.

QEBA. Qualified Excess Benefit Arrangement was established 01/01/2004 (H.B.190). The QEBA is operated in accordance with Internal Revenue Code Section 415(m). Under this arrangement the recipient may be paid the portion of his/her retirement benefit that was previously limited due to IRC Section 415(b).

Cost-of-Living Adjustment. A retiree who has received benefits for 12 months will receive an annual cost-of-living adjustment (COLA). The COLA is determined by the recipient's retirement effective date. Members with effective retirement dates prior to January 7, 2013 receive a simple 3 percent COLA corresponding to their base allowance. Members with effective retirement dates after January 7, 2013 receive a simple percent COLA corresponding to their base allowance equal to the percentage increase of the Consumer Price Index for the prior year (June to June CPI-W), not to exceed to 3 percent. Members who retired within the first five calendar years after January 7, 2013 received a simple 3 percent COLA until December 31, 2018. Reemployed Retiree annuitized balances do not receive a COLA.

Post-retirement Death Benefit. Upon the death of an age and service or disability retiree, a death benefit in the following amount is payable:

Service Credit at Retirement	Amount of Death Benefit
5 to 9 years	\$ 500
10 to 14 years	1,000
15 to 19 years	1,500
20 to 24 years	2,000
25 or more years	2,500

Deferred Benefits. A member with at least 5 years of service credit who leaves service before being eligible for an immediate allowance and who does not withdraw accumulated contributions will be entitled to a deferred allowance at age 60. For law members, the age at which benefits commence depends on the amount of service credit. The amount of the allowance will be based on credited service and final average salary at time of leaving service.



Traditional Pension Plan Other Benefit Provisions

Refund of Member Accumulated Contributions. In the event a member leaves service prior to retirement, the member may elect to receive a refund of contributions with interest and may be eligible to receive an additional amount as described below. These refund provisions are available to all members. If a member dies prior to retirement and survivor benefits are not payable, the member's contributions with interest are paid to a designated beneficiary or other survivor. Interest is credited annually to member contribution balances. The rate of interest credited is determined by the OPERS Board and will not be greater than 6%. At the present time, 1% interest is credited to member contribution balances.

If the member has at time of termination, or had at the time of death, at least 5 years but less than 10 years of qualified service, an additional 33% of the member's eligible contributions will be paid to the member or survivor. If the member has at time of termination, or had at the time of death, at least 10 years of qualified service credit, an additional 67% of the member's eligible contributions will be paid to the member or survivor. The additional amount is not paid if the member is a re-employed retiree, or in the case of a deceased member, was receiving disability benefits at the time of death.

Health Care Benefits. Health care benefits are available to persons meeting retiree health care eligibility requirements. Members retiring with a normal or early service retirement allowance after January 1, 2015 must have 20 or more years of qualified service credit to be eligible for this benefit.

Additional Annuity Program. The additional annuity program provides Traditional Plan and re-employed retiree members the opportunity of supplementing their retirement income. Members make additional contributions (independent of the required contributions) to an account that earns investment income based upon the return of the OPERS Stable Value Fund. At termination, the member may take the additional annuity account balance either as a lump sum or annuitized in monthly payments.

Re-Employed Retirees. Re-employed age and service retirees contribute to the "Money Purchase Plan". In most instances, re-employed retirees will continue to receive their retirement allowance during re-employment. Upon termination of re-employment, members are eligible to apply for either a refund of contributions prior to age 65 or a Money Purchase Plan benefit as a lump sum or annuity after age 65. The Money Purchase Plan benefit is equal to member contributions and allowable interest plus an additional 67% matching amount. If monthly benefits are elected, joint and survivor options are also available.

Combined Plan

Age and Service Eligibility. State and Local Government Members* who elected the Combined Plan may retire with an age and service retirement allowance under the same eligibility conditions as the Traditional Plan.

**Law Enforcement and Public Safety members must elect the Traditional Pension Plan only.*

Age and Service Retirement Allowance (Defined Benefit portion of the Plan). A retiring member's age and service retirement allowance is equal to Ohio service credit in the Plan times 1.0% of FAS for the first 30 years of service (35 years for Transition Group C) plus 1.25% for years of service over 30 years (35 years for Transition Group C). Maximum allowance is 100% of FAS or the limits under IRC Section 415(b). Early retirement reduction factors for reduced benefits in the Combined Plan are the same as the Traditional Plan.

Age and Service Retirement Benefit (Defined Contribution portion of the Plan). The member's retirement benefit under this portion of the Combined Plan is based on the amounts credited to the Participant Contribution Account, Rollover Account, and Miscellaneous Account and the gains and losses on the amounts in those Accounts.

Disability Retirement. A Combined Plan member may apply after completion of 5 years in the Plan or 60 contributing months of service in the Plan. Combined Plan members may be covered under the original or revised disability plan. Combined Plan members who apply for disability may:

- 1) Take a lump sum distribution of the Participant Contribution Account, Rollover Account, and Miscellaneous Account and any additional amount they are entitled to from the Employers' Accumulation Fund, or
- 2) Transfer all service credit and the Participant's Accounts (as listed above) in the Combined Plan to the Traditional Pension Plan to be paid a disability benefit under the Traditional Pension Plan guidelines.

Survivor Benefits. Combined Plan members are eligible for the same survivor benefits as those listed under the Traditional Pension Plan and must qualify for survivor benefits under the same guidelines as those members in the Traditional Pension Plan.

Optional Benefit Forms under the Defined Benefit portion of the Plan. Retiring members may elect to have their age and service retirement allowance in straight life form, in a form that guarantees a minimum number of monthly payments, or in a form that provides a continuation of all or a portion of the monthly benefit to a beneficiary after the death of the retiree. If a retiring member elects benefits in other than straight life form, the monthly amount is adjusted. The adjustment is based upon interest, COLA, and mortality assumptions (with a blend of male and female mortality rates to produce unisex election factors consistent with the gender distribution of members electing optional forms of payment).

Optional Benefit Forms under the Defined Contribution portion of the Plan. Retiring members may elect to have retirement benefits paid in a partial lump sum, subject to any rules adopted by the Board; monthly annuity payments (with joint and survivor options) similar to those offered under the defined benefit portion of the Plan; periodic payments over a period certain; periodic payments of a specific monthly amount; payments with a deferred start date; or a combination of these options.



Combined Plan (Continued)

QEBA. Qualified Excess Benefit Arrangement was established 01/01/2004 (H.B.190). The QEBA is operated in accordance with Internal Revenue Code Section 415(m). Under this arrangement the recipient may be paid the portion of his/her retirement benefit that was previously limited due to IRC Section 415(b). The QEBA is available to Combined Plan members for the age and service retirement allowance under the defined benefit portion of the Plan.

Cost-of-Living Adjustment. A retiree who has received benefits for 12 months will receive an annual cost-of-living adjustment (COLA). The COLA is determined by the recipient's retirement effective date. Members with effective retirement dates prior to January 7, 2013 receive a simple 3 percent COLA corresponding to their base allowance. Members with effective retirement dates after January 7, 2013 receive a simple percent COLA corresponding to their base allowance equal to the percentage increase of the Consumer Price Index for the prior year (June to June CPI-W), not to exceed to 3 percent. Members who retired within the first five calendar years after January 7, 2013 received a simple 3 percent COLA until December 31, 2018. Reemployed Retiree annuitized balances do not receive a COLA.

Post-retirement death benefit. Upon the death of an age and service retiree, a death benefit in the following amount is payable:

Service Credit at Retirement	Amount of Death Benefit
5 to 9 years	\$ 500
10 to 14 years	1,000
15 to 19 years	1,500
20 to 24 years	2,000
25 or more years	2,500

Refunds and Vesting. A participant in the Combined Plan shall at all times be 100% vested in the Participant Contribution Account, Miscellaneous Contribution Account, and the Rollover Account.

If the member has at least 5 years but less than 10 years of qualified service credit in the Plan, an additional 33% of the member's eligible contributions will be paid from the Employers' Accumulation Fund. If the member has at least 10 years of qualified service credit in the Plan, an additional 67% of the member's eligible contributions will be paid to the member. Amounts paid to purchase service credit earn interest at the same rates as the Traditional Pension Plan and are payable as a refund.

In the event a member leaves service prior to retirement, the member may elect to receive a refund of their Participant Contribution Account, the Rollover Account, the Miscellaneous Account, and any additional amounts they are entitled to from the Employers' Accumulation Fund (as described above).

Plan Eligibility. Members hired on or after January 1, 2022 are not eligible to elect the Combined Plan.

Health Care Benefits. Health care benefits are available to persons meeting retiree health care eligibility requirements. Members retiring with a normal or early service retirement allowance after January 1, 2015 must have 20 or more years of qualified service credit to be eligible for this benefit.



Member-Directed Plan

Age and Service Eligibility. State and Local Government Members* who elected the Member Directed Plan and attained age fifty-five (55) may retire under the Member-Directed Plan.

**Law Enforcement and Public Safety members must elect the Traditional Pension Plan only.*

Age and Service Retirement Benefits. The member's retirement benefit is based on the value of the Participant Contribution Account, the Rollover Account, the Miscellaneous Account, and any vested portion of the Employer Contribution Account.

Disability Retirement. Not available under the Member-Directed Plan. Members may:

- 1) If age fifty-five (55), terminate employment and begin receiving retirement benefits, or
- 2) Take a lump sum distribution of their Participant Contribution Account, Rollover Account, Miscellaneous Account and any vested portion of the Employer Contribution Account.

Survivor Benefits. Not available under the Member-Directed Plan. Survivors must take a lump sum distribution of the member's Participant Contribution Account, Rollover Account, Miscellaneous Account and any vested portion of the Employer Contribution Account.

Optional Benefit Forms. Retiring members may elect to have retirement benefits paid in a partial lump sum, subject to any rules adopted by the Board; monthly annuity payments (with joint and survivor options) similar to those offered under the defined benefit portion of the Combined Plan; periodic payments over a period certain; periodic payments of a specific monthly amount; payments with a deferred start date; or a combination of these options.

Refunds and Vesting. A participant shall at all times be 100% vested in the Participant Contribution Account, Miscellaneous Contribution Account, and the Rollover Account. A participant shall vest in the Employer Contribution Account according to the Participant's attained years of participation in the Plan as follows:

One year of participation	20%
Two years of participation	40%
Three years of participation	60%
Four years of participation	80%
Five years of participation	100%

In the event a member leaves service prior to retirement, the member may elect to receive a refund of their Participant Contribution Account, Rollover Account, and Miscellaneous Account and any vested amounts in the Employer Contribution Account (as described above).



Member-Directed Plan (Continued)

Health Care Benefits. A portion of the employer contribution for Member-Directed participants is credited to a Retiree Medical Account (RMA). Amounts contributed to the RMA may be used after separation from service and a refund or retirement distribution is made to pay qualified health, dental and vision care expenses. Members vest in their RMA based on their attained years of participation in the Plan as follows:

Hired prior to July 1, 2015	
Less than 1 year	0%
1 year	20%
2 years	40%
3 years	60%
4 years	80%
5 years	100%

Hired on or after July 1, 2015	
Less than 6 years	0%
6 years	10%
7 years	20%
8 years	30%
9 years	40%
10 years	50%
11 years	60%
12 years	70%
13 years	80%
14 years	90%
15 years	100%

Sample Benefit Computation – Traditional Plan

State or Local Member (Transition Group A) - Normal Retirement

Retiring December 31, 2022

Under Benefit Provisions Evaluated

Data:

A.	\$32,000	Final Average Earnings
B.	33	Years of Credited Service
C.	59	Age of Retiree
D.	56	Age of Spouse
E.	100%	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)

Computations:

F.	Formula Benefit: $(0.022 \times 30 \text{ years} + 0.025 \times 3 \text{ years}) \times \$32,000 =$	\$ 23,520
G.	Reduction for Line E Election: $\# (1 - 0.85193) \times (F) =$	3,483
H.	Benefit Payable to Retiree while Spouse is Alive: $(F) - (G) =$	20,037
I.	Benefit Payable to Spouse after Retiree's Death	20,037
J.	Benefit Payable to Retiree after Spouse's Death	23,520

Projected Benefits:*

Year Ended December 31,	Retiree's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Retiree's Benefit (After Spouse's Death)
2023	\$ 20,037	\$ 20,037	\$ 23,520
2024	20,638	20,638	24,226
2025	21,239	21,239	24,931
2026	21,840	21,840	25,637
2027	22,441	22,441	26,342
2028	23,043	23,043	27,048
2029	23,644	23,644	27,754
2030	24,245	24,245	28,459
2031	24,846	24,846	29,165
2032	25,447	25,447	29,870

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.

Based on conversion factors for optional forms of payment in effect December 31, 2022.



Sample Benefit Computation – Traditional Plan State or Local Member (Transition Group A) - Early Retirement Retiring December 31, 2022 Under Benefit Provisions Evaluated

Data:

A.	\$32,000	Final Average Earnings
B.	26	Years of Credited Service
C.	59	Age of Retiree
D.	56	Age of Spouse
E.	100%	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)

Computations:

F.	Formula Benefit:	$0.022 \times 26 \text{ years} \times \$32,000 =$	\$ 18,304
G.	Adjustment Factor for Early Retirement (from schedule)		80%
H.	Adjusted Benefit:	$(F) \times (G) =$	14,643
I.	Reduction for Line E Election: # $(1 - 0.85193) \times (H) =$		2,168
J.	Benefit Payable to Retiree while Spouse is Alive: $(H) - (I)$		12,475
K.	Benefit Payable to Spouse after Retiree's Death		12,475
L.	Benefit Payable to Retiree after Spouse's Death		14,643

Projected Benefits:*

Year Ended December 31,	Retiree's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Retiree's Benefit (After Spouse's Death)
2023	\$ 12,475	\$ 12,475	\$ 14,643
2024	12,849	12,849	15,082
2025	13,224	13,224	15,522
2026	13,598	13,598	15,961
2027	13,972	13,972	16,400
2028	14,346	14,346	16,840
2029	14,721	14,721	17,279
2030	15,095	15,095	17,718
2031	15,469	15,469	18,158
2032	15,844	15,844	18,597

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.

Based on conversion factors for optional forms of payment in effect December 31, 2022.



Sample Benefit Computation – Traditional Plan Public Safety Member (Transition Group A) - Normal Retirement Retiring December 31, 2022 Under Benefit Provisions Evaluated

Data:

A.	<u>\$38,000</u>	Final Average Earnings
B.	<u>28</u>	Years of Credited Service
C.	<u>49</u>	Age of Retiree
D.	<u>46</u>	Age of Spouse
E.	<u>100%</u>	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)

Computations:

F.	Formula Benefit: $(0.025 \times 25 \text{ years} + 0.021 \times 3 \text{ years}) \times \$38,000 \times 80\% =$	\$ 20,915
G.	Reduction for Line E Election: $\# (1 - 0.90314) \times (F) =$	<u>2,026</u>
H.	Benefit Payable to Retiree while Spouse is Alive: $(F) - (G) =$	18,889
I.	Benefit Payable to Spouse after Retiree's Death	18,889
J.	Benefit Payable to Retiree after Spouse's Death	20,915

Projected Benefits:*

Year Ended December 31,	Retiree's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Retiree's Benefit (After Spouse's Death)
2023	\$ 18,889	\$ 18,889	\$ 20,915
2024	19,456	19,456	21,542
2025	20,022	20,022	22,170
2026	20,589	20,589	22,797
2027	21,156	21,156	23,425
2028	21,722	21,722	24,052
2029	22,289	22,289	24,680
2030	22,856	22,856	25,307
2031	23,422	23,422	25,935
2032	23,989	23,989	26,562

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.

Based on conversion factors for optional forms of payment in effect December 31, 2022.



Sample Benefit Computation – Traditional Plan Law Enforcement Member (Transition Group A) - Normal Retirement Retiring December 31, 2022 Under Benefit Provisions Evaluated

Data:

A.	\$38,000	Final Average Earnings
B.	28	Years of Credited Service
C.	49	Age of Retiree
D.	46	Age of Spouse
E.	100%	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)

Computations:

F.	Formula Benefit: $(0.025 \times 25 \text{ years} + 0.021 \times 3 \text{ years}) \times \$38,000 =$	\$ 26,144
G.	Reduction for Line E Election: $\# (1 - 0.90314) \times (F) =$	2,532
H.	Benefit Payable to Retiree while Spouse is Alive: $(F) - (G) =$	23,612
I.	Benefit Payable to Spouse after Retiree's Death	23,612
J.	Benefit Payable to Retiree after Spouse's Death	26,144

Projected Benefits:*

Year Ended December 31,	Retiree's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Retiree's Benefit (After Spouse's Death)
2023	\$ 23,612	\$ 23,612	\$ 26,144
2024	24,320	24,320	26,928
2025	25,029	25,029	27,713
2026	25,737	25,737	28,497
2027	26,445	26,445	29,281
2028	27,154	27,154	30,066
2029	27,862	27,862	30,850
2030	28,571	28,571	31,634
2031	29,279	29,279	32,419
2032	29,987	29,987	33,203

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.
Based on conversion factors for optional forms of payment in effect December 31, 2022.

Sample Benefit Computation – Traditional Plan

State or Local Member (Transition Group C) – Termination Benefit

Terminating December 31, 2022

Under Benefit Provisions Evaluated

Data:

A.	\$32,000	Final Average Earnings
B.	15	Years of Credited Service
C.	45	Age of Member
D.	42	Age of Spouse
E.	62:59	Ages at Which Benefits are Payable
F.	100%	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)
G.	\$44,000	Accumulated Contributions with Interest at Termination Date

Computations:

H.	Formula Benefit:	$(0.022 \times 15 \text{ years} + 0.025 \times 0 \text{ years}) \times \$32,000 =$	\$ 10,560
I.	Adjustment Factor for Early Retirement (from schedule)		58%
J.	Adjusted Benefit:	$(H) \times (I) =$	6,125
K.	Reduction for Line F Election: # $(1 - 0.83276) \times (J) =$		1,024
L.	Benefit Payable to Retiree while Spouse is Alive: $(J) - (K) =$		5,101
M.	Benefit Payable to Spouse after Member's Death		5,101
N.	Benefit Payable to Retiree after Spouse's Death		6,125
O.	In lieu of a lifetime benefit, terminnee may elect to receive a refund of accumulated contributions with interest plus an additional 67% of eligible accumulated contributions because terminnee had more than 10 years of service.		73,480

Projected Benefits:*

Year Ended December 31,	Member's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Member's Benefit (After Spouse's Death)
2040	\$ 5,101	\$ 5,101	\$ 6,125
2041	5,254	5,254	6,309
2042	5,407	5,407	6,492
2043	5,560	5,560	6,676
2044	5,713	5,713	6,860
2045	5,866	5,866	7,044
2046	6,019	6,019	7,227
2047	6,172	6,172	7,411
2048	6,325	6,325	7,595
2049	6,478	6,478	7,778

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.

Based on conversion factors for optional forms of payment in effect December 31, 2022.



Sample Benefit Computation – Traditional Plan Public Safety/Law Enforcement Member (Transition Group C) – Termination Benefit Terminating December 31, 2022 Under Benefit Provisions Evaluated

Data:

A.	\$38,000	Final Average Earnings
B.	15	Years of Credited Service
C.	37	Age of Member
D.	34	Age of Spouse
E.	56:53	Ages at Which Benefits are Payable
F.	100%	Percentage of Pension to Continue to Spouse after retiree's death (Retiree makes the choice of 100% Joint and Survivor with Pop-Up)
G.	\$46,000	Accumulated Contributions at Termination Date

Computations:

H.	Formula Benefit: $(0.015 \times 15 \text{ years}) \times \$38,000 =$	\$ 8,550
I.	Reduction for Line F Election: $\# (1 - 0.86923) \times (H) =$	1,118
J.	Benefit Payable to Retiree while Spouse is Alive: $(H) - (I) =$	7,432
K.	Benefit Payable to Spouse after Member's Death	7,432
L.	Benefit Payable to Retiree after Spouse's Death	8,550
M.	In lieu of a lifetime benefit, terminee may elect to receive a refund of accumulated contributions with interest plus an additional 67% of eligible accumulated contributions because terminee had more than 10 years of service.	76,820

Projected Benefits:*

Year Ended December 31,	Member's Benefit (Both Alive)	Spouse's Benefit (After Retiree's Death)	Member's Benefit (After Spouse's Death)
2042	\$ 7,432	\$ 7,432	\$ 8,550
2043	7,655	7,655	8,807
2044	7,878	7,878	9,063
2045	8,101	8,101	9,320
2046	8,324	8,324	9,576
2047	8,547	8,547	9,833
2048	8,770	8,770	10,089
2049	8,993	8,993	10,346
2050	9,216	9,216	10,602
2051	9,439	9,439	10,859

* Assumes the annual percentage change in the Consumer Price Index (CPI) is 3% or greater in all future years.

Based on conversion factors for optional forms of payment in effect December 31, 2022.



SECTION IV

RECOMMENDATIONS FOR RESERVE TRANSFERS

December 31, 2022 Retired Life Valuation Reserve Transfers

Reserve transfers from the Employer Accumulation Fund to the A & PR Fund and/or Survivor Benefit Funds are recommended in the following instances.

- Whenever the December 31 valuation shows unfunded accrued liabilities or assets in excess of computed liabilities in any of the retired life funds.
- To cover the cost of ad-hoc postretirement benefit increases.
- To adjust retired life reserves for any changes in computed liabilities resulting from assumption changes.

By making these annual adjustments in addition to the regular transfers when allowances are added to the rolls, the ratio of assets to liabilities for retired members and beneficiaries will stay at 100%. Year to year changes in this ratio before recommended transfers will normally be isolated to mortality experience within the retired life group.

In 1992, OPERS began making interim benefit payments for certain retirements to shorten the delay between the retirement effective date and receipt of the first monthly check. However, reserve transfers are not made until benefit amounts are final. Transfers for these cases have been accrued based upon supplemental information supplied by OPERS staff and are shown on the following page. The accruals, when added to other assets, are intended to put retired life reserves in the same position they would have been in if reserve transfers for the interim benefit cases had been coincident with benefit commencement.

It is recommended that the transfers shown on the following page be made from the Employer Accumulation Fund to the Annuity & Pension Reserve Fund and Survivor Benefit Funds as indicated. The Accrued Transfers are an estimate of pending future transfers for interim cases, and do not require a year end transfer. Any accrued transfers that have been made prior to OPERS' extract date and, hence, are not included in the "Accrued Transfers" column on pages IV-2 through IV-5 should be netted off the "Other" column on pages IV-2 through IV-5.

Traditional Plan

Reserve Transfers Affecting the Employer Accumulation Fund

December 31, 2022

	Assets Before Transfers	Transfers		Assets After Transfers	Liabilities	Ratio
		Accrued	Other			
State						
A&PR Fund						
SR	\$ 24,713,656,215	\$ 281,302,781	\$ 1,685,488,151	\$ 26,680,447,147	\$ 26,680,447,147	
MP	49,562,403	70,062	3,202,056	52,834,521	52,834,521	
AA	373,438	0	34,806	408,244	408,244	
JR	0	0	0	0	0	
CR	241,355,160	1,374,998	17,189,281	259,919,439	259,919,439	
DR	2,036,820,151	2,732,436	97,655,322	2,137,207,909	2,137,207,909	
BD	667,149,195	21,542,627	9,528,602	698,220,424	698,220,424	
Total A&PR	\$ 27,708,916,562	\$ 307,022,904	\$ 1,813,098,218	\$ 29,829,037,684	\$ 29,829,037,684	100.0%
SBF						
AA	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	
S-1	124,568,505	726,525	27,568,939	152,863,969	152,863,969	
S-2	612,345,364	2,833,285	55,633,118	670,811,767	670,811,767	
Total SBF	\$ 736,913,869	\$ 3,559,810	\$ 83,202,057	\$ 823,675,736	\$ 823,675,736	100.0%
Total State	\$ 28,445,830,431	\$ 310,582,714	\$ 1,896,300,275	\$ 30,652,713,420	\$ 30,652,713,420	100.0%
Local						
A&PR Fund						
SR	\$ 35,267,506,432	\$ 304,683,853	\$ 2,309,021,038	\$ 37,881,211,323	\$ 37,881,211,323	
MP	131,854,285	309,262	5,811,641	137,975,188	137,975,188	
AA	57,524,620	224,253	3,603,647	61,352,520	61,352,520	
JR	0	0	0	0	0	
CR	355,271,496	471,160	25,079,516	380,822,172	380,822,172	
DR	2,436,090,455	1,783,997	133,453,219	2,571,327,671	2,571,327,671	
BD	783,589,182	23,955,293	8,632,482	816,176,957	816,176,957	
Total A&PR	\$ 39,031,836,470	\$ 331,427,818	\$ 2,485,601,543	\$ 41,848,865,831	\$ 41,848,865,831	100.0%
SBF						
AA	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	
S-1	192,729,843	423,261	49,219,270	242,372,374	242,372,374	
S-2	992,062,964	3,776,125	77,256,638	1,073,095,727	1,073,095,727	
Total SBF	\$ 1,184,792,807	\$ 4,199,386	\$ 126,475,908	\$ 1,315,468,101	\$ 1,315,468,101	100.0%
Total Local	\$ 40,216,629,277	\$ 335,627,204	\$ 2,612,077,451	\$ 43,164,333,932	\$ 43,164,333,932	100.0%

Traditional Plan

Reserve Transfers Affecting the Employer Accumulation Fund

December 31, 2022

	Assets Before Transfers	Transfers		Assets After Transfers	Liabilities	Ratio
		Accrued	Other			
Public Safety						
A&PR Fund						
SR	\$ 11,556,850	\$ 0	\$ 540,448	\$ 12,097,298	\$ 12,097,298	
MP	0	0	0	0	0	
AA	0	0	0	0	0	
JR	0	0	0	0	0	
CR	0	0	0	0	0	
DR	15,324,422	0	1,053,554	16,377,976	16,377,976	
BD	2,269,590	254,381	(44,377)	2,479,594	2,479,594	
Total A&PR	\$ 29,150,862	\$ 254,381	\$ 1,549,625	\$ 30,954,868	\$ 30,954,868	100.0%
SBF						
AA	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	
S-1	2,850,095	0	4,511,389	7,361,484	7,361,484	
S-2	18,474,280	0	1,336,761	19,811,041	19,811,041	
Total SBF	\$ 21,324,375	\$ 0	\$ 5,848,150	\$ 27,172,525	\$ 27,172,525	100.0%
Total Public Safety	\$ 50,475,237	\$ 254,381	\$ 7,397,775	\$ 58,127,393	\$ 58,127,393	100.0%
Law Enforcement						
A&PR Fund						
SR	\$ 2,242,105,566	\$ 28,016,638	\$ 146,402,955	\$ 2,416,525,159	\$ 2,416,525,159	
MP	33,414	0	(33,414)	0	0	
AA	0	0	0	0	0	
JR	0	0	0	0	0	
CR	2,573,668	0	(523,339)	2,050,329	2,050,329	
DR	561,947,135	0	35,512,418	597,459,553	597,459,553	
BD	198,567,911	10,312,171	13,440,182	222,320,264	222,320,264	
Total A&PR	\$ 3,005,227,694	\$ 38,328,809	\$ 194,798,802	\$ 3,238,355,305	\$ 3,238,355,305	100.0%
SBF						
AA	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	
S-1	9,679,860	0	1,632,410	11,312,270	11,312,270	
S-2	61,731,269	105,477	8,510,162	70,346,908	70,346,908	
Total SBF	\$ 71,411,129	\$ 105,477	\$ 10,142,572	\$ 81,659,178	\$ 81,659,178	100.0%
Total Law Enforcement	\$ 3,076,638,823	\$ 38,434,286	\$ 204,941,374	\$ 3,320,014,483	\$ 3,320,014,483	100.0%
Grand Total	\$ 71,789,573,768	\$ 684,898,585	\$ 4,720,716,875	\$ 77,195,189,228	\$ 77,195,189,228	100.0%

Combined Plan
Reserve Transfers Affecting the Employer Accumulation Fund
December 31, 2022

	Assets Before Transfers	Transfers		Assets After Transfers	Liabilities	Ratio
		Accrued	Other			
State						
A&PR Fund						
CA	\$ 8,514,393	\$ 0	\$ (658,981)	\$ 7,855,412	\$ 7,855,412	
CA Reserve for Future Adverse Experience	0	0	658,981	658,981	658,981	
CA Total (DC)	\$ 8,514,393	\$ 0	\$ 0	\$ 8,514,393	\$ 8,514,393	
CB Total (DB)	15,290,110	867,301	711,152	16,868,563	16,868,563	
Total A&PR	\$ 23,804,503	\$ 867,301	\$ 711,152	\$ 25,382,956	\$ 25,382,956	100.0%
Total State	\$ 23,804,503	\$ 867,301	\$ 711,152	\$ 25,382,956	\$ 25,382,956	100.0%
Local						
A&PR Fund						
CA	\$ 16,991,714	\$ 0	\$ (2,928,320)	\$ 14,063,394	\$ 14,063,394	
CA Reserve for Future Adverse Experience	0	0	2,928,320	2,928,320	2,928,320	
CA Total (DC)	\$ 16,991,714	\$ 0	\$ 0	\$ 16,991,714	\$ 16,991,714	
CB Total (DB)	25,416,181	1,102,576	1,898,228	28,416,985	28,416,985	
Total A&PR	\$ 42,407,895	\$ 1,102,576	\$ 1,898,228	\$ 45,408,699	\$ 45,408,699	100.0%
Total Local	\$ 42,407,895	\$ 1,102,576	\$ 1,898,228	\$ 45,408,699	\$ 45,408,699	100.0%
Grand Total	\$ 66,212,398	\$ 1,969,877	\$ 2,609,380	\$ 70,791,655	\$ 70,791,655	100.0%

Member Directed Plan
Reserve Transfers Affecting the Employer Accumulation Fund
December 31, 2022

	Assets Before Transfers	Transfers		Assets After Transfers	Liabilities	Ratio
		Accrued	Other			
State						
A&PR Fund						
MD	\$ 10,187,765	\$ 0	\$ (164,050)	\$ 10,023,715	\$ 10,023,715	
Reserve for Future Adverse Experience*	5,097,696	0	164,050	5,261,746	5,261,746	
Total State	\$ 15,285,461	\$ 0	\$ 0	\$ 15,285,461	\$ 15,285,461	100.0%
Local						
A&PR Fund						
MD	\$ 21,260,831	\$ 0	\$ (2,044,264)	\$ 19,216,567	\$ 19,216,567	
Reserve for Future Adverse Experience*	4,473,771	0	2,044,264	6,518,035	6,518,035	
Total Local	\$ 25,734,602	\$ 0	\$ 0	\$ 25,734,602	\$ 25,734,602	100.0%
Grand Total	\$ 41,020,063	\$ 0	\$ 0	\$ 41,020,063	\$ 41,020,063	100.0%

* Includes funds for pending retirements.

SECTION V

STATE DIVISION

STATE DIVISION

Data on active, inactive, retired and money purchase members that was used in the valuation is tabulated briefly below.

Active Members in Valuation December 31, 2022

Groups	Number	Annual Payroll	Average		
			Pay	Age	Service
Traditional Plan					
Men	45,293	\$ 2,718,258,475	\$ 60,015	41.7 yrs.	9.9 yrs.
Women	57,413	3,203,560,426	55,799	40.4	9.0
Traditional Plan Total	102,706	\$ 5,921,818,901	\$ 57,658	41.0 yrs.	9.4 yrs.
Combined Plan					
Men	987	\$ 80,479,285	\$ 81,539	47.3 yrs.	12.0 yrs.
Women	1,470	114,992,960	78,227	46.8	11.4
Combined Plan Total	2,457	\$ 195,472,245	\$ 79,557	47.0 yrs.	11.6 yrs.
Grand Total	105,163	\$ 6,117,291,146	\$ 58,170	41.1 yrs.	9.4 yrs.

Also included in the valuation were 332,248 inactive members and 3,360 members active in the money purchase plan.

Retired Members in Valuation December 31, 2022

Fund/Type of Allowance	Number	Current Monthly Benefits	Actuarial Liabilities
Traditional Plan			
A & PR Fund			
Superannuation Retirement	64,736	\$ 202,545,234	\$ 26,940,774,830
Disability Retirement	6,967	20,505,203	2,835,428,333
Money Purchase	1,099	549,964	52,834,521
Total A & PR Fund	72,802	\$ 223,600,401	\$ 29,829,037,684
Total SBF	4,444	6,636,771	823,675,736
Traditional Plan Total	77,246	\$ 230,237,172	\$ 30,652,713,420
Combined Plan			
A & PR Fund			
CB (DB)	201	\$ 117,454	\$ 16,868,563
CA (DC)	124	56,444	8,514,393
Total A & PR Fund	325	\$ 173,898	\$ 25,382,956
Combined Plan Total	325	\$ 173,898	\$ 25,382,956
Member Directed Plan			
A & PR Fund	116	\$ 71,968	\$ 10,023,715
Reserve for Future Adverse Experience			5,261,746
Member Directed Plan Total	116	\$ 71,968	\$ 15,285,461
Grand Total	77,687	\$ 230,483,038	\$ 30,693,381,837

STATE DIVISION
Employer Contributions to Support
Defined Benefit Retirement Allowances
Expressed as Percents of Active Member Payroll

Valuation Date December 31	2022			2021
Contributions for	2025			2024
Normal Cost	<u>Traditional Plan</u>	<u>Combined Plan</u>	<u>Traditional and Combined Plans</u>	<u>Traditional and Combined Plans</u>
Age and Service Allowances*	8.73 %	4.85 %	8.59 %	8.64 %
Disability Allowances	1.26 %	1.14 %	1.25 %	1.25 %
Survivor's Benefits	0.36 %	0.30 %	0.36 %	0.36 %
Separation Benefits	3.97 %	1.01 %	3.87 %	3.87 %
Total Normal Cost	14.32 %	7.30 %	14.07 %	14.12 %
(Member Contributions)	10.00 %	0.00 %	9.64 %	9.62 %
Employer Normal Cost	4.32 %	7.30 %	4.43 %	4.50 %
Unfunded Actuarial Accrued Liabilities				
Total Available Contribution	9.68 %	4.70 %	9.51 %	9.44 %
Amortization Years	22	0	21	22
Total Pension Employer Contribution Rate	14.00 %	12.00 %	13.94 %	13.94 %

* Includes contributions for administrative expenses.

The term "Amortization Years" refers to the period sufficient to produce the Total Employer Contribution Rate for retirement allowances and survivor benefits and incorporates all scheduled employer and member contribution rate increases and scheduled employer rate reallocations between the pension and retiree health programs.

STATE DIVISION Comparative Statement

Valuation Date December 31	Contribution Rate Effective January 1	Defined Benefit Active Members in Valuation				Computed Employer Contributions as % of Payroll				
		No.	Annual Payroll			Normal Cost	Unfunded Accrued Liability	Pension Total	Retiree Health	Grand Total
			Total	Average	Increase					
			(\$Millions)							
2008	2011	114,925	\$ 4,780	\$ 41,590	4.8 %	5.44 %	4.56 %	10.00 %	4.00 %	14.00 %
2009	2012	117,008	4,763	40,704	(2.1)%	5.45 %	4.55 %	10.00 %	4.00 %	14.00 %
2010@	2013	118,240	4,811	40,691	0.0 %	5.36 %	7.64 %	13.00 %	1.00 %	14.00 %
2011	2014	118,273	4,844	40,952	0.6 %	5.37 %	8.63 %	14.00 %	0.00 %	14.00 %
2012#	2015	117,430	4,690	39,938	(2.5)%	3.49 %	7.51 %	11.00 %	3.00 %	14.00 %
2013	2016	117,370	4,746	40,433	1.2 %	3.49 %	6.51 %	10.00 %	4.00 %	14.00 %
2014	2017	118,114	4,826	40,862	1.1 %	3.40 %	6.60 %	10.00 %	4.00 %	14.00 %
2015@	2018	118,372	4,961	41,911	2.6 %	4.09 %	9.91 %	14.00 %	0.00 %	14.00 %
2016	2019	119,223	5,131	43,037	2.7 %	4.03 %	9.97 %	14.00 %	0.00 %	14.00 %
2017	2020	121,199	5,285	43,610	1.3 %	4.07 %	9.93 %	14.00 %	0.00 %	14.00 %
2018^	2021	102,165	5,189	50,795	16.5 %	4.78 %	9.22 %	14.00 %	0.00 %	14.00 %
2019	2022	103,162	5,375	52,101	2.6 %	4.74 %	9.26 %	14.00 %	0.00 %	14.00 %
2020@	2023	97,744	5,416	55,410	6.4 %	4.52 %	9.48 %	14.00 %	0.00 %	14.00 %
2021	2024	100,996	5,557	55,026	(0.7)%	4.50 %	9.44 %	13.94 %	0.06 %	14.00 %
2022	2025	105,163	6,117	58,170	5.7 %	4.43 %	9.51 %	13.94 %	0.06 %	14.00 %

After benefit changes.

@ Revised actuarial assumptions.

^ Reflects active members reclassified as inactive.

STATE DIVISION
Development of Unfunded Actuarial Accrued Liabilities
December 31, 2022

Actuarial Present Value	(1) Total Actuarial Present Value	Allocation by Entry Age	
		(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Allowances currently being paid from the Annuity & Pension Reserve Fund	\$ 29,869,706,101	\$ -	\$ 29,869,706,101
Allowances currently being paid from the Survivors Benefit Fund	823,675,736	-	823,675,736
Age and service allowances based on service rendered before and likely to be rendered after valuation date*	20,077,900,485	4,693,645,275	15,384,255,210
Disability allowances likely to be paid present active members who become permanently disabled	1,448,033,504	682,290,650	765,742,854
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	510,583,357	190,437,399	320,145,958
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members	3,288,984,473	2,170,284,140	1,118,700,333
Total	\$ 56,018,883,656	\$ 7,736,657,464	\$ 48,282,226,192
Funding Value of Assets			38,926,085,195
Unfunded Actuarial Accrued Liability			\$ 9,356,140,997

* Includes contributions for administrative expenses.

STATE DIVISION
Development of Unfunded Actuarial Accrued Liabilities
Comparative Statement
(\$ in Millions Except Averages)

Dec. 31	Defined Benefit Active Payroll		Active and Inactive Member Accrued Liabilities for Retirement Allowances				Unfunded /Payroll
			Computed Total	Valuation Assets	Unfunded	Amortization Years	
	Total	Average					
2008	4,780	\$41,590	\$ 14,872	\$ 7,488	\$ 7,384	N/A	1.54
2009	4,763	40,704	14,843	6,648	8,195	N/A	1.71
2010@	4,811	40,691	14,903	7,113	7,790	48	1.62
2011	4,844	40,952	14,754	6,616	8,138	37	1.68
2012#	4,690	39,938	13,135	5,270	7,865	37	1.68
2013	4,746	40,433	13,125	6,572	6,553	32	1.38
2014	4,826	40,862	12,951	5,631	7,320	40	1.52
2015@	4,961	41,911	13,788	5,550	8,238	24	1.66
2016	5,131	43,037	14,090	5,587	8,503	24	1.66
2017	5,285	43,610	14,300	5,899	8,401	23	1.59
2018	5,189	50,795	15,280	4,784	10,496	35	2.02
2019	5,375	52,101	15,694	5,684	10,010	29	1.86
2020@	5,416	55,410	16,234	6,651	9,583	27	1.77
2021	5,557	55,026	16,432	7,828	8,604	22	1.55
2022	6,117	58,170	17,595	8,239	9,356	21	1.53

After benefit changes.

@ Revised actuarial assumptions.

While no one or two numeric indices can fully describe the financial condition of a retirement plan, the ratio of unfunded actuarial accrued liabilities divided by active member payroll ("UNFUNDED/PAYROLL" above) is significant. Unfunded actuarial accrued liabilities represent plan debt, while active member payroll represents the plan's capacity to collect contributions to pay toward debt --- thus the ratio is a relative index of condition. The lower the ratio, the greater the financial strength, and vice-versa.

STATE DIVISION
Male Active Members in Defined Benefit Valuation
December 31, 2022
by Attained Age and Years of Service

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19	929							929
Tot. Pay	\$10,800,040							\$10,800,040
Avg. Pay	\$11,625							\$11,625
20-24	6,187	11						6,198
Tot. Pay	\$116,275,337	\$616,517						\$116,891,854
Avg. Pay	\$18,793	\$56,047						\$18,860
25-29	4,015	689	6					4,710
Tot. Pay	\$163,033,504	\$41,659,051	\$344,540					\$205,037,095
Avg. Pay	\$40,606	\$60,463	\$57,423					\$43,532
30-34	2,678	1,649	380	3				4,710
Tot. Pay	\$129,921,493	\$107,819,878	\$28,054,322	\$191,082				\$265,986,775
Avg. Pay	\$48,514	\$65,385	\$73,827	\$63,694				\$56,473
35-39	1,817	1,363	1,089	421	15			4,705
Tot. Pay	\$95,894,198	\$95,052,775	\$86,745,757	\$33,828,723	\$991,372			\$312,512,825
Avg. Pay	\$52,776	\$69,738	\$79,656	\$80,353	\$66,091			\$66,421
40-44	1,327	967	863	1,084	390	5		4,636
Tot. Pay	\$70,212,902	\$69,258,535	\$69,743,545	\$91,902,865	\$32,591,286	\$478,071		\$334,187,204
Avg. Pay	\$52,911	\$71,622	\$80,815	\$84,781	\$83,567	\$95,614		\$72,085
45-49	1,090	714	600	777	967	298	8	4,454
Tot. Pay	\$58,957,915	\$49,006,452	\$47,984,453	\$66,017,055	\$86,086,005	\$25,862,248	\$756,298	\$334,670,426
Avg. Pay	\$54,090	\$68,636	\$79,974	\$84,964	\$89,024	\$86,786	\$94,537	\$75,139
50-54	1,016	673	634	677	889	1,148	315	5,352
Tot. Pay	\$52,673,055	\$49,943,370	\$49,070,194	\$58,472,613	\$77,099,637	\$106,096,344	\$31,225,035	\$424,580,248
Avg. Pay	\$51,844	\$74,210	\$77,398	\$86,370	\$86,726	\$92,418	\$99,127	\$79,331
55-59	772	494	517	626	682	890	753	4,734
Tot. Pay	\$37,473,040	\$34,789,480	\$40,129,322	\$51,004,137	\$55,898,646	\$80,719,352	\$74,393,295	\$374,407,272
Avg. Pay	\$48,540	\$70,424	\$77,620	\$81,476	\$81,963	\$90,696	\$98,796	\$79,089
60-64	576	374	363	442	571	624	616	3,566
Tot. Pay	\$24,577,605	\$24,201,662	\$27,171,864	\$36,201,461	\$46,155,040	\$52,502,601	\$58,829,893	\$269,640,126
Avg. Pay	\$42,669	\$64,710	\$74,854	\$81,904	\$80,832	\$84,139	\$95,503	\$75,614
65-69	367	150	161	230	184	216	281	1,589
Tot. Pay	\$10,749,750	\$9,596,195	\$11,785,989	\$19,457,343	\$14,939,013	\$19,104,354	\$25,223,880	\$110,856,524
Avg. Pay	\$29,291	\$63,975	\$73,205	\$84,597	\$81,190	\$88,446	\$89,765	\$69,765
70 & Over	303	66	60	60	49	53	106	697
Tot. Pay	\$6,723,698	\$3,337,155	\$4,724,505	\$4,964,988	\$4,488,299	\$4,582,102	\$10,346,624	\$39,167,371
Avg. Pay	\$22,190	\$50,563	\$78,742	\$82,750	\$91,598	\$86,455	\$97,610	\$56,194
Totals	21,077	7,150	4,673	4,320	3,747	3,234	2,079	46,280
Tot. Pay	\$777,292,537	\$485,281,070	\$365,754,491	\$362,040,267	\$318,249,298	\$289,345,072	\$200,775,025	\$2,798,737,760
Avg. Pay	\$36,879	\$67,871	\$78,270	\$83,806	\$84,934	\$89,470	\$96,573	\$60,474

STATE DIVISION
Female Active Members in Defined Benefit Valuation
December 31, 2022
by Attained Age and Years of Service

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19	1,701							1,701
Tot. Pay	\$16,955,731							\$16,955,731
Avg. Pay	\$9,968							\$9,968
20-24	9,182	12						9,194
Tot. Pay	\$161,890,029	\$503,156						\$162,393,185
Avg. Pay	\$17,631	\$41,930						\$17,663
25-29	5,069	866	5					5,940
Tot. Pay	\$217,932,273	\$51,920,544	\$249,123					\$270,101,940
Avg. Pay	\$42,993	\$59,954	\$49,825					\$45,472
30-34	3,527	2,086	516	8				6,137
Tot. Pay	\$163,153,413	\$134,957,986	\$37,628,191	\$460,452				\$336,200,042
Avg. Pay	\$46,258	\$64,697	\$72,923	\$57,557				\$54,782
35-39	2,282	1,705	1,313	427	10			5,737
Tot. Pay	\$118,885,359	\$114,971,757	\$100,402,918	\$34,438,508	\$619,025			\$369,317,567
Avg. Pay	\$52,097	\$67,432	\$76,468	\$80,652	\$61,903			\$64,375
40-44	1,941	1,289	1,004	1,258	419	13		5,924
Tot. Pay	\$102,117,725	\$88,665,307	\$77,035,194	\$103,586,265	\$34,726,182	\$1,198,176		\$407,328,849
Avg. Pay	\$52,611	\$68,786	\$76,728	\$82,342	\$82,879	\$92,167		\$68,759
45-49	1,465	1,053	811	912	991	331	11	5,574
Tot. Pay	\$78,222,386	\$72,502,780	\$63,567,068	\$78,318,664	\$85,150,063	\$28,236,760	\$798,931	\$406,796,652
Avg. Pay	\$53,394	\$68,854	\$78,381	\$85,876	\$85,923	\$85,307	\$72,630	\$72,981
50-54	1,378	977	763	853	938	1,042	337	6,288
Tot. Pay	\$73,607,821	\$66,744,920	\$58,805,039	\$69,948,356	\$78,667,720	\$92,298,072	\$29,853,363	\$469,925,291
Avg. Pay	\$53,416	\$68,316	\$77,071	\$82,003	\$83,868	\$88,578	\$88,586	\$74,734
55-59	987	763	699	798	803	926	812	5,788
Tot. Pay	\$52,006,968	\$51,278,916	\$51,614,803	\$62,533,239	\$61,992,691	\$75,953,912	\$73,078,252	\$428,458,781
Avg. Pay	\$52,692	\$67,207	\$73,841	\$78,362	\$77,201	\$82,024	\$89,998	\$74,025
60-64	597	504	598	720	759	733	607	4,518
Tot. Pay	\$29,663,737	\$32,563,860	\$41,885,093	\$51,403,818	\$55,005,253	\$56,640,080	\$51,649,913	\$318,811,754
Avg. Pay	\$49,688	\$64,611	\$70,042	\$71,394	\$72,471	\$77,272	\$85,090	\$70,565
65-69	213	202	190	285	261	216	244	1,611
Tot. Pay	\$7,605,172	\$12,435,341	\$13,273,612	\$20,273,784	\$18,313,471	\$16,194,869	\$18,502,874	\$106,599,123
Avg. Pay	\$35,705	\$61,561	\$69,861	\$71,136	\$70,167	\$74,976	\$75,831	\$66,170
70 & Over	119	37	49	64	69	52	81	471
Tot. Pay	\$2,244,414	\$1,750,305	\$2,693,508	\$4,144,202	\$4,710,972	\$4,018,456	\$6,102,614	\$25,664,471
Avg. Pay	\$18,861	\$47,306	\$54,970	\$64,753	\$68,275	\$77,278	\$75,341	\$54,489
Totals	28,461	9,494	5,948	5,325	4,250	3,313	2,092	58,883
Tot. Pay	\$1,024,285,028	\$628,294,872	\$447,154,549	\$425,107,288	\$339,185,377	\$274,540,325	\$179,985,947	\$3,318,553,386
Avg. Pay	\$35,989	\$66,178	\$75,177	\$79,832	\$79,808	\$82,868	\$86,035	\$56,358



STATE DIVISION
Inactive Members in Defined Benefit Valuation
December 31, 2022
by Attained Age and Years of Service

Attained Ages	Years of Service to Valuation Date							Total Number
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
Under 20	906							906
20-24	34,182	3						34,185
25-29	56,751	310	2					57,063
30-34	72,989	1,238	66	1				74,294
35-39	42,607	1,554	335	40				44,536
40-44	36,539	1,388	498	194	25			38,644
45-49	26,910	1,062	488	213	68	9		28,750
50-54	18,930	1,084	537	282	162	54	1	21,050
55-59	10,661	1,061	664	325	206	52	6	12,975
60-64	8,263	966	675	327	168	40	8	10,447
65-69	5,671	396	228	114	47	10	6	6,472
70 & Over	2,736	124	33	21	7	3	2	2,926
Totals	317,145	9,186	3,526	1,517	683	168	23	332,248

SECTION VI

LOCAL GOVERNMENT DIVISION

LOCAL GOVERNMENT DIVISION

Data on active, inactive, retired and money purchase members that was used in the valuation is tabulated briefly below.

Active Members in Valuation December 31, 2022

Groups	Number	Annual Payroll	Average		
			Pay	Age	Service
Traditional Plan					
Men	78,512	\$ 4,107,447,968	\$ 52,316	46.8 yrs.	10.5 yrs.
Women	92,842	4,419,893,111	47,607	45.7	10.3
Traditional Plan Total	171,354	\$ 8,527,341,079	\$ 49,764	46.2 yrs.	10.4 yrs.
Combined Plan					
Men	1,878	\$ 125,774,297	\$ 66,972	49.3 yrs.	11.8 yrs.
Women	2,247	137,022,643	60,980	48.5	11.6
Combined Plan Total	4,125	\$ 262,796,940	\$ 63,708	48.9 yrs.	11.7 yrs.
Grand Total	175,479	\$ 8,790,138,019	\$ 50,092	46.2 yrs.	10.4 yrs.

Also included in the valuation were 374,783 inactive members and 14,931 members active in the money purchase plan.

Retired Members in Valuation December 31, 2022

Fund/Type of Allowance	Number	Current Monthly Benefits	Actuarial Liabilities
Traditional Plan			
A & PR Fund			
Superannuation Retirement	121,397	\$ 289,199,104	\$ 38,323,386,015
Disability Retirement	9,307	24,880,594	3,387,504,628
Money Purchase	3,612	1,420,555	137,975,188
Total A & PR Fund	134,316	\$ 315,500,253	\$ 41,848,865,831
Total SBF	9,374	10,799,193	1,315,468,101
Traditional Plan Total	143,690	\$ 326,299,446	\$ 43,164,333,932
Combined Plan			
A & PR Fund			
CB (DB)	418	\$ 200,984	\$ 28,416,985
CA (DC)	276	100,236	16,991,714
Total A & PR Fund	694	\$ 301,220	\$ 45,408,699
Combined Plan Total	694	\$ 301,220	\$ 45,408,699
Member Directed Plan			
A & PR Fund	307	\$ 137,011	\$ 19,216,567
Reserve for Future Adverse Experience			6,518,035
Member Directed Plan Total	307	\$ 137,011	\$ 25,734,602
Grand Total	144,691	\$ 326,737,677	\$ 43,235,477,233

LOCAL GOVERNMENT DIVISION
Employer Contributions to Support
Defined Benefit Retirement Allowances
Expressed as Percents of Active Member Payroll

Valuation Date December 31	2022			2021
Contributions for	2025			2024
Normal Cost	<u>Traditional Plan</u>	<u>Combined Plan</u>	<u>Traditional and Combined Plans</u>	<u>Traditional and Combined Plans</u>
Age and Service Allowances*	9.28 %	5.13 %	9.15 %	9.19 %
Disability Allowances	0.96 %	0.87 %	0.96 %	0.95 %
Survivor's Benefits	0.41 %	0.35 %	0.41 %	0.41 %
Separation Benefits	3.63 %	1.09 %	3.55 %	3.56 %
Total Normal Cost	14.28 %	7.44 %	14.07 %	14.11 %
(Member Contributions)	10.00 %	0.00 %	9.67 %	9.65 %
Employer Normal Cost	4.28 %	7.44 %	4.40 %	4.46 %
Unfunded Actuarial Accrued Liabilities				
Total Available Contribution	9.72 %	4.56 %	9.55 %	9.48 %
Amortization Years	13	0	13	14
Total Pension Employer Contribution Rate	14.00 %	12.00 %	13.95 %	13.94 %

* Includes contributions for administrative expenses.

The term "Amortization Years" refers to the period sufficient to produce the Total Employer Contribution Rate for retirement allowances and survivor benefits and incorporates all scheduled employer and member contribution rate increases and scheduled employer rate reallocations between the pension and retiree health programs.

LOCAL GOVERNMENT DIVISION Comparative Statement

Valuation Date December 31	Contribution Rate Effective January 1	Defined Benefit Active Members in Valuation				Computed Employer Contributions as % of Payroll				
		No.	Annual Payroll			Normal Cost	Unfunded Accrued Liability	Pension Total	Retiree Health	Grand Total
			Total	Average	Increase					
			(\$Millions)							
2008	2011	233,163	\$ 7,566	\$ 32,451	3.5 %	5.14 %	4.86 %	10.00 %	4.00 %	14.00 %
2009	2012	223,004	7,334	32,889	1.3 %	5.14 %	4.86 %	10.00 %	4.00 %	14.00 %
2010	2013	215,144	7,196	33,447	1.7 %	5.15 %	7.85 %	13.00 %	1.00 %	14.00 %
2011	2014	209,452	7,115	33,968	1.6 %	5.14 %	8.86 %	14.00 %	0.00 %	14.00 %
2012#	2015	208,188	7,061	33,918	(0.1)%	3.13 %	7.87 %	11.00 %	3.00 %	14.00 %
2013	2016	207,416	7,134	34,396	1.4 %	3.16 %	6.84 %	10.00 %	4.00 %	14.00 %
2014	2017	203,955	7,360	36,087	4.9 %	3.06 %	6.94 %	10.00 %	4.00 %	14.00 %
2015@	2018	202,779	7,505	37,008	2.6 %	3.91 %	10.09 %	14.00 %	0.00 %	14.00 %
2016	2019	203,767	7,800	38,279	3.4 %	3.85 %	10.15 %	14.00 %	0.00 %	14.00 %
2017	2020	201,953	7,929	39,263	2.6 %	3.89 %	10.11 %	14.00 %	0.00 %	14.00 %
2018^	2021	182,306	7,836	42,984	9.5 %	4.64 %	9.36 %	14.00 %	0.00 %	14.00 %
2019	2022	182,109	8,025	44,067	2.5 %	4.58 %	9.42 %	14.00 %	0.00 %	14.00 %
2020@	2023	172,805	7,941	45,954	4.3 %	4.49 %	9.51 %	14.00 %	0.00 %	14.00 %
2021	2024	172,602	8,231	47,686	3.8 %	4.46 %	9.48 %	13.94 %	0.06 %	14.00 %
2022	2025	175,479	8,790	50,092	5.1 %	4.40 %	9.55 %	13.95 %	0.05 %	14.00 %

After benefit changes.

@ Revised actuarial assumptions.

^ Reflects active members reclassified as inactive.

LOCAL GOVERNMENT DIVISION
Development of Unfunded Actuarial Accrued Liabilities
December 31, 2022

Actuarial Present Value	(1) Total Actuarial Present Value	Allocation by Entry Age	
		(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Allowances currently being paid from the Annuity & Pension Reserve Fund	\$ 41,920,009,132	\$ -	\$ 41,920,009,132
Allowances currently being paid from the Survivors Benefit Fund	1,315,468,101	-	1,315,468,101
Age and service allowances based on service rendered before and likely to be rendered after valuation date*	29,237,362,204	7,061,582,869	22,175,779,335
Disability allowances likely to be paid present active members who become permanently disabled	1,472,344,938	739,407,522	732,937,416
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	779,005,690	308,029,039	470,976,651
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members	4,783,200,970	2,858,672,104	1,924,528,866
Total	\$ 79,507,391,035	\$ 10,967,691,534	\$ 68,539,699,501
Funding Value of Assets			58,784,181,930
Unfunded Actuarial Accrued Liability			\$ 9,755,517,571

* Includes contributions for administrative expenses.

LOCAL GOVERNMENT DIVISION
Development of Unfunded Actuarial Accrued Liabilities
Comparative Statement
(\$ in Millions Except Averages)

Dec. 31	Defined Benefit Active Payroll		Active and Inactive Member Accrued Liabilities for Retirement Allowances				Unfunded /Payroll
			Computed Total	Valuation Assets	Unfunded	Amortization Years	
	Total	Average					
2008	\$ 7,566	\$ 32,451	\$ 21,590	\$ 11,561	\$ 10,029	N/A	1.33
2009	7,334	32,889	21,620	11,599	10,021	N/A	1.37
2010@	7,196	33,447	21,668	13,212	8,456	22	1.18
2011	7,115	33,968	21,631	11,418	10,213	25	1.44
2012#	7,061	33,918	19,583	11,981	7,602	15	1.08
2013	7,134	34,396	19,586	11,440	8,146	20	1.14
2014	7,360	36,087	19,656	13,066	6,590	13	0.90
2015@	7,505	37,008	20,867	10,620	10,247	16	1.37
2016	7,800	38,279	21,422	10,699	10,723	17	1.37
2017	7,929	39,263	21,605	11,273	10,332	16	1.30
2018	7,836	42,984	22,942	9,874	13,068	24	1.67
2019	8,025	44,067	23,366	11,334	12,032	20	1.50
2020@	7,941	45,954	24,008	12,955	11,053	18	1.39
2021	8,231	47,686	24,547	14,840	9,707	14	1.18
2022	8,790	50,092	25,314	15,558	9,756	13	1.11

After benefit changes.

@ Revised actuarial assumptions.

While no one or two numeric indices can fully describe the financial condition of a retirement plan, the ratio of unfunded actuarial accrued liabilities divided by active member payroll (“UNFUNDED/PAYROLL” above) is significant. Unfunded accrued liabilities represent plan debt, while active member payroll represents the plan’s capacity to collect contributions to pay toward debt --- thus the ratio is a relative index of condition. The lower the ratio, the greater the financial strength, and vice-versa.

LOCAL GOVERNMENT DIVISION
Male Active Members in Defined Benefit Valuation
December 31, 2022
by Attained Age and Years of Service

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19	1,777							1,777
Tot. Pay	\$24,387,143							\$24,387,143
Avg. Pay	\$13,724							\$13,724
20-24	4,139	68						4,207
Tot. Pay	\$128,561,740	\$3,425,653						\$131,987,393
Avg. Pay	\$31,061	\$50,377						\$31,373
25-29	4,621	1,158	43					5,822
Tot. Pay	\$192,688,305	\$61,749,839	\$2,545,097					\$256,983,241
Avg. Pay	\$41,698	\$53,325	\$59,188					\$44,140
30-34	3,926	2,340	652	54				6,972
Tot. Pay	\$176,780,428	\$135,865,743	\$41,110,968	\$3,652,651				\$357,409,790
Avg. Pay	\$45,028	\$58,062	\$63,054	\$67,642				\$51,264
35-39	3,258	2,165	1,390	826	49			7,688
Tot. Pay	\$148,272,872	\$131,005,537	\$91,297,222	\$56,484,163	\$3,302,933			\$430,362,727
Avg. Pay	\$45,510	\$60,511	\$65,681	\$68,383	\$67,407			\$55,979
40-44	2,855	1,836	1,210	1,475	818	62		8,256
Tot. Pay	\$123,590,357	\$108,774,867	\$79,862,805	\$104,560,811	\$57,949,202	\$4,366,143		\$479,104,185
Avg. Pay	\$43,289	\$59,246	\$66,002	\$70,889	\$70,843	\$70,422		\$58,031
45-49	2,317	1,545	1,008	1,340	1,582	617	39	8,448
Tot. Pay	\$97,785,861	\$87,504,740	\$65,208,331	\$93,696,152	\$122,861,206	\$46,908,402	\$3,085,569	\$517,050,261
Avg. Pay	\$42,204	\$56,637	\$64,691	\$69,923	\$77,662	\$76,027	\$79,117	\$61,204
50-54	2,393	1,523	1,045	1,259	1,684	1,634	535	10,073
Tot. Pay	\$97,449,560	\$86,318,832	\$65,708,650	\$87,384,118	\$128,117,841	\$128,894,517	\$42,287,780	\$636,161,298
Avg. Pay	\$40,723	\$56,677	\$62,879	\$69,408	\$76,079	\$78,883	\$79,043	\$63,155
55-59	2,193	1,313	1,004	1,177	1,492	1,436	1,083	9,698
Tot. Pay	\$82,738,027	\$70,140,181	\$58,245,740	\$74,495,679	\$107,540,857	\$112,604,029	\$88,695,662	\$594,460,175
Avg. Pay	\$37,728	\$53,420	\$58,014	\$63,293	\$72,078	\$78,415	\$81,898	\$61,297
60-64	1,969	1,108	921	1,082	1,315	1,222	983	8,600
Tot. Pay	\$64,572,848	\$54,595,926	\$51,310,017	\$66,542,184	\$88,980,286	\$86,573,126	\$78,144,006	\$490,718,393
Avg. Pay	\$32,795	\$49,274	\$55,711	\$61,499	\$67,666	\$70,845	\$79,495	\$57,060
65-69	1,627	700	541	532	546	463	507	4,916
Tot. Pay	\$33,648,006	\$28,310,772	\$24,849,939	\$28,004,593	\$33,815,604	\$31,923,988	\$36,282,056	\$216,834,958
Avg. Pay	\$20,681	\$40,444	\$45,933	\$52,640	\$61,933	\$68,950	\$71,562	\$44,108
70 & Over	1,795	763	386	325	221	182	261	3,933
Tot. Pay	\$26,255,194	\$16,357,527	\$11,322,337	\$11,357,750	\$8,938,084	\$8,255,031	\$15,276,778	\$97,762,701
Avg. Pay	\$14,627	\$21,438	\$29,332	\$34,947	\$40,444	\$45,357	\$58,532	\$24,857
Totals	32,870	14,519	8,200	8,070	7,707	5,616	3,408	80,390
Tot. Pay	\$1,196,730,341	\$784,049,617	\$491,461,106	\$526,178,101	\$551,506,013	\$419,525,236	\$263,771,851	\$4,233,222,265
Avg. Pay	\$36,408	\$54,002	\$59,934	\$65,202	\$71,559	\$74,702	\$77,398	\$52,659

LOCAL GOVERNMENT DIVISION
Female Active Members in Defined Benefit Valuation
December 31, 2022
by Attained Age and Years of Service

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19	1,923							1,923
Tot. Pay	\$22,736,984							\$22,736,984
Avg. Pay	\$11,824							\$11,824
20-24	4,675	36						4,711
Tot. Pay	\$128,690,668	\$1,253,767						\$129,944,435
Avg. Pay	\$27,527	\$34,827						\$27,583
25-29	6,360	1,133	26					7,519
Tot. Pay	\$252,731,470	\$53,733,916	\$1,041,396					\$307,506,782
Avg. Pay	\$39,738	\$47,426	\$40,054					\$40,897
30-34	5,427	3,186	642	38				9,293
Tot. Pay	\$222,881,182	\$168,976,742	\$34,430,659	\$1,922,442				\$428,211,025
Avg. Pay	\$41,069	\$53,037	\$53,630	\$50,591				\$46,079
35-39	4,192	2,657	1,578	717	50			9,194
Tot. Pay	\$174,680,110	\$142,143,200	\$92,750,223	\$42,167,741	\$2,939,028			\$454,680,302
Avg. Pay	\$41,670	\$53,498	\$58,777	\$58,811	\$58,781			\$49,454
40-44	3,836	2,346	1,407	1,811	844	64		10,308
Tot. Pay	\$152,780,740	\$124,902,986	\$86,800,475	\$116,640,196	\$53,799,063	\$3,830,310		\$538,753,770
Avg. Pay	\$39,828	\$53,241	\$61,692	\$64,407	\$63,743	\$59,849		\$52,266
45-49	3,361	1,899	1,140	1,517	1,998	750	48	10,713
Tot. Pay	\$132,697,884	\$99,471,596	\$66,403,647	\$98,449,994	\$134,130,362	\$50,748,466	\$2,802,060	\$584,704,009
Avg. Pay	\$39,482	\$52,381	\$58,249	\$64,898	\$67,132	\$67,665	\$58,376	\$54,579
50-54	3,235	2,019	1,256	1,525	1,986	1,942	629	12,592
Tot. Pay	\$124,464,260	\$100,678,304	\$69,975,324	\$91,326,384	\$131,826,628	\$136,719,104	\$43,059,230	\$698,049,234
Avg. Pay	\$38,474	\$49,865	\$55,713	\$59,886	\$66,378	\$70,401	\$68,457	\$55,436
55-59	2,709	1,720	1,200	1,486	1,810	1,643	1,224	11,792
Tot. Pay	\$97,349,799	\$81,269,915	\$62,792,351	\$82,440,723	\$111,892,735	\$109,305,022	\$86,349,278	\$631,399,823
Avg. Pay	\$35,936	\$47,250	\$52,327	\$55,478	\$61,819	\$66,528	\$70,547	\$53,545
60-64	1,931	1,476	1,038	1,467	1,740	1,473	1,012	10,137
Tot. Pay	\$57,936,117	\$64,247,972	\$48,661,978	\$76,719,644	\$100,076,655	\$87,826,691	\$69,190,254	\$504,659,311
Avg. Pay	\$30,003	\$43,528	\$46,881	\$52,297	\$57,515	\$59,624	\$68,370	\$49,784
65-69	1,185	614	448	617	678	546	418	4,506
Tot. Pay	\$26,346,897	\$23,836,689	\$19,269,496	\$28,464,931	\$34,612,854	\$31,119,920	\$26,596,935	\$190,247,722
Avg. Pay	\$22,234	\$38,822	\$43,012	\$46,134	\$51,051	\$56,996	\$63,629	\$42,221
70 & Over	1,040	317	222	231	210	179	202	2,401
Tot. Pay	\$14,778,704	\$6,378,108	\$6,719,862	\$8,967,190	\$9,003,135	\$8,505,369	\$11,669,989	\$66,022,357
Avg. Pay	\$14,210	\$20,120	\$30,270	\$38,819	\$42,872	\$47,516	\$57,772	\$27,498
Totals	39,874	17,403	8,957	9,409	9,316	6,597	3,533	95,089
Tot. Pay	\$1,408,074,815	\$866,893,195	\$488,845,411	\$547,099,245	\$578,280,460	\$428,054,882	\$239,667,746	\$4,556,915,754
Avg. Pay	\$35,313	\$49,813	\$54,577	\$58,146	\$62,074	\$64,886	\$67,837	\$47,923



LOCAL GOVERNMENT DIVISION
Inactive Members in Defined Benefit Valuation
December 31, 2022
by Attained Age and Years of Service

Attained Ages	Years of Service to Valuation Date							Total Number
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
Under 20	5,175							5,175
20-24	36,418	6						36,424
25-29	42,217	383						42,600
30-34	48,358	1,434	117					49,909
35-39	43,129	1,939	484	55				45,607
40-44	41,370	1,834	770	345	60	1		44,380
45-49	35,144	1,786	807	491	194	18		38,440
50-54	29,565	2,070	1,078	639	370	122	10	33,854
55-59	22,184	2,123	1,290	711	477	122	16	26,923
60-64	20,289	2,037	1,349	764	447	112	17	25,015
65-69	15,836	1,019	540	283	121	35	17	17,851
70 & Over	7,981	384	128	63	27	10	12	8,605
Totals	347,666	15,015	6,563	3,351	1,696	420	72	374,783

SECTION VII

PUBLIC SAFETY DIVISION

PUBLIC SAFETY DIVISION

Data on active, inactive, retired and money purchase members that was used in the valuation is tabulated briefly below.

Active Members in Valuation December 31, 2022

Groups	Number	Annual Payroll	Average		
			Pay	Age	Service
Men	34	\$ 1,764,258	\$ 51,890	44.9 yrs.	10.7 yrs.
Women	11	556,600	50,600	42.6	8.6
Totals	45	\$ 2,320,858	\$ 51,575	44.3 yrs.	10.2 yrs.

Also included in the valuation were 63 inactive members and 2 members active in the money purchase plan.

Retired Members in Valuation December 31, 2022

Fund/Type of Allowance	Number	Current Monthly Benefits	Actuarial Liabilities
A & PR Fund			
Superannuation Retirement	33	\$ 79,320	\$ 12,097,298
Disability Retirement	34	129,649	18,857,570
Money Purchase	0	0	0
Total A & PR Fund	67	\$ 208,969	\$ 30,954,868
Total SBF	118	203,574	27,172,525
Grand Total	185	\$ 412,543	\$ 58,127,393

PUBLIC SAFETY DIVISION
Employer Contributions to Support
Retirement Allowances
Expressed as Percents of Active Member Payroll

Valuation Date December 31	2022	2021
Contributions for	2025	2024
Normal Cost		
Age and Service Allowances*	10.08 %	9.86 %
Disability Allowances	3.21 %	2.87 %
Survivor's Benefits	0.66 %	0.63 %
Separation Benefits	4.59 %	4.71 %
Total Normal Cost	18.54 %	18.07 %
(Member Contributions)	12.00 %	12.00 %
Employer Normal Cost	6.54 %	6.07 %
Unfunded Actuarial Accrued Liabilities		
Total Available Contribution	11.56 %	12.03 %
Amortization Years	N/A	N/A
Total Pension Employer Contribution Rate	18.10 %	18.10 %

* Includes contributions for administrative expenses.

N/A The total pension contribution rate is not sufficient to amortize the unfunded actuarial accrued liabilities.

The term "Amortization Years" refers to the period sufficient to produce the Total Employer Contribution Rate for retirement allowances and survivor benefits and incorporates all scheduled employer and member contribution rate increases and scheduled employer rate reallocations between the pension and retiree health programs.

PUBLIC SAFETY DIVISION Comparative Statement

Valuation Date December 31	Contribution Rate Effective January 1	Active Members in Valuation				Computed Employer Contributions as % of Payroll				
		No.	Annual Payroll			Normal Cost	Unfunded Accrued Liability	Pension Total	Retiree Health	Grand Total
			Total	Average	Increase					
			(\$Thousands)							
2008	2011	127	\$ 6,219	\$ 48,969	4.2 %	8.32 %	5.78 %	14.10 %	4.00 %	18.10 %
2009	2012	94	4,061	43,205	(11.8)%	7.77 %	6.33 %	14.10 %	4.00 %	18.10 %
2010@	2013	88	3,650	41,480	(4.0)%	6.22 %	10.88 %	17.10 %	1.00 %	18.10 %
2011	2014	84	3,629	43,202	4.2 %	6.12 %	11.98 %	18.10 %	0.00 %	18.10 %
2012#	2015	87	3,751	43,119	(0.2)%	3.96 %	11.14 %	15.10 %	3.00 %	18.10 %
2013	2016	85	3,684	43,338	0.5 %	4.11 %	9.99 %	14.10 %	4.00 %	18.10 %
2014	2017	86	3,823	44,452	2.6 %	4.16 %	9.94 %	14.10 %	4.00 %	18.10 %
2015@	2018	79	3,620	45,817	3.1 %	5.24 %	12.86 %	18.10 %	0.00 %	18.10 %
2016	2019	76	3,401	44,752	(2.3)%	5.45 %	12.65 %	18.10 %	0.00 %	18.10 %
2017	2020	75	3,640	48,539	8.5 %	5.42 %	12.68 %	18.10 %	0.00 %	18.10 %
2018^	2021	61	3,004	49,253	1.5 %	6.51 %	11.59 %	18.10 %	0.00 %	18.10 %
2019	2022	59	3,058	51,826	5.2 %	6.58 %	11.52 %	18.10 %	0.00 %	18.10 %
2020@	2023	55	2,849	51,801	(0.1)%	5.70 %	12.40 %	18.10 %	0.00 %	18.10 %
2021	2024	42	2,211	52,646	1.6 %	6.07 %	12.03 %	18.10 %	0.00 %	18.10 %
2022	2025	45	2,321	51,575	(2.0)%	6.54 %	11.56 %	18.10 %	0.00 %	18.10 %

After benefit changes.

@ Revised actuarial assumptions.

^ Reflects active members reclassified as inactive.

PUBLIC SAFETY DIVISION
Development of Unfunded Actuarial Accrued Liabilities
December 31, 2022

Actuarial Present Value	(1) Total Actuarial Present Value	Allocation by Entry Age	
		(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Allowances currently being paid from the Annuity & Pension Reserve Fund	\$ 30,954,868	\$ -	\$ 30,954,868
Allowances currently being paid from the Survivors Benefit Fund	27,172,525	-	27,172,525
Age and service allowances based on service rendered before and likely to be rendered after valuation date*	7,788,393	1,793,372	5,995,021
Disability allowances likely to be paid present active members who become permanently disabled	1,191,156	568,424	622,732
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	265,229	112,346	152,883
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members	2,267,861	835,879	1,431,982
Total	\$ 69,640,032	\$ 3,310,021	\$ 66,330,011
Funding Value of Assets			29,542,406
Unfunded Actuarial Accrued Liability			\$ 36,787,605

* Includes contributions for administrative expenses.

PUBLIC SAFETY DIVISION
Development of Unfunded Actuarial Accrued Liabilities
Comparative Statement
(\$ in Millions Except Averages)

Dec. 31	Defined Benefit Active Payroll		Active and Inactive Member Accrued Liabilities for Retirement Allowances				Unfunded /Payroll
			Computed	Valuation	Unfunded	Amortization	
	Total	Average	Total	Assets		Years	
2008	\$ 6	\$48,969	\$18	\$ 9	\$ 9	79	1.50
2009	4	43,205	12	0	12	N/A	3.00
2010@	4	41,480	7	(7)	14	N/A	3.50
2011	4	43,202	8	(1)	9	45	2.25
2012#	4	43,119	7	(14)	21	N/A	5.25
2013	4	43,338	7	1	6	19	1.50
2014	4	44,452	8	(15)	23	N/A	5.75
2015@	4	45,817	8	(4)	12	82	3.00
2016	3	44,752	8	(7)	15	N/A	5.00
2017	4	48,539	9	(9)	18	N/A	4.50
2018	3	49,253	9	(15)	24	N/A	8.00
2019	3	51,826	10	(16)	26	N/A	8.67
2020@	3	51,801	8	(23)	31	N/A	10.33
2021	2	52,646	8	(25)	33	N/A	16.50
2022	2	51,575	8	(29)	37	N/A	18.50

After benefit changes.

N/A The total pension contribution rate is not sufficient to amortize the unfunded actuarial accrued liabilities.

@ Revised actuarial assumptions.

While no one or two numeric indices can fully describe the financial condition of a retirement plan, the ratio of unfunded actuarial accrued liabilities divided by active member payroll (“UNFUNDED/PAYROLL” above) is significant. Unfunded accrued liabilities represent plan debt, while active member payroll represents the plan’s capacity to collect contributions to pay toward debt --- thus the ratio is a relative index of condition. The lower the ratio, the greater the financial strength, and vice-versa.

PUBLIC SAFETY DIVISION
Male Active Members in Valuation December 31, 2022
by Attained Age and Years of Service

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19								
Tot. Pay								
Avg. Pay								
20-24	1							1
Tot. Pay	\$62,841							\$62,841
Avg. Pay	\$62,841							\$62,841
25-29	2							2
Tot. Pay	\$103,960							\$103,960
Avg. Pay	\$51,980							\$51,980
30-34	5	1						6
Tot. Pay	\$229,986	\$34,073						\$264,059
Avg. Pay	\$45,997	\$34,073						\$44,010
35-39	3							3
Tot. Pay	\$137,908							\$137,908
Avg. Pay	\$45,969							\$45,969
40-44	2							2
Tot. Pay	\$72,166							\$72,166
Avg. Pay	\$36,083							\$36,083
45-49		1		2	3			6
Tot. Pay		\$43,658		\$118,279	\$214,173			\$376,110
Avg. Pay		\$43,658		\$59,140	\$71,391			\$62,685
50-54	2		1		1	2		6
Tot. Pay	\$72,240		\$43,411		\$45,810	\$116,303		\$277,764
Avg. Pay	\$36,120		\$43,411		\$45,810	\$58,152		\$46,294
55-59	2			1	2		1	6
Tot. Pay	\$67,914			\$51,859	\$148,572		\$78,844	\$347,189
Avg. Pay	\$33,957			\$51,859	\$74,286		\$78,844	\$57,865
60-64				1				1
Tot. Pay				\$78,577				\$78,577
Avg. Pay				\$78,577				\$78,577
65-69		1						1
Tot. Pay		\$43,684						\$43,684
Avg. Pay		\$43,684						\$43,684
70 & Over								
Tot. Pay								
Avg. Pay								
Totals	17	3	1	4	6	2	1	34
Tot. Pay	\$747,015	\$121,415	\$43,411	\$248,715	\$408,555	\$116,303	\$78,844	\$1,764,258
Avg. Pay	\$43,942	\$40,472	\$43,411	\$62,179	\$68,093	\$58,152	\$78,844	\$51,890



PUBLIC SAFETY DIVISION
Female Active Members in Valuation December 31, 2022
by Attained Age and Years of Service

Attained Ages	Years of Service To Valuation Date						Total	
	0-4	5-9	10-14	15-19	20-24	25-29		30+
15-19								
Tot. Pay								
Avg. Pay								
20-24	1							1
Tot. Pay	\$61,797							\$61,797
Avg. Pay	\$61,797							\$61,797
25-29	1							1
Tot. Pay	\$44,879							\$44,879
Avg. Pay	\$44,879							\$44,879
30-34								
Tot. Pay								
Avg. Pay								
35-39	1			1				2
Tot. Pay	\$42,102			\$45,202				\$87,304
Avg. Pay	\$42,102			\$45,202				\$43,652
40-44	1	1						2
Tot. Pay	\$38,052	\$48,507						\$86,559
Avg. Pay	\$38,052	\$48,507						\$43,280
45-49		2						2
Tot. Pay		\$89,679						\$89,679
Avg. Pay		\$44,840						\$44,840
50-54	1						1	2
Tot. Pay	\$36,324						\$106,320	\$142,644
Avg. Pay	\$36,324						\$106,320	\$71,322
55-59								
Tot. Pay								
Avg. Pay								
60-64			1					1
Tot. Pay			\$43,738					\$43,738
Avg. Pay			\$43,738					\$43,738
65-69								
Tot. Pay								
Avg. Pay								
70 & Over								
Tot. Pay								
Avg. Pay								
Totals	5	3	1	1			1	11
Tot. Pay	\$223,154	\$138,186	\$43,738	\$45,202			\$106,320	\$556,600
Avg. Pay	\$44,631	\$46,062	\$43,738	\$45,202			\$106,320	\$50,600

PUBLIC SAFETY DIVISION
Inactive Members in Valuation December 31, 2022
by Attained Age and Years of Service

Attained Ages	Years of Service to Valuation Date							Total Number
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
Under 20								
20-24								
25-29	15							15
30-34	9	1						10
35-39	10	1	1					12
40-44	5	1						6
45-49	7	1					2	10
50-54	3						2	5
55-59	1		1					2
60-64								
65-69	1		1					2
70 & Over	1							1
Totals	52	4	3		4			63

SECTION VIII

LAW ENFORCEMENT DIVISION

LAW ENFORCEMENT DIVISION

Data on active, inactive, retired and money purchase members that was used in the valuation is tabulated briefly below.

Active Members in Valuation December 31, 2022

Groups	Number	Annual Payroll	Average		
			Pay	Age	Service
Men	6,866	\$ 548,267,173	\$ 79,852	41.3 yrs.	14.1 yrs.
Women	995	74,853,838	75,230	40.0	12.9
Totals	7,861	\$ 623,121,011	\$ 79,267	41.1 yrs.	14.0 yrs.

Also included in the valuation were 1,611 inactive members and 32 members active in the money purchase plan.

Retired Members in Valuation December 31, 2022

Fund/Type of Allowance	Number	Current Monthly Benefits	Actuarial Liabilities
A & PR Fund			
Superannuation Retirement	3,929	\$ 15,682,953	\$ 2,418,575,488
Disability Retirement	1,545	5,664,321	819,779,817
Money Purchase	0	0	0
Total A & PR Fund	5,474	\$ 21,347,274	\$ 3,238,355,305
Total SBF	453	626,469	81,659,178
Grand Total	5,927	\$ 21,973,743	\$ 3,320,014,483

LAW ENFORCEMENT DIVISION
Employer Contributions to Support
Retirement Allowances
Expressed as Percents of Active Member Payroll

Valuation Date December 31	2022	2021
Contributions for	2025	2024
Normal Cost		
Age and Service Allowances*	14.29 %	14.37 %
Disability Allowances	2.95 %	2.92 %
Survivor's Benefits	0.69 %	0.69 %
Separation Benefits	2.45 %	2.45 %
Total Normal Cost	20.38 %	20.43 %
(Member Contributions)	13.00 %	13.00 %
Employer Normal Cost	7.38 %	7.43 %
Unfunded Actuarial Accrued Liabilities		
Total Available Contribution	10.72 %	10.67 %
Amortization Years	7	7
Total Pension Employer Contribution Rate	18.10 %	18.10 %

** Includes contributions for administrative expenses.*

The term "Amortization Years" refers to the period sufficient to produce the Total Employer Contribution Rate for retirement allowances and survivor benefits and incorporates all scheduled employer and member contribution rate increases and scheduled employer rate reallocations between the pension and retiree health programs.

LAW ENFORCEMENT DIVISION Comparative Statement

Valuation Date December 31	Contribution Rate Effective January 1	Active Members in Valuation				Computed Employer Contributions as % of Payroll				
		No.	Annual Payroll			Normal Cost	Unfunded Accrued Liability	Pension Total	Retiree Health	Grand Total
			Total	Average	Increase					
			(\$Thousands)							
2008	2011	8,173	\$ 448,694	\$ 54,900	3.8 %	8.43 %	5.67 %	14.10 %	4.00 %	18.10 %
2009	2012	8,006	447,232	55,862	1.8 %	8.16 %	5.94 %	14.10 %	4.00 %	18.10 %
2010@	2013	7,702	438,830	56,976	2.0 %	7.56 %	9.54 %	17.10 %	1.00 %	18.10 %
2011	2014	7,545	437,605	57,999	1.8 %	7.18 %	10.92 %	18.10 %	0.00 %	18.10 %
2012#	2015	7,470	438,500	58,702	1.2 %	5.43 %	9.67 %	15.10 %	3.00 %	18.10 %
2013	2016	7,549	447,612	59,294	1.0 %	5.44 %	8.66 %	14.10 %	4.00 %	18.10 %
2014	2017	7,618	463,653	60,863	2.6 %	5.34 %	8.76 %	14.10 %	4.00 %	18.10 %
2015@	2018	7,779	481,296	61,871	1.7 %	6.70 %	11.40 %	18.10 %	0.00 %	18.10 %
2016	2019	7,916	511,457	64,610	4.4 %	6.75 %	11.35 %	18.10 %	0.00 %	18.10 %
2017	2020	8,039	528,004	65,680	1.7 %	6.79 %	11.31 %	18.10 %	0.00 %	18.10 %
2018^	2021	8,015	543,649	67,829	3.3 %	8.09 %	10.01 %	18.10 %	0.00 %	18.10 %
2019	2022	8,062	564,250	69,989	3.2 %	8.05 %	10.05 %	18.10 %	0.00 %	18.10 %
2020@	2023	8,005	577,952	72,199	3.2 %	7.43 %	10.67 %	18.10 %	0.00 %	18.10 %
2021	2024	7,931	592,514	74,709	3.5 %	7.43 %	10.67 %	18.10 %	0.00 %	18.10 %
2022	2025	7,861	623,121	79,267	6.1 %	7.38 %	10.72 %	18.10 %	0.00 %	18.10 %

After benefit changes.

@ Revised actuarial assumptions.

^ Reflects active members reclassified as inactive.

LAW ENFORCEMENT DIVISION
Development of Unfunded Actuarial Accrued Liabilities
December 31, 2022

Actuarial Present Value	(1) Total Actuarial Present Value	Allocation by Entry Age	
		(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Allowances currently being paid from the Annuity & Pension Reserve Fund	\$ 3,238,355,305	\$ -	\$ 3,238,355,305
Allowances currently being paid from the Survivors Benefit Fund	81,659,178	-	81,659,178
Age and service allowances based on service rendered before and likely to be rendered after valuation date*	2,926,815,448	921,998,876	2,004,816,572
Disability allowances likely to be paid present active members who become permanently disabled	347,326,023	187,574,990	159,751,033
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	90,195,949	43,969,277	46,226,672
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members	201,530,503	157,578,055	43,952,448
Total	\$ 6,885,882,406	\$ 1,311,121,198	\$ 5,574,761,208
Funding Value of Assets			5,111,865,481
Unfunded Actuarial Accrued Liability			\$ 462,895,727

* Includes contributions for administrative expenses.

LAW ENFORCEMENT DIVISION
Development of Unfunded Actuarial Accrued Liabilities
Comparative Statement
(\$ in Millions Except Averages)

Dec. 31	Defined Benefit Active Payroll		Active and Inactive Member Accrued Liabilities for Retirement Allowances				Unfunded /Payroll
			Computed	Valuation	Unfunded	Amortization	
	Total	Average	Total	Assets		Years	
2008	\$449	\$54,900	\$ 1,500	\$ 771	\$ 729	N/A	1.62
2009	447	55,862	1,534	807	727	N/A	1.63
2010@	439	56,976	1,542	966	576	19	1.31
2011	438	57,999	1,546	813	733	23	1.67
2012#	439	58,702	1,480	945	535	14	1.22
2013	448	59,294	1,510	981	529	15	1.18
2014	464	60,863	1,550	1,062	488	13	1.05
2015@	481	61,871	1,706	1,087	619	13	1.29
2016	511	64,610	1,818	1,172	646	13	1.26
2017	528	65,680	1,871	1,258	613	12	1.16
2018	544	67,829	2,048	1,219	829	20	1.52
2019	564	69,989	2,156	1,425	731	16	1.30
2020@	578	72,199	2,192	1,586	606	11	1.05
2021	593	74,709	2,195	1,732	463	7	0.78
2022	623	79,267	2,255	1,792	463	7	0.74

After benefit changes.

@ Revised actuarial assumptions.

While no one or two numeric indices can fully describe the financial condition of a retirement plan, the ratio of unfunded actuarial accrued liabilities divided by active member payroll (“UNFUNDED/PAYROLL” above) is significant. Unfunded accrued liabilities represent plan debt, while active member payroll represents the plan’s capacity to collect contributions to pay toward debt --- thus the ratio is a relative index of condition. The lower the ratio, the greater the financial strength, and vice-versa.

LAW ENFORCEMENT DIVISION

Male Active Members in Valuation December 31, 2022 by Attained Age and Years of Service

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19								
Tot. Pay								
Avg. Pay								
20-24	243	5						248
Tot. Pay	\$13,203,859	\$322,883						\$13,526,742
Avg. Pay	\$54,337	\$64,577						\$54,543
25-29	538	232	3					773
Tot. Pay	\$33,628,346	\$16,630,018	\$241,655					\$50,500,019
Avg. Pay	\$62,506	\$71,681	\$80,552					\$65,330
30-34	322	583	162	4				1,071
Tot. Pay	\$21,790,801	\$45,810,217	\$13,073,370	\$375,299				\$81,049,687
Avg. Pay	\$67,673	\$78,577	\$80,700	\$93,825				\$75,677
35-39	177	288	343	172	7			987
Tot. Pay	\$11,465,589	\$22,328,396	\$28,681,433	\$14,488,669	\$692,145			\$77,656,232
Avg. Pay	\$64,777	\$77,529	\$83,619	\$84,236	\$98,878			\$78,679
40-44	74	117	171	365	220	3		950
Tot. Pay	\$4,974,431	\$8,983,865	\$13,818,547	\$31,184,798	\$20,401,540	\$291,793		\$79,654,974
Avg. Pay	\$67,222	\$76,785	\$80,810	\$85,438	\$92,734	\$97,264		\$83,847
45-49	61	75	100	190	513	198	1	1,138
Tot. Pay	\$3,950,737	\$5,506,538	\$8,609,976	\$16,105,637	\$45,925,145	\$18,095,595	\$100,555	\$98,294,183
Avg. Pay	\$64,766	\$73,421	\$86,100	\$84,767	\$89,523	\$91,392	\$100,555	\$86,375
50-54	39	43	52	130	262	448	105	1,079
Tot. Pay	\$2,245,902	\$3,247,277	\$4,056,509	\$10,734,875	\$22,909,284	\$41,472,681	\$10,053,507	\$94,720,035
Avg. Pay	\$57,587	\$75,518	\$78,010	\$82,576	\$87,440	\$92,573	\$95,748	\$87,785
55-59	20	20	25	33	111	144	71	424
Tot. Pay	\$1,077,526	\$1,327,239	\$1,889,191	\$2,752,697	\$9,587,716	\$12,698,569	\$6,861,434	\$36,194,372
Avg. Pay	\$53,876	\$66,362	\$75,568	\$83,415	\$86,376	\$88,185	\$96,640	\$85,364
60-64	4	3	10	18	33	48	44	160
Tot. Pay	\$257,675	\$183,762	\$788,872	\$1,456,137	\$3,069,935	\$3,810,443	\$4,117,878	\$13,684,702
Avg. Pay	\$64,419	\$61,254	\$78,887	\$80,897	\$93,028	\$79,384	\$93,588	\$85,529
65-69		1	1	2	5	9	11	29
Tot. Pay		\$75,157	\$73,388	\$210,530	\$428,318	\$689,543	\$1,039,479	\$2,516,415
Avg. Pay		\$75,157	\$73,388	\$105,265	\$85,664	\$76,616	\$94,498	\$86,773
70 & Over		2		1	2	1	1	7
Tot. Pay		\$117,017		\$47,840	\$140,081	\$76,046	\$88,828	\$469,812
Avg. Pay		\$58,509		\$47,840	\$70,041	\$76,046	\$88,828	\$67,116
Totals	1,478	1,369	867	915	1,153	851	233	6,866
Tot. Pay	\$92,594,866	\$104,532,369	\$71,232,941	\$77,356,482	\$103,154,164	\$77,134,670	\$22,261,681	\$548,267,173
Avg. Pay	\$62,649	\$76,357	\$82,160	\$84,543	\$89,466	\$90,640	\$95,544	\$79,852

LAW ENFORCEMENT DIVISION

Female Active Members in Valuation December 31, 2022 by Attained Age and Years of Service

Attained Ages	Years of Service To Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
15-19								
Tot. Pay								
Avg. Pay								
20-24	34	2						36
Tot. Pay	\$1,929,489	\$160,439						\$2,089,928
Avg. Pay	\$56,750	\$80,220						\$58,054
25-29	116	48						164
Tot. Pay	\$7,084,783	\$3,437,235						\$10,522,018
Avg. Pay	\$61,076	\$71,609						\$64,159
30-34	55	88	20					163
Tot. Pay	\$3,590,726	\$6,650,513	\$1,557,350					\$11,798,589
Avg. Pay	\$65,286	\$75,574	\$77,868					\$72,384
35-39	22	35	50	19	1			127
Tot. Pay	\$1,457,163	\$2,734,261	\$4,195,815	\$1,433,916	\$86,033			\$9,907,188
Avg. Pay	\$66,235	\$78,122	\$83,916	\$75,469	\$86,033			\$78,009
40-44	18	22	24	41	31			136
Tot. Pay	\$1,153,743	\$1,563,698	\$2,022,648	\$3,443,802	\$2,525,873			\$10,709,764
Avg. Pay	\$64,097	\$71,077	\$84,277	\$83,995	\$81,480			\$78,748
45-49	9	13	12	25	62	30		151
Tot. Pay	\$559,310	\$910,856	\$908,041	\$2,101,298	\$5,048,129	\$2,622,658		\$12,150,292
Avg. Pay	\$62,146	\$70,066	\$75,670	\$84,052	\$81,421	\$87,422		\$80,466
50-54	2	10	13	16	31	56	8	136
Tot. Pay	\$89,896	\$759,213	\$933,818	\$1,369,187	\$2,554,287	\$4,764,045	\$750,631	\$11,221,077
Avg. Pay	\$44,948	\$75,921	\$71,832	\$85,574	\$82,396	\$85,072	\$93,829	\$82,508
55-59	1	2	2	7	21	17	10	60
Tot. Pay	\$8,333	\$213,004	\$197,219	\$533,604	\$1,552,889	\$1,391,967	\$896,145	\$4,793,161
Avg. Pay	\$8,333	\$106,502	\$98,610	\$76,229	\$73,947	\$81,880	\$89,615	\$79,886
60-64			3	1	3	8	2	17
Tot. Pay			\$226,567	\$72,929	\$262,220	\$606,168	\$134,909	\$1,302,793
Avg. Pay			\$75,522	\$72,929	\$87,407	\$75,771	\$67,455	\$76,635
65-69				2	2		1	5
Tot. Pay				\$134,494	\$138,021		\$86,513	\$359,028
Avg. Pay				\$67,247	\$69,011		\$86,513	\$71,806
70 & Over								
Tot. Pay								
Avg. Pay								
Totals	257	220	124	111	151	111	21	995
Tot. Pay	\$15,873,443	\$16,429,219	\$10,041,458	\$9,089,230	\$12,167,452	\$9,384,838	\$1,868,198	\$74,853,838
Avg. Pay	\$61,764	\$74,678	\$80,980	\$81,885	\$80,579	\$84,548	\$88,962	\$75,230

LAW ENFORCEMENT DIVISION
Inactive Members in Valuation December 31, 2022
by Attained Age and Years of Service

Attained Ages	Years of Service to Valuation Date							Total Number
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
Under 20								
20-24	39							39
25-29	192	17						209
30-34	215	86	3					304
35-39	135	65	23	5				228
40-44	104	33	22	21	7	1		188
45-49	91	24	27	25	22	7		196
50-54	113	23	22	23	23	8		212
55-59	85	10	12	12	5	2		126
60-64	44	6	6	4	2	1		63
65-69	24		2		1			27
70 & Over	17			1			1	19
Totals	1,059	264	117	91	60	19	1	1,611

SECTION IX

ALLOWANCES BEING PAID TO RETIREES AND BENEFICIARIES

Monthly Allowances of Retired Lives by Year of Retirement as of December 31, 2022

Year of Retirement	No.	Initial	Post-Ret. Increase	Total	Average
2022	8,695	\$23,586,290	\$ 97,345	\$ 23,683,635	\$ 2,724
2021	9,534	24,087,457	811,728	24,899,185	2,612
2020	8,916	21,783,731	845,202	22,628,933	2,538
2019	7,654	18,193,797	960,932	19,154,729	2,503
2018	7,755	17,118,215	1,420,393	18,538,608	2,391
2017	8,754	19,786,984	2,229,957	22,016,941	2,515
2016	8,019	17,172,839	2,436,175	19,609,014	2,445
2015	7,200	14,798,003	2,526,768	17,324,771	2,406
2014	11,324	20,790,165	4,183,531	24,973,696	2,205
2013	11,227	22,161,957	5,708,510	27,870,467	2,482
2012	10,229	21,255,692	6,383,172	27,638,864	2,702
2011	11,223	25,193,573	8,343,943	33,537,516	2,988
2010	9,964	20,579,442	7,417,643	27,997,085	2,810
2009	9,693	20,546,274	7,985,761	28,532,035	2,944
2008	8,326	16,152,280	6,758,806	22,911,086	2,752
2007	7,908	14,754,267	6,621,909	21,376,176	2,703
2006	8,246	14,680,359	6,988,912	21,669,271	2,628
2001-2005	33,613	58,391,586	32,634,705	91,026,291	2,708
1996-2000	20,517	28,739,088	19,412,919	48,152,007	2,347
1991-1995	10,772	12,046,194	9,578,394	21,624,588	2,007
1986-1990	5,755	5,434,016	5,211,394	10,645,410	1,850
1981-1985	2,076	1,368,794	1,451,684	2,820,478	1,359
1976-1980	789	340,636	414,553	755,189	957
1971-1975	238	70,757	100,290	171,047	719
Before 1971	63	14,503	35,476	49,979	793
TOTAL	228,490	\$439,046,899	\$140,560,102	\$579,607,001	\$2,537

Monthly Allowances of Retired Lives by Years of Service as of December 31, 2022

Years of Service	No.	Initial	Post-Ret. Increase	Total	Average
<5 or n/a	9,058	\$ 3,661,823	\$ 535,257	\$ 4,197,080	\$ 463
5	3,950	1,572,995	566,541	2,139,536	542
6	3,266	1,497,966	496,328	1,994,294	611
7	3,227	1,582,703	494,692	2,077,395	644
8	3,167	1,749,837	534,719	2,284,556	721
9	2,590	1,628,990	460,063	2,089,053	807
10	8,441	4,689,452	1,736,784	6,426,236	761
11	5,446	3,673,876	1,203,218	4,877,094	896
12	5,601	4,050,557	1,296,154	5,346,711	955
13	5,370	4,371,285	1,388,929	5,760,214	1,073
14	5,168	4,489,769	1,378,364	5,868,133	1,135
15	5,642	5,355,884	1,651,675	7,007,559	1,242
16	5,336	5,331,678	1,684,808	7,016,486	1,315
17	4,995	5,472,809	1,707,579	7,180,388	1,438
18	4,998	5,793,601	1,820,382	7,613,983	1,523
19	4,510	5,340,994	1,844,590	7,185,584	1,593
20	7,361	10,214,584	2,702,236	12,916,820	1,755
21	5,811	8,363,864	2,462,639	10,826,503	1,863
22	5,482	8,532,660	2,551,513	11,084,173	2,022
23	5,309	8,822,142	2,666,618	11,488,760	2,164
24	4,980	8,609,504	2,660,738	11,270,242	2,263
25	10,774	20,339,557	6,869,901	27,209,458	2,525
26	6,583	13,316,617	4,428,718	17,745,335	2,696
27	6,436	14,014,598	4,877,961	18,892,559	2,935
28	6,978	16,494,488	6,230,853	22,725,341	3,257
29	6,499	16,550,578	6,161,281	22,711,859	3,495
30	34,445	95,767,396	32,516,401	128,283,797	3,724
31	12,609	39,525,505	10,283,339	49,808,844	3,950
32	8,358	26,590,944	7,980,205	34,571,149	4,136
33	6,122	20,115,440	6,341,769	26,457,209	4,322
34	4,700	15,881,996	5,162,382	21,044,378	4,478
35	4,164	14,461,381	4,722,254	19,183,635	4,607
36	2,955	10,356,528	3,409,003	13,765,531	4,658
37	2,272	8,033,232	2,720,116	10,753,348	4,733
38	1,649	5,964,222	1,931,321	7,895,543	4,788
39	1,233	4,369,944	1,528,285	5,898,229	4,784
40 & Over	3,005	12,457,500	3,552,486	16,009,986	5,328
TOTAL	228,490	\$439,046,899	\$140,560,102	\$579,607,001	\$2,537

Annuity and Pension Reserve Fund

Annual Allowance, Reported Assets and Actuarial Liabilities

Comparative Statement

(\$ Millions)

Valuation Date	Annual Allowances			Reported Assets*	Actuarial Liabilities	Ratio of Assets to Liabilities	Ratio of DB Active to Retired
	No.	\$ Millions	% of DB Payroll				
12/31/1993	100,651	\$ 901	12.5 % **	\$ 9,390	\$ 9,356	100.4 %	3.4
12/31/1994	102,587	958	12.6 % **	9,964	9,893	100.7 %	3.3
12/31/1995	104,806	1,036	13.0 % **	10,808	10,737	100.7 %	3.3
12/31/1996@	107,617	1,141	13.7 % **	11,819	11,762	100.5 %	3.3
12/31/1997	110,470	1,233	14.3 % **	12,843	12,755	100.7 %	3.2
12/13/1998	113,000	1,327	14.7 % **	13,885	13,751	101.0 %	3.1
12/31/1999+	115,431	1,530	16.1 % **	14,978	16,139	92.8 %	3.1
12/31/2000	118,620	1,641	16.1 % **	16,980	16,980	100.0 %	3.1
12/31/2001@	121,875	1,775	16.5 % **	18,001	18,001	100.0 %	3.0
12/31/2002	126,409	1,958	17.5 % **	20,085	20,085	100.0 %	2.9
12/31/2003	130,433	2,136	19.1 % **	22,535	22,535	100.0 %	2.7
12/31/2004	134,535	2,311	20.2 % **	24,470	24,470	100.0 %	2.6
12/31/2005@	138,996	2,508	21.2 % **	27,084	27,084	100.0 %	2.6
12/31/2006	144,037	2,710	22.3 % **	29,304	29,304	100.0 %	2.5
12/31/2007	148,493	2,916	23.2 % **	31,547	31,547	100.0 %	2.5
12/31/2008	153,931	3,148	24.6 % **	34,060	34,060	100.0 %	2.3
12/31/2009	159,518	3,419	27.2 % **	37,098	37,098	100.0 %	2.2
12/31/2010@	166,247	3,705	29.8 % **	40,184	40,818	100.0 %	2.1
12/31/2011	174,679	4,065	32.8 % **	45,001	45,001	100.0 %	1.9
12/31/2012	180,759	4,352	35.7 % **	48,044	48,044	100.0 %	1.8
12/31/2013	187,198	4,629	37.5 % **	50,754	50,754	100.0 %	1.8
12/31/2014	194,096	4,908	38.8 % **	53,432	53,432	100.0 %	1.7
12/31/2015@	196,709	5,115	39.5 % **	55,117	55,117	100.0 %	1.7
12/31/2016	199,662	5,344	39.7 % **	60,949	60,949	100.0 %	1.7
12/31/2017	202,292	5,575	40.6 % **	62,931	62,931	100.0 %	1.6
12/31/2018	204,479	5,791	42.7 % **	66,395	66,395	100.0 %	1.4
12/31/2019	206,832	6,018	43.1 % **	68,058	68,058	100.0 %	1.4
12/31/2020@	209,216	6,245	44.8 % **	70,674	70,674	100.0 %	1.3
12/31/2021	212,550	6,491	45.1 % **	73,141	73,141	100.0 %	1.3
12/31/2022	214,101	6,736	43.4 % **	75,055	75,055	100.0 %	1.3

* Including certain recommended transfers and accrued transfers.

@ Revised actuarial assumptions.

** Excluding health insurance and Medicare payments.

+ Including estimated effect of legislated benefit changes.

Annuity and Pension Reserve Fund
Retirees and Beneficiaries December 31, 2022
Type of Benefit, Monthly Amount and Actuarial Liabilities

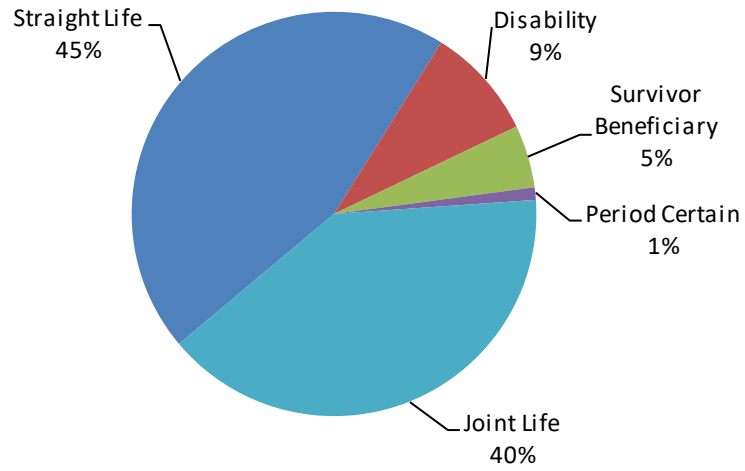
Type of Allowance	Number	Current Total	Actuarial Liabilities
Superannuation Retirement			
Multiple Life Plan/Plan A - Joint & 50%	23,268	\$ 73,083,307	\$ 10,225,894,573
Single Life Plan/Plan B - Straight Life	98,612	247,498,122	30,643,032,242
Multiple Life Plan/Plan C - Special Joint & Survivor	20,393	68,363,335	9,466,194,106
Multiple Life Plan/Plan D - Joint & 100%	27,920	81,763,843	13,162,210,728
Period Certain/Plan E - Life & 0 to 5 Years Guaranteed	271	678,884	75,074,075
- Life & 6 to 10 Years Guaranteed	386	889,973	98,112,717
- Life & 11 to 15 Years Guaranteed	536	1,105,480	125,550,098
- Life & 16 to 20 Years Guaranteed	56	164,813	22,614,887
Multiple Life Plan/Plan F - Multiple Continuing Beneficiaries	1,670	5,113,315	988,032,994
Reserve for Combined Plan Future Adverse Experience			3,587,301
Reserve for Member Directed Future Adverse Experience			11,779,781
Money Purchase	4,320	1,917,710	183,711,441
Survivor Beneficiary - Life Benefit	18,758	29,482,972	2,987,762,449
Survivor Beneficiary - Temporary Benefit	58	99,473	3,897,666
Total Superannuation	196,248	\$ 510,161,227	\$ 67,997,455,058
Disability Retirement	17,853	\$ 51,179,767	\$ 7,061,570,348
Total from A & PR	214,101	\$ 561,340,994	\$ 75,059,025,406

Annuity and Pension Reserve Fund
Retirees and Beneficiaries December 31, 2022
Type of Benefit and Amount by Gender of Recipient

Type of Allowance	Men		Women		Total	
	Number	Monthly Allowances	Number	Monthly Allowances	Number	Monthly Allowances
Superannuation Retirement						
Multiple Life Plan/Plan A - Joint & 50%	14,751	\$ 49,420,762	8,517	\$ 23,662,545	23,268	\$ 73,083,307
Single Life Plan/Plan B - Straight Life	30,555	86,226,107	68,057	161,272,015	98,612	247,498,122
Multiple Life Plan/Plan C - Special Joint & Survivor	9,683	37,237,136	10,710	31,126,199	20,393	68,363,335
Multiple Life Plan/Plan D - Joint & 100%	21,568	66,352,705	6,352	15,411,138	27,920	81,763,843
Period Certain/Plan E - Life & 0 to 5 Years Guaranteed	103	300,898	168	377,986	271	678,884
- Life & 6 to 10 Years Guaranteed	179	414,496	207	475,477	386	889,973
- Life & 11 to 15 Years Guaranteed	279	561,633	257	543,847	536	1,105,480
- Life & 16 to 20 Years Guaranteed	36	97,753	20	67,060	56	164,813
Multiple Life Plan/Plan F - Multiple Continuing Beneficiaries	629	2,268,608	1,041	2,844,707	1,670	5,113,315
Money Purchase	2,558	1,364,887	1,762	552,823	4,320	1,917,710
Survivor Beneficiary - Life Benefit	2,871	2,835,699	15,887	26,647,273	18,758	29,482,972
Survivor Beneficiary - Temporary Benefit	18	39,258	40	60,215	58	99,473
Total Superannuation	83,230	\$ 247,119,942	113,018	\$ 263,041,285	196,248	\$ 510,161,227
Disability Retirement	9,110	\$ 28,485,678	8,743	\$ 22,694,089	17,853	\$ 51,179,767
Total from A & PR	92,340	\$ 275,605,620	121,761	\$ 285,735,374	214,101	\$ 561,340,994

Annuities Being Paid by Type December 31, 2022

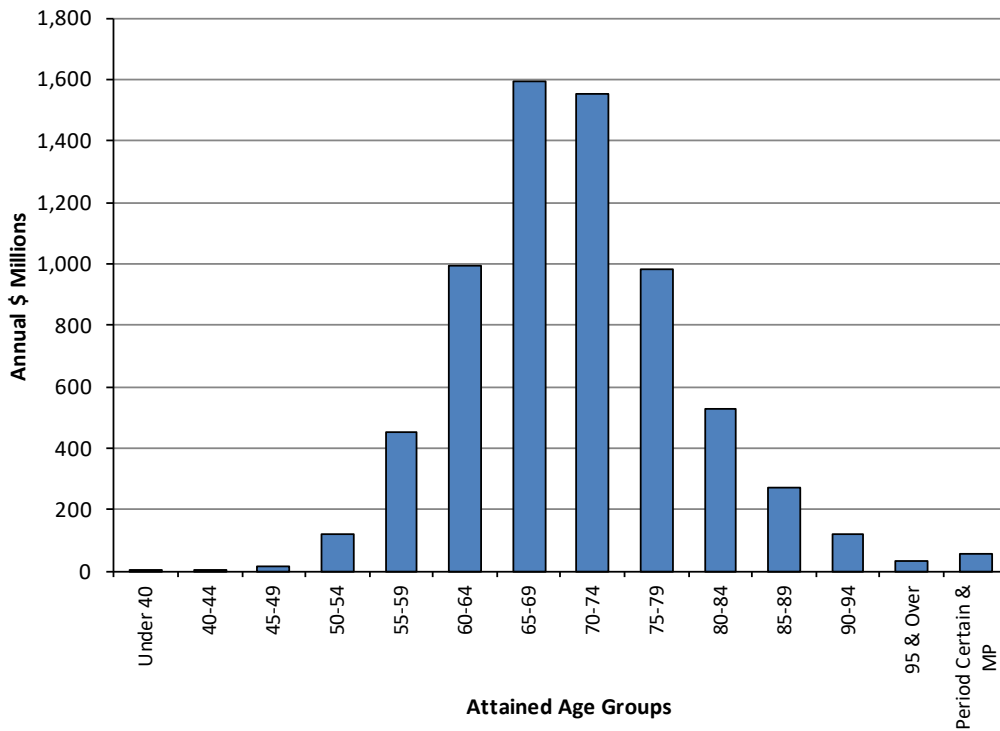
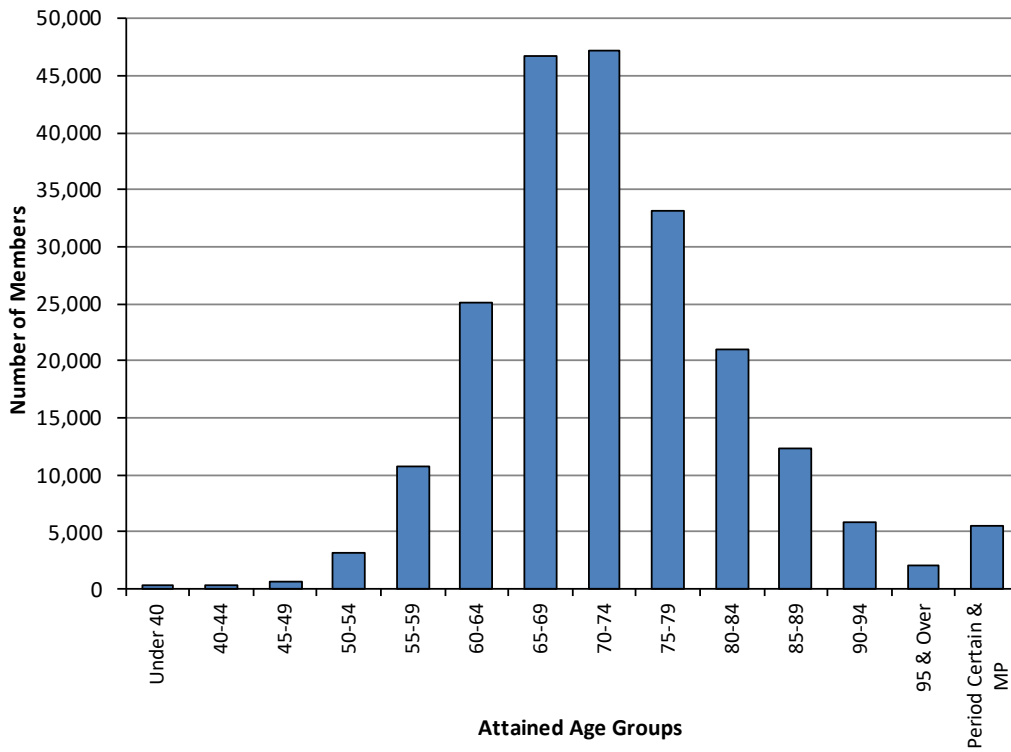
Annuity and Pension Reserve Fund



Annuity and Pension Reserve Fund
Retirees and Beneficiaries December 31, 2022
Current Monthly Total \$ by Attained Ages

Attained Ages	Superannuation		Disability		Totals	
	No.	Monthly Total	No.	Monthly Total	No.	Monthly Total
Under 20	11	\$ 9,400			11	\$ 9,400
20-24	33	29,916			33	29,916
25-29	51	35,539	2	\$ 2,191	53	37,730
30-34	68	51,303	12	21,189	80	72,492
35-39	72	79,155	65	126,636	137	205,791
40-44	88	67,576	215	441,054	303	508,630
45-49	139	148,270	539	1,205,045	678	1,353,315
50-54	1,765	6,197,059	1,451	3,837,479	3,216	10,034,538
55-59	7,955	29,601,506	2,743	8,117,030	10,698	37,718,536
60-64	20,853	70,372,164	4,263	12,723,600	25,116	83,095,764
65-69	43,376	122,207,708	3,290	10,630,178	46,666	132,837,886
70-74	44,399	121,325,691	2,729	8,086,064	47,128	129,411,755
75-79	31,660	77,584,255	1,551	4,082,749	33,211	81,667,004
80-84	20,328	42,820,040	653	1,349,051	20,981	44,169,091
85-89	12,023	22,278,551	243	425,377	12,266	22,703,928
90-94	5,838	9,782,766	77	109,172	5,915	9,891,938
95 & Over	2,020	2,813,468	20	22,952	2,040	2,836,420
Period Certain & Money Purchase	5,569	4,756,860			5,569	4,756,860
Totals	196,248	\$510,161,227	17,853	\$51,179,767	214,101	\$561,340,994

Annuity and Pension Reserve Fund Benefits Being Paid by Attained Ages December 31, 2022



Annuity and Pension Reserve Fund Percent of Recipients by Age Groups and Year

Attained Age Group	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Under 30	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30-39	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.4%
40-49	0.5%	0.5%	0.6%	0.7%	0.8%	0.9%	1.1%	1.1%	1.3%	1.5%	1.8%	2.0%	2.2%	2.5%	2.7%
50-59	6.5%	7.1%	7.7%	8.5%	9.5%	10.6%	11.5%	12.5%	13.7%	14.6%	15.4%	15.9%	15.9%	16.0%	15.9%
60-69	33.5%	34.8%	35.7%	36.4%	37.3%	37.9%	38.6%	38.8%	37.9%	36.5%	35.5%	34.8%	33.5%	32.6%	31.4%
70-79	37.6%	36.2%	34.8%	33.2%	31.4%	29.8%	27.9%	26.7%	26.2%	26.1%	25.8%	25.4%	25.7%	26.2%	26.7%
80-89	15.5%	15.0%	14.7%	14.6%	14.5%	14.3%	14.4%	14.4%	14.4%	14.8%	15.3%	15.8%	16.6%	16.9%	17.4%
90 & Over	3.7%	3.7%	3.8%	3.8%	3.7%	3.7%	3.7%	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%	3.4%	3.4%
Period Certain & Money Purchase	2.6%	2.6%	2.6%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.4%	2.3%	2.2%	2.1%	2.1%
TOTALS	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average Age	72.1	71.7	71.5	71.2	70.9	70.9	70.6	70.4	70.2	70.0	69.9	69.9	70.0	70.0	70.1



STATE DIVISION
Survivor Benefit Fund Tabulated by
Type of Benefit Being Paid and Monthly Amount
December 31, 2022

Group	Number	Current Total	Actuarial Liabilities
S-1 - Survivor Benefit to Beneficiary of Deceased Member Joint and Survivor Computation			
Men	211	\$ 306,795	\$ 33,496,489
Women	560	1,045,677	119,367,480
Totals	771	\$ 1,352,472	\$ 152,863,969
S-2 - Survivor Benefit to Beneficiary of Deceased Member Fixed Rate Amount			
Males			
Widower	777	\$ 1,120,320	\$ 140,886,216
Parent	0	0	0
Other	1	584	74,608
Child	297	258,663	17,716,004
Subtotals - Male	1,075	\$ 1,379,567	\$ 158,676,828
Females			
Widow	2,128	\$ 3,455,346	\$ 467,490,732
Parent	0	0	0
Other	2	2,760	369,007
Child	277	245,005	13,560,158
Subtotals - Female	2,407	\$ 3,703,111	\$ 481,419,897
Totals	3,482	\$ 5,082,678	\$ 640,096,725
Total Benefits Being Paid from Survivor Benefit Fund			
Men	1,286	\$ 1,686,362	\$ 192,173,317
Women	2,967	4,748,788	600,787,377
Totals	4,253	\$ 6,435,150	\$ 792,960,694

LOCAL GOVERNMENT DIVISION
Survivor Benefit Fund Tabulated by
Type of Benefit Being Paid and Monthly Amount
December 31, 2022

Group	Number	Current Total	Actuarial Liabilities
S-1 - Survivor Benefit to Beneficiary of Deceased Member Joint and Survivor Computation			
Men	336	\$ 376,200	\$ 39,062,613
Women	1,255	1,807,112	203,309,761
Totals	1,591	\$ 2,183,312	\$ 242,372,374
S-2 - Survivor Benefit to Beneficiary of Deceased Member Fixed Rate Amount			
Males			
Widower	1,268	\$ 1,369,482	\$ 171,313,572
Parent	0	0	0
Other	0	0	0
Child	593	423,603	30,794,087
Subtotals - Male	1,861	\$ 1,793,085	\$ 202,107,659
Females			
Widow	5,007	\$ 6,143,131	\$ 807,865,824
Parent	1	758	92,835
Other	9	7,996	770,543
Child	531	392,286	23,880,903
Subtotals - Female	5,548	\$ 6,544,171	\$ 832,610,105
Totals	7,409	\$ 8,337,256	\$ 1,034,717,764
Total Benefits Being Paid from Survivor Benefit Fund			
Men	2,197	\$ 2,169,285	\$ 241,170,272
Women	6,803	8,351,283	1,035,919,866
Totals	9,000	\$ 10,520,568	\$ 1,277,090,138

PUBLIC SAFETY DIVISION
Survivor Benefit Fund Tabulated by
Type of Benefit Being Paid and Monthly Amount
December 31, 2022

Group	Number	Current Total	Actuarial Liabilities
S-1 - Survivor Benefit to Beneficiary of Deceased Member Joint and Survivor Computation			
Men	2	\$ 2,762	\$ 333,617
Women	28	52,961	7,027,867
Totals	30	\$ 55,723	\$ 7,361,484
S-2 - Survivor Benefit to Beneficiary of Deceased Member Fixed Rate Amount			
Males			
Widower	2	\$ 1,846	\$ 191,356
Other	0	0	0
Child	1	1,215	228,943
Subtotals - Male	3	\$ 3,061	\$ 420,299
Females			
Widow	82	\$ 141,443	\$ 18,897,346
Other	0	0	0
Child	3	3,347	493,396
Subtotals - Female	85	\$ 144,790	\$ 19,390,742
Totals	88	\$ 147,851	\$ 19,811,041
Total Benefits Being Paid from Survivor Benefit Fund			
Men	5	\$ 5,823	\$ 753,916
Women	113	197,751	26,418,609
Totals	118	\$ 203,574	\$ 27,172,525

LAW ENFORCEMENT DIVISION
Survivor Benefit Fund Tabulated by
Type of Benefit Being Paid and Monthly Amount
December 31, 2022

Group	Number	Current Total	Actuarial Liabilities
S-1 - Survivor Benefit to Beneficiary of Deceased Member			
Joint and Survivor Computation			
Men	2	\$ 2,396	\$ 235,398
Women	47	100,563	11,076,872
Totals	49	\$ 102,959	\$ 11,312,270
S-2 - Survivor Benefit to Beneficiary of Deceased Member			
Fixed Rate Amount			
Males			
Widower	16	\$ 17,408	\$ 2,363,452
Other	0	0	0
Child	74	61,076	2,981,980
Subtotals - Male	90	\$ 78,484	\$ 5,345,432
Females			
Widow	247	\$ 373,541	\$ 59,399,105
Other	0	0	0
Child	59	55,519	2,838,675
Subtotals - Female	306	\$ 429,060	\$ 62,237,780
Totals	396	\$ 507,544	\$ 67,583,212
Total Benefits Being Paid from Survivor Benefit Fund			
Men	92	\$ 80,880	\$ 5,580,830
Women	353	529,623	73,314,652
Totals	445	\$ 610,503	\$ 78,895,482

STATE DIVISION
Deferred Survivor Beneficiaries
Tabulated by Gender and Deferred Age
December 31, 2022

Group	Number	Current Total	Actuarial Liabilities
Widowers - Male			
No Deferral Age	18	\$ 24,440	\$ 4,644,256
Deferred to age 50	0	0	0
Deferred to age 62	29	26,280	3,165,777
Deferred to age 65	0	0	0
Total - Male	47	\$ 50,720	\$ 7,810,033
Widows - Female			
No Deferral Age	43	\$ 68,139	\$ 12,964,832
Deferred to age 50	0	0	0
Deferred to age 62	101	82,762	9,940,177
Deferred to age 65	0	0	0
Total - Female	144	\$ 150,901	\$ 22,905,009
Totals	191	\$ 201,621	\$ 30,715,042

LOCAL GOVERNMENT DIVISION
Deferred Survivor Beneficiaries
Tabulated by Gender and Deferred Age
December 31, 2022

Group	Number	Current Total	Actuarial Liabilities
Widowers - Male			
No Deferral Age	35	\$ 24,047	\$ 4,269,693
Deferred to age 50	0	0	0
Deferred to age 62	73	40,778	4,270,667
Deferred to age 65	0	0	0
Total - Male	108	\$ 64,825	\$ 8,540,360
Widows - Female			
No Deferral Age	76	\$ 72,882	\$ 13,007,009
Deferred to age 50	0	0	0
Deferred to age 62	190	140,918	16,830,594
Deferred to age 65	0	0	0
Total - Female	266	\$ 213,800	\$ 29,837,603
Totals	374	\$ 278,625	\$ 38,377,963

PUBLIC SAFETY DIVISION
Deferred Survivor Beneficiaries
Tabulated by Gender and Deferred Age
December 31, 2022

Group	Number	Current Total	Actuarial Liabilities
Widowers - Males			
No Deferral Age	0	\$ 0	\$ 0
Deferred to age 50	0	0	0
Deferred to age 62	0	0	0
Total - Male	0	\$ 0	\$ 0
Widows - Females			
No Deferral Age	0	\$ 0	\$ 0
Deferred to age 50	0	0	0
Deferred to age 62	0	0	0
Total - Female	0	\$ 0	\$ 0
Totals	0	\$ 0	\$ 0

LAW ENFORCEMENT DIVISION
Deferred Survivor Beneficiaries
Tabulated by Gender and Deferred Age
December 31, 2022

Group	Number	Current Total	Actuarial Liabilities
Widowers - Males			
No Deferral Age	0	\$ 0	\$ 0
Deferred to age 50	0	0	0
Deferred to age 62	1	1,001	50,414
Total - Male	1	\$ 1,001	\$ 50,414
Widows - Females			
No Deferral Age	4	\$ 11,401	\$ 2,366,225
Deferred to age 50	0	0	0
Deferred to age 62	3	3,564	347,057
Total - Female	7	\$ 14,965	\$ 2,713,282
Totals	8	\$ 15,966	\$ 2,763,696

Survivor Benefit Fund Reported Assets and Liabilities Divisions Combined

Valuation Date	Monthly Allowances				\$ Millions		Ratio of Assets to Liabilities
	Current		Deferred		Reported Assets+	Actuarial Liabilities	
	No.	Amount	No.	Amount			
12/31/1988	12,237	\$ 3,822,085	941	\$ 283,026	\$ 490.8	\$ 490.8	100 %
12/31/1989@	12,198	4,177,540	941	320,792	525.3	522.1	101 %
12/31/1990	12,182	4,330,622	907	321,218	542.5	537.1	101 %
12/31/1991	12,268	4,528,326	860	314,414	567.9	557.1	102 %
12/31/1992	12,318	4,750,848	852	329,509	589.8	583.3	101 %
12/31/1993	12,437	4,985,681	862	345,937	620.7	607.7	102 %
12/31/1994	12,569	5,207,186	845	347,178	641.5	628.5	102 %
12/31/1995	12,608	5,408,577	866	376,573	668.9	652.4	103 %
12/31/1996@	12,724	5,822,113	878	395,594	711.6	710.6	100 %
12/31/1997	12,856	6,074,566	932	433,430	743.0	740.5	100 %
12/13/1998	13,079	6,337,739	1,060	500,514	780.2	779.6	100 %
12/31/1999#	13,236	7,345,740	989	550,153	801.4	910.9	88 %
12/31/2000	13,317	9,026,315	666	348,886	1,037.4	1,037.4	100 %
12/31/2001@	13,588	9,449,543	993	490,441	1,086.4	1,086.4	100 %
12/31/2002	13,708	9,764,826	902	470,284	1,120.2	1,120.2	100 %
12/31/2003	13,988	10,246,174	842	493,329	1,193.1	1,193.1	100 %
12/31/2004	13,903	10,503,169	858	524,733	1,227.1	1,227.1	100 %
12/31/2005@	14,108	10,948,727	831	528,162	1,289.3	1,289.3	100 %
12/31/2006	14,172	11,333,735	832	508,430	1,332.6	1,332.6	100 %
12/31/2007	14,186	11,714,551	832	510,846	1,375.9	1,375.9	100 %
12/31/2008	14,238	12,122,501	847	526,623	1,425.6	1,425.6	100 %
12/31/2009	14,301	12,576,956	840	527,032	1,479.4	1,479.4	100 %
12/31/2010@	14,407	13,047,857	829	524,242	1,545.7	1,545.7	100 %
12/31/2011	14,370	13,424,237	800	505,111	1,589.7	1,589.7	100 %
12/31/2012#	14,224	13,769,795	796	519,459	1,629.3	1,629.3	100 %
12/31/2013	14,187	14,152,417	751	480,335	1,663.5	1,663.5	100 %
12/31/2014	13,974	14,406,311	739	474,837	1,688.7	1,688.7	100 %
12/31/2015@	13,842	14,728,606	750	479,666	1,838.1	1,838.1	100 %
12/31/2016	13,790	15,119,687	715	462,896	1,881.1	1,881.1	100 %
12/31/2017	13,960	15,655,980	726	553,126	1,942.9	1,942.9	100 %
12/31/2018	13,890	16,063,379	706	542,369	2,034.1	2,034.1	100 %
12/31/2019	13,936	16,606,829	656	496,472	2,091.0	2,091.0	100 %
12/31/2020@	13,811	16,924,352	625	456,657	2,141.0	2,141.0	100 %
12/31/2021	13,918	17,358,024	568	472,900	2,208.3	2,208.3	100 %
12/31/2022	13,816	17,769,795	573	496,212	2,248.0	2,248.0	100 %

@ Revised actuarial assumptions.

After benefit changes.

+ Includes certain recommended transfers and accrued transfers.



Retirees and Beneficiaries December 31, 2022

Historical Averages

All Retirees								
December 31	Number Count	Average Age at Retirement	Average Service at Retirement	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date	Median Pension on Valuation Date	Average FAS at Retirement
2022	228,490	58.1	23.6	\$23,590	71.9	\$31,172	\$27,462	\$47,664
2021	227,036	58.0	23.5	23,012	71.6	30,233	26,568	46,591
2020	223,652	58.0	23.4	22,422	71.4	29,505	25,884	45,397
2019	221,424	57.9	23.2	21,881	71.1	28,740	25,140	44,379
2018	219,075	57.8	23.1	21,429	70.7	27,944	24,408	43,395
2017	216,978	57.7	23.0	20,993	70.4	27,161	23,652	42,486
2016	214,167	57.6	22.9	20,526	70.2	26,370	22,848	41,524
2015	211,301	57.6	22.8	20,076	69.9	25,579	22,056	40,604
2014	208,809	57.6	22.8	19,673	69.7	24,833	21,348	39,753
2013	202,136	57.4	22.8	19,290	69.5	24,209	20,784	38,763
2012	195,779	57.4	22.7	18,827	69.3	23,461	20,088	37,743
2011	189,849	57.3	22.6	18,218	69.3	22,611	19,212	36,552
2010	181,483	57.2	22.4	17,379	69.3	21,598	18,144	35,025
2009	174,659	57.2	22.2	16,724	69.3	20,730	17,256	33,808
2008	169,016	57.2	22.0	15,942	69.4	19,750	16,284	32,401
Traditional Plan								
December 31	Number Count	Average Age at Retirement	Average Service at Retirement	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date	Median Pension on Valuation Date	Average FAS at Retirement
2022	227,048	58.1	23.7	\$23,640	71.9	\$31,242	\$27,552	\$47,645
2021	225,740	58.0	23.5	23,056	71.7	30,294	26,640	46,575
2020	222,577	58.0	23.4	22,457	71.4	29,553	25,944	45,386
2019	220,448	57.9	23.3	21,912	71.1	28,784	25,188	44,368
2018	218,226	57.8	23.2	21,456	70.7	27,981	24,444	43,386
2017	216,260	57.7	23.1	21,016	70.4	27,192	23,688	42,479
2016	213,550	57.6	23.0	20,545	70.2	26,396	22,884	41,519
2015	210,792	57.6	22.9	20,092	69.9	25,600	22,080	40,600
2014	208,395	57.6	22.8	19,686	69.7	24,849	21,372	39,749
2013	201,841	57.4	22.8	19,299	69.5	24,220	20,796	38,760
2012	195,622	57.4	22.7	18,832	69.3	23,468	20,088	37,741
2011	189,753	57.3	22.6	18,221	69.3	22,614	19,224	36,549
2010	181,433	57.2	22.4	17,380	69.3	21,600	18,144	35,025
2009	174,637	57.2	22.2	16,725	69.3	20,731	17,256	33,808
2008	169,000	57.2	22.0	15,942	69.4	19,751	16,284	32,401
Combined Plan								
December 31	Number Count	Average Age at Retirement	Average Service at Retirement	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date	Median Pension on Valuation Date	Average FAS at Retirement
2022	1,019	65.0	12.7	\$5,684	70.2	\$6,173	\$5,388	\$54,539
2021	914	64.9	12.4	5,427	69.7	5,814	5,088	53,230
2020	744	64.9	11.4	4,849	69.8	5,294	4,476	51,079
2019	659	64.8	11.1	4,686	69.1	5,107	4,314	50,618
2018	569	64.8	10.6	4,338	68.7	4,697	4,020	49,007
2017	476	64.7	10.3	4,000	68.2	4,304	3,816	47,455
2016	398	64.8	10.0	3,709	67.9	3,956	3,528	46,614
2015	324	64.6	9.8	3,401	67.3	3,596	3,186	45,141
2014	259	64.7	9.7	3,284	66.8	3,421	3,030	44,349
2013	164	64.9	8.7	2,839	67.0	2,962	2,682	43,403
2012	95	64.2	8.5	2,785	66.2	2,891	2,556	45,218
2011	58	64.2	7.9	2,757	66.0	2,828	2,202	49,751
2010	32	64.3	7.9	2,158	65.9	2,219	1,962	40,548
2009	12	65.0	7.6	1,590	66.6	1,635	1,740	35,139
2008	12	64.0	7.4	1,239	64.8	1,260	1,092	29,454
DB Portion of Member-Directed Plan								
December 31	Number Count	Average Age at Retirement	Average Service at Retirement	Average Pension at Retirement	Average Age on Valuation Date	Average Pension on Valuation Date	Median Pension on Valuation Date	Average FAS at Retirement
2022	423	NA	NA	NA	NA	NA	NA	NA
2021	382	NA	NA	NA	NA	NA	NA	NA
2020	331	NA	NA	NA	NA	NA	NA	NA
2019	317	NA	NA	NA	NA	NA	NA	NA
2018	280	NA	NA	NA	NA	NA	NA	NA
2017	242	NA	NA	NA	NA	NA	NA	NA
2016	219	NA	NA	NA	NA	NA	NA	NA
2015	185	NA	NA	NA	NA	NA	NA	NA
2014	155	NA	NA	NA	NA	NA	NA	NA
2013	131	NA	NA	NA	NA	NA	NA	NA
2012	62	NA	NA	NA	NA	NA	NA	NA
2011	38	NA	NA	NA	NA	NA	NA	NA
2010	18	NA	NA	NA	NA	NA	NA	NA
2009	10	NA	NA	NA	NA	NA	NA	NA
2008	4	NA	NA	NA	NA	NA	NA	NA



SECTION X

ACTUARIAL METHODS AND ASSUMPTIONS

Summary of Actuarial Methods and Assumptions used for OPERS Actuarial Valuations Assumptions Adopted by the Retirement Board After Consulting with the Actuary

The individual entry age actuarial cost method of valuation was used in determining liabilities and normal cost. Differences in the past between assumed experience and actual experience (“actuarial gains and losses”) become part of actuarial accrued liabilities.

Unfunded actuarial accrued liabilities are amortized to produce payments (principal & interest) which are level percent of payroll contributions.

The actuarial assumptions used in the valuation are shown in this section. Assumptions were established following the December 31, 2020 actuarial valuation based upon an Experience Study covering the period January 1, 2016 through December 31, 2020. The actuarial assumptions represent estimates of future experience.

Economic Assumptions

The investment return rate assumed in the valuations was 6.90% per year, compounded annually (net after investment expenses).

The wage inflation rate assumed in this valuation was 2.75% per year. The wage inflation rate is defined to be the portion of total pay increases for an individual that are due to macroeconomic forces including productivity, price inflation, and labor market conditions. The wage inflation rate does not include pay changes related to individual merit and seniority effects.

The price inflation component of the investment return rate and the wage inflation rate is assumed to be 2.35%.

The assumed real rate of return over wage inflation is defined to be the portion of total investment return that is more than the assumed total wage growth rate. Considering other economic assumptions, the 6.90% investment return rate translates to an assumed real rate of return over wage inflation of 4.15%. The assumed real rate of return over price inflation is 4.55%.

The active member population (the sum of the Traditional and Combined Plan active members) is assumed to remain constant. For purposes of financing the unfunded actuarial accrued liabilities, total payroll (the sum of the Traditional and Combined Plan active payroll) is assumed to grow at the wage inflation rate – 2.75% per year.

Pay increase assumptions for individual active members are shown for sample ages on pages X-8 through X-11. Part of the assumption for each age is for merit and/or seniority increase, and the other 2.75% recognizes wage inflation, including price inflation, productivity increases, and other macroeconomic forces.



Non-Economic Assumptions

The pre-retirement mortality tables, for pre-retirement mortality, used in evaluating allowances to be paid were 130% of the Pub-2010 General Employee Mortality tables (males and females) for State and Local Government divisions and 170% of the Pub-2010 Safety Employee Mortality tables (males and females) for the Public Safety and Law Enforcement divisions. The base year is 2010 and mortality rates for a particular calendar year are determined by applying the MP-2020 mortality improvement scales (males and females) to the above described tables.

The healthy retiree mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were 115% of the PubG-2010 Retiree Mortality Tables (males and females) for all divisions. The base year is 2010 and mortality rates for a particular calendar year are determined by applying the MP-2020 mortality improvement scales (males and females) to the above described tables.

The disabled retiree mortality tables, for post-retirement disabled mortality, used in evaluating allowances to be paid were the PubNS-2010 Disabled Retiree Mortality Tables (males and females) for all divisions. The base year is 2010 and mortality rates for a particular calendar year are determined by applying the MP-2020 mortality improvement scales (males and females) to the above described tables.

The probabilities of unreduced and reduced age and service retirement are shown on pages X-3 through X-7. For State and Local Government members that satisfy the 30-year (31 & 32 years for Transition Groups B & C) unreduced retirement condition prior to age 65 (66 & 67 for Transition Groups B & C), the service-based unreduced retirement probabilities are used. For State and Local Government members that satisfy the 30-year (31 & 32 years for Transition Groups B & C) unreduced retirement condition on or after age 65 (66 & 67 for Transition Groups B & C), the age-based unreduced retirement probabilities are used.

The probabilities of withdrawal from service, disability and death-in-service are shown for sample ages on pages X-8 through X-11. For withdrawal from service it was assumed that members terminating with less than 5 years of service and a percentage of all other members would withdraw their contributions and forfeit their entitlement to an employer financed benefit. For State and Local Government members the percentage is 35% for ages at or below 48 and is reduced for each year of age after 48, becoming 0% at age 55. For Public Safety and Law enforcement members the percentage is 50% for ages at or below 40 and is reduced for each year after age 40, becoming 0% at age 45.

For purposes of death-in-service and disability benefits, it is assumed that Combined Plan members will take a benefit from the Traditional Plan, unless a lump sum distribution from the Combined Plan would have a greater value. It is assumed death-in-service members have 2 qualified survivor beneficiaries.

The funding value of defined benefit assets recognizes assumed investment return fully each year. Differences between actual and assumed investment return are phased-in over a closed 4-year period. Funding value is not permitted to deviate from market value by more than 12%. Traditional and Combined Plan retiree health funding values of assets are developed independently beginning with the December 31, 2004 valuation.

Present assets (cash & investments) at funding value are shown on pages II-2 through II-9.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA). Great care was taken in the production of this report, but there may be cases where schedules do not add, or where they do not exactly balance to other related schedules due to rounding.

Probabilities of Unreduced Age and Service Retirement

Transition Group A

Ages	Percent of Eligible Active Members Retiring Within Next Year			
	State		Local Government	
	Men	Women	Men	Women
65	22%	25%	24%	25%
66	22%	25%	24%	25%
67	20%	25%	22%	22%
68	20%	22%	22%	22%
69	20%	22%	22%	22%
70	20%	22%	22%	22%
71	20%	22%	18%	22%
72	20%	22%	18%	22%
73	20%	22%	18%	22%
74	20%	22%	18%	22%
75	20%	25%	18%	18%
76	20%	25%	18%	18%
77	20%	25%	18%	18%
78	20%	25%	18%	18%
79	20%	25%	20%	22%
80	25%	25%	20%	22%
81	25%	25%	20%	22%
82	25%	25%	20%	22%
83	25%	25%	20%	22%
84	25%	25%	20%	22%
85 & Over	100%	100%	100%	100%
Ref	3256	3257	3258	3259

Ages	Percent of Eligible Active Members Retiring Within Next Year	
	Public Safety	Law Enforcement
	48	
49		15%
50		15%
51		15%
52	18%	18%
53	18%	18%
54	18%	18%
55	18%	18%
56	20%	20%
57	20%	20%
58	20%	20%
59	20%	20%
60	20%	20%
61	20%	20%
62	30%	30%
63	25%	25%
64	25%	25%
65	25%	25%
66	30%	30%
67	30%	30%
68	30%	30%
69	30%	30%
70 & Over	100%	100%
Ref	3261	3261

Service	Percent of Eligible Active Members Retiring Within Next Year			
	State		Local Government	
	Men	Women	Men	Women
30	33%	33%	33%	33%
31	27%	27%	27%	27%
32-49	21%	21%	21%	21%
50 & Over	100%	100%	100%	100%
Ref	3260	3260	3260	3260

Probabilities of Unreduced Age and Service Retirement

Transition Group B

Ages	Percent of Eligible Active Members Retiring Within Next Year			
	State		Local Government	
	Men	Women	Men	Women
66	22%	25%	24%	25%
67	22%	25%	24%	25%
68	20%	25%	22%	22%
69	20%	22%	22%	22%
70	20%	22%	22%	22%
71	20%	22%	22%	22%
72	20%	22%	18%	22%
73	20%	22%	18%	22%
74	20%	22%	18%	22%
75	20%	22%	18%	22%
76	20%	25%	18%	18%
77	20%	25%	18%	18%
78	20%	25%	18%	18%
79	20%	25%	18%	18%
80	20%	25%	20%	22%
81	25%	25%	20%	22%
82	25%	25%	20%	22%
83	25%	25%	20%	22%
84	25%	25%	20%	22%
85 & Over	100%	100%	100%	100%
Ref	3256	3257	3258	3259

Ages	Percent of Eligible Active Members Retiring Within Next Year	
	Public Safety	Law Enforcement
	50	
51		15%
52		15%
53		15%
54	18%	18%
55	18%	18%
56	20%	18%
57	20%	18%
58	20%	20%
59	20%	20%
60	20%	20%
61	20%	20%
62	30%	20%
63	25%	20%
64	25%	30%
65	25%	25%
66	30%	25%
67	30%	25%
68	30%	30%
69	30%	30%
70	100%	30%
71	100%	30%
72 & Over	100%	100%
Ref	3261	3261

Service	Percent of Eligible Active Members Retiring Within Next Year			
	State		Local Government	
	Men	Women	Men	Women
31	33%	33%	33%	33%
32	27%	27%	27%	27%
33-50	21%	21%	21%	21%
51 & Over	100%	100%	100%	100%
Ref	3260	3260	3260	3260

Probabilities of Unreduced Age and Service Retirement

Transition Group C

67 & 5 Condition	Percent of Eligible Active Members Retiring Within Next Year			
	State		Local Government	
	Men	Women	Men	Women
Age				
67	22%	25%	24%	25%
68	22%	25%	24%	25%
69	20%	25%	22%	22%
70	20%	22%	22%	22%
71	20%	22%	22%	22%
72	20%	22%	22%	22%
73	20%	22%	18%	22%
74	20%	22%	18%	22%
75	20%	22%	18%	22%
76	20%	22%	18%	22%
77	20%	25%	18%	18%
78	20%	25%	18%	18%
79	20%	25%	18%	18%
80	20%	25%	18%	18%
81	20%	25%	20%	22%
82	25%	25%	20%	22%
83	25%	25%	20%	22%
84	25%	25%	20%	22%
85 & Over	100%	100%	100%	100%
Ref	3256	3257	3258	3259

Ages	Percent of Eligible Active Members Retiring Within Next Year	
	Public Safety	Law Enforcement
	52	
53		15%
54		15%
55		15%
56	20%	18%
57	20%	18%
58	20%	18%
59	20%	18%
60	20%	20%
61	20%	20%
62	30%	20%
63	25%	20%
64	25%	20%
65	25%	20%
66	30%	30%
67	30%	25%
68	30%	25%
69	30%	25%
70	100%	30%
71	100%	30%
72	100%	30%
73	100%	30%
74 & Over	100%	100%
Ref	3261	3261

55 & 32 Condition	Percent of Eligible Active Members Retiring Within Next Year			
	State		Local Government	
	Men	Women	Men	Women
Year of Eligibility				
1	33%	33%	33%	33%
2	27%	27%	27%	27%
3-20	21%	21%	21%	21%
21 & over	100%	100%	100%	100%
Ref	3260	3260	3260	3260

Probabilities of Reduced Retirement

Transition Group A

Ages	Percent of Eligible Active Members Retiring Within Next Year				
	State		Local Government		Public Safety
	Men	Women	Men	Women	
48					4.00%
49					4.00%
50					4.00%
51					4.00%
52					
53					
54					
55	3.00%	2.50%	3.00%	3.50%	
56	3.00%	2.50%	3.00%	3.50%	
57	3.00%	3.50%	3.00%	3.50%	
58	3.00%	3.50%	3.00%	3.50%	
59	3.00%	3.50%	3.00%	3.50%	
60	5.00%	8.00%	5.00%	8.00%	
61	5.00%	8.00%	5.00%	8.00%	
62	8.75%	8.00%	8.75%	8.00%	
63	8.75%	10.00%	8.75%	10.00%	
64	8.75%	10.00%	8.75%	10.00%	
Ref	3253	3254	3253	3255	1200

Transition Group B

Ages	Percent of Eligible Active Members Retiring Within Next Year					
	State		Local Government		Public Safety	Law Enforcement
	Men	Women	Men	Women		
48					4.00%	4.00%
49					4.00%	4.00%
50					4.00%	
51					4.00%	
52					4.00%	
53					4.00%	
54						
55	3.00%	2.50%	3.00%	3.50%		
56	3.00%	2.50%	3.00%	3.50%		
57	3.00%	3.50%	3.00%	3.50%		
58	3.00%	3.50%	3.00%	3.50%		
59	3.00%	3.50%	3.00%	3.50%		
60	5.00%	8.00%	5.00%	8.00%		
61	5.00%	8.00%	5.00%	8.00%		
62	8.75%	8.00%	8.75%	8.00%		
63	8.75%	10.00%	8.75%	10.00%		
64	8.75%	10.00%	8.75%	10.00%		
65	15.00%	15.00%	12.00%	15.00%		
Ref	3253	3254	3253	3255	1200	1200

Probabilities of Reduced Retirement

Transition Group C

Ages	Percent of Eligible Active Members Retiring Within Next Year					
	State		Local Government		Public Safety	Law Enforcement
	Men	Women	Men	Women		
48						4.00%
49						4.00%
50						4.00%
51						4.00%
52					4.00%	
53					4.00%	
54					4.00%	
55					4.00%	
56						
57	3.00%	2.50%	3.00%	3.50%		
58	3.00%	2.50%	3.00%	3.50%		
59	3.00%	3.50%	3.00%	3.50%		
60	3.00%	3.50%	3.00%	3.50%		
61	3.00%	3.50%	3.00%	3.50%		
62	5.00%	8.00%	5.00%	8.00%		
63	5.00%	8.00%	5.00%	8.00%		
64	8.75%	8.00%	8.75%	8.00%		
65	8.75%	10.00%	8.75%	10.00%		
66	8.75%	10.00%	8.75%	10.00%		
Ref	3253	3254	3253	3255	1200	1200

STATE

Separations from Active Employment Before Age & Service Retirement & Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating Within the Next Year						Pay Increase Assumptions for an Individual Employee		
		Death*		Withdrawal		Disability		Merit & Seniority	Base (Economy)	Increase Next Year
		Men	Women	Men	Women	Men	Women			
	0			50.00%	50.00%					
	1			35.00%	35.00%					
	2			20.00%	20.00%					
	3			15.00%	15.00%					
	4			12.00%	12.00%					
20	5 & Over	0.0510%	0.0188%	10.00%	10.00%	0.07%	0.06%	5.50%	2.75%	8.25%
25		0.0441%	0.0147%	8.20%	9.28%	0.07%	0.06%	5.14%	2.75%	7.89%
30		0.0671%	0.0276%	5.80%	7.30%	0.07%	0.06%	3.88%	2.75%	6.63%
35		0.0926%	0.0421%	4.28%	5.10%	0.11%	0.10%	2.90%	2.75%	5.65%
40		0.1140%	0.0559%	3.14%	3.46%	0.20%	0.17%	2.34%	2.75%	5.09%
45		0.1353%	0.0716%	2.22%	2.42%	0.33%	0.28%	1.68%	2.75%	4.43%
50		0.1823%	0.1010%	1.84%	2.10%	0.47%	0.40%	1.10%	2.75%	3.85%
55		0.2746%	0.1630%	1.80%	2.10%	0.74%	0.63%	0.72%	2.75%	3.47%
60		0.4294%	0.2551%	1.80%	2.10%	0.88%	0.75%	0.42%	2.75%	3.17%
65		0.6162%	0.3697%	1.80%	2.10%	0.88%	0.75%	0.12%	2.75%	2.87%
70		0.8527%	0.5650%	1.80%	2.10%	0.88%	0.75%	0.00%	2.75%	2.75%
Ref		#2723x1.3sb0	#2724x1.3sb0	1034 #1387x1	1034 #1389x1	#1092x0.7	#1092x0.6	573		

*Applicable rates during the 2022 Calendar Year. Rates in future years are determined by the above rates and the MP-2020 projection scale.

The pay increase assumptions are age based only, and not service based.

LOCAL GOVERNMENT

Separations from Active Employment Before Age & Service Retirement & Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating Within the Next Year						Pay Increase Assumptions for an Individual Employee		
		Death*		Withdrawal		Disability		Merit & Seniority	Base (Economy)	Increase Next Year
		Men	Women	Men	Women	Men	Women			
	0			40.00%	40.00%					
	1			27.00%	27.00%					
	2			18.00%	18.00%					
	3			13.00%	13.00%					
	4			11.00%	11.00%					
20	5 & Over	0.0510%	0.0188%	10.00%	11.00%	0.05%	0.04%	5.50%	2.75%	8.25%
25		0.0441%	0.0147%	7.78%	9.32%	0.05%	0.04%	5.14%	2.75%	7.89%
30		0.0671%	0.0276%	5.34%	6.94%	0.05%	0.04%	3.88%	2.75%	6.63%
35		0.0926%	0.0421%	3.86%	5.02%	0.08%	0.06%	2.78%	2.75%	5.53%
40		0.1140%	0.0559%	2.82%	3.52%	0.15%	0.12%	2.14%	2.75%	4.89%
45		0.1353%	0.0716%	2.26%	2.70%	0.24%	0.19%	1.60%	2.75%	4.35%
50		0.1823%	0.1010%	2.04%	2.50%	0.34%	0.27%	1.10%	2.75%	3.85%
55		0.2746%	0.1630%	2.00%	2.50%	0.53%	0.42%	0.72%	2.75%	3.47%
60		0.4294%	0.2551%	2.00%	2.50%	0.63%	0.50%	0.42%	2.75%	3.17%
65		0.6162%	0.3697%	2.00%	2.50%	0.63%	0.50%	0.12%	2.75%	2.87%
70	0.8527%	0.5650%	2.00%	2.50%	0.63%	0.50%	0.00%	2.75%	2.75%	
Ref		#2723x1.3sb0	#2724x1.3sb0	1035 #1391x1	1035 #1393x1	#1092x0.5	#1092x0.4	574		

*Applicable rates during the 2022 Calendar Year. Rates in future years are determined by the above rates and the MP-2020 projection scale.

The pay increase assumptions are age based only, and not service based.

PUBLIC SAFETY

Separations from Active Employment Before Age & Service Retirement & Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating Within the Next Year						Pay Increase Assumptions for an Individual Employee		
		Death*		Withdrawal		Disability		Merit & Seniority	Base (Economy)	Increase Next Year
		Men	Women	Men	Women	Men	Women			
	0			20.00%	20.00%					
	1			19.00%	19.00%					
	2			15.00%	15.00%					
	3			15.00%	15.00%					
	4			10.00%	10.00%					
20	5 & Over	0.0738%	0.0303%	10.00%	10.00%	0.20%	0.20%	8.00%	2.75%	10.75%
25		0.0762%	0.0427%	10.00%	10.00%	0.20%	0.20%	6.80%	2.75%	9.55%
30		0.0998%	0.0648%	8.80%	8.80%	0.20%	0.20%	4.20%	2.75%	6.95%
35		0.1210%	0.0862%	6.20%	6.20%	0.23%	0.44%	2.22%	2.75%	4.97%
40		0.1333%	0.0994%	3.50%	3.50%	0.43%	0.66%	1.46%	2.75%	4.21%
45		0.1481%	0.1120%	2.20%	2.20%	0.70%	0.76%	1.00%	2.75%	3.75%
50		0.1919%	0.1448%	2.00%	2.00%	1.07%	0.92%	0.74%	2.75%	3.49%
55		0.2868%	0.2132%	2.00%	2.00%	1.40%	2.05%	0.52%	2.75%	3.27%
60		0.4648%	0.3012%	2.00%	2.00%	1.80%	2.75%	0.40%	2.75%	3.15%
65		0.7058%	0.3725%	2.00%	2.00%	2.00%	2.75%	0.16%	2.75%	2.91%
70		1.2148%	0.6860%	2.00%	2.00%	2.00%	2.75%	0.00%	2.75%	2.75%
Ref		#2721x1.7sb0	#2722x1.7sb0	1036 #1211x1	1036 #1211x1	#1221x1	#1222x1	575		

*Applicable rates during the 2022 Calendar Year. Rates in future years are determined by the above rates and the MP-2020 projection scale.

The pay increase assumptions are age based only, and not service based.

LAW ENFORCEMENT

Separations from Active Employment Before Age & Service Retirement & Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating Within the Next Year						Pay Increase Assumptions for an Individual Employee		
		Death*		Withdrawal		Disability		Merit & Seniority	Base (Economy)	Increase Next Year
		Men	Women	Men	Women	Men	Women			
	0			16.00%	20.00%					
	1			10.00%	12.00%					
	2			8.00%	9.00%					
	3			6.00%	6.00%					
	4			5.00%	6.00%					
20	5 & Over	0.0738%	0.0303%	4.50%	5.00%	0.20%	0.20%	8.00%	2.75%	10.75%
25		0.0762%	0.0427%	3.54%	3.80%	0.20%	0.20%	6.80%	2.75%	9.55%
30		0.0998%	0.0648%	2.66%	2.90%	0.20%	0.20%	4.20%	2.75%	6.95%
35		0.1210%	0.0862%	2.14%	2.30%	0.23%	0.44%	2.22%	2.75%	4.97%
40		0.1333%	0.0994%	1.48%	1.50%	0.43%	0.66%	1.46%	2.75%	4.21%
45		0.1481%	0.1120%	1.20%	1.30%	0.70%	0.76%	1.00%	2.75%	3.75%
50		0.1919%	0.1448%	1.20%	1.20%	1.07%	0.92%	0.74%	2.75%	3.49%
55		0.2868%	0.2132%	1.20%	1.20%	1.40%	2.05%	0.52%	2.75%	3.27%
60		0.4648%	0.3012%	1.20%	1.20%	1.80%	2.75%	0.40%	2.75%	3.15%
65		0.7058%	0.3725%	1.20%	1.20%	2.00%	2.75%	0.16%	2.75%	2.91%
70	1.2148%	0.6860%	1.20%	1.20%	2.00%	2.75%	0.00%	2.75%	2.75%	
Ref		#2721x1.7sb0	#2722x1.7sb0	753 #876x1	1037 #575x1	#1221x1	#1222x1	575		

*Applicable rates during the 2022 Calendar Year. Rates in future years are determined by the above rates and the MP-2020 projection scale.

The pay increase assumptions are age based only, and not service based.

Single Life Retirement Values

Sample Attained Ages*	Present Value of \$1 Monthly for Life Increasing 3.0% Annually (First Increase After 1 Year)		Future Life Expectancy (Years)	
	Males	Females	Males	Females
50	\$202.74	\$211.12	34.08	37.03
55	188.76	198.72	29.24	32.10
60	172.26	183.59	24.59	27.30
65	153.25	165.39	20.18	22.64
70	131.60	144.06	16.03	18.18
75	107.99	120.14	12.22	14.04
80	83.94	95.11	8.89	10.35
Ref:	:#2705x1.15sb0	:#2706x1.15sb0		

*Attained Age during the 2022 Calendar Year.

Miscellaneous and Technical Assumptions

December 31, 2022

Marriage Assumption:	70% of males and 60% of females are assumed to be married for purposes of death-in-service benefits for State and Local members. 90% of males and 90% of females are assumed to be married for purposes of death-in-service benefits for Law members. Male spouses are assumed to be three years older than female spouses for active member valuation purposes. In retired or inactive cases where spouse information is needed, but not available, the three-year age difference is also assumed.
Pay Increase Timing:	Beginning of year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Final Average Salary:	For present value of future benefit purposes, final average salary was calculated in accordance with pay increase assumptions, but was not permitted to fall below the final average salary reported in the data.
Decrement Timing:	Decrements are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and mortality decrements do not operate during the first 5 years of service. The withdrawal decrement does not operate for members eligible to retire.
Death after Disability:	Death after disability benefits were approximated by assuming that the disability benefit would be paid as a joint and 35% survivor benefit for people in the original disability plan and as a joint and 20% survivor benefit for people in the post 1992 plan.
Service Credit Accruals:	It is assumed that members accrue one year of service credit per year. A (0.40)% factor is applied to State active member liabilities (other than for refunds) and a (0.50)% factor is applied to Local active member liabilities (other than for refunds) to recognize that a portion of the membership is part time.
Minimum Earnable Salary:	A (1.00)% factor is applied to State and Local active member liabilities (other than for refunds) to recognize the minimum amount that members must earn each month to qualify for full service credit. The minimum earnable salary for calendar year 2023 was \$709.03 per month.
Qualified Excess Benefit Arrangement (QEBA):	Benefit amounts, if any, in excess of the IRC §415(b) limits are paid through a QEBA and are included in the actuarial valuation results.

Miscellaneous and Technical Assumptions

December 31, 2022 (Concluded)

Miscellaneous Loads:	<ul style="list-style-type: none">• A load of approximately 0.43% of payroll is included in the computed normal cost to recognize subsidized service purchases.• Law active accrued liabilities for retirement are reduced by 10% to recognize that total service reported is not entirely Law service, and that non-Law service cannot be used to satisfy Law eligibility conditions.• A load of approximately 0.40% of Traditional Plan and 1.00% of Combined Plan payroll is included in the Traditional and Combined Plan computed normal costs to recognize expected administrative expenses.
Transition Groups Under Senate Bill #343:	If the transition group data field was populated and it was A or B, the OPERS provided transition group was used. For all other records (i.e., the provided transition group was C or blank), the member's transition group was estimated based upon first eligibility of retirement (assuming future service accruals for active members).
Cost-of-Living Adjustments:	For individuals retiring after January 7, 2013, cost-of-living adjustments were assumed to be 3.00% for calendar year 2023 and 2.05% thereafter. Increases assumed to occur on anniversary of benefit effective date.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon contribution rates presented in the Summary of Benefits, and the actual payroll payable at the time contributions are made.
Other Contributions:	For amortization purposes, it was assumed that payroll for mitigating contributions (i.e., 3.50% from the Combined and Member Directed Plans and 2.24% from the Alternate Retirement Plan) and payroll for reemployed retirees will grow at the assumed 2.75% wage inflation assumption.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Normal Form of Benefit:	The assumed normal form of benefit is a straight life benefit, except where otherwise noted.
Missing Member Data and Member Data Adjustments:	Active and inactive records with missing dates of birth, if any, were given dates of birth that resulted in an entry age of 30 based upon the reported service. Active and inactive records with missing gender codes, if any, were assumed to be female. For active members with less than 6 months of service credit and a reported annualized salary greater than \$200,000, the annual salary used for valuation purposes was the greater of the member's reported FAS and non-annualized gross salary.

SECTION XI

FINANCIAL PRINCIPLES

Financial Principles and Operational Techniques of OPERS

Promises Made, and To Be Paid For. As each year is completed, OPERS in effect hands an “IOU” to each member then acquiring a year of service credit --- the “IOU” says: “The Ohio Public Employees Retirement System owes you one year’s worth of retirement benefits, payments in cash commencing when you qualify for retirement.”

The related **key financial questions** are:

Which generation of taxpayers contributes the money to cover the IOU?

The present taxpayers, who receive the benefit of the member’s present year of service? **Or the future taxpayers**, who happen to be in Ohio at the time the IOU becomes a cash demand, years and often decades later?

The law governing OPERS financing intends that this year’s taxpayers contribute the money to cover the IOUs being handed out this year. With this financial objective, **the employer contribution rate is expected to remain approximately level from generation to generation of taxpayers.**

There are systems which have a design for deferring contributions to future taxpayers. Lured by a lower contribution rate now, they put aside the consequence that the contribution rate must then relentlessly grow to a level much higher than would be required if a level contribution pattern were followed.

An inevitable by-product of the level-cost design is the accumulation of reserve assets, for decades, and the income produced when the assets are invested. **Investment income** becomes **the 3rd and largest contributor** for benefits to employees, and is interlocked with the contribution amounts required from employees and employers.

Translated to actuarial terminology, this level-cost objective means that the contribution rates must total at least the following:

Normal Cost (the cost of members’ service being rendered this year)

... plus ...

Interest on Unfunded Actuarial Accrued Liabilities (unfunded actuarial accrued liabilities are the difference between: liabilities for service already rendered; and the accrued assets of OPERS).

Computing Contributions to Support Fund Benefits. From a given schedule of benefits and from employee and asset data, the actuary calculates the contribution rates to support the benefits by means of ***an actuarial valuation and a funding method.***

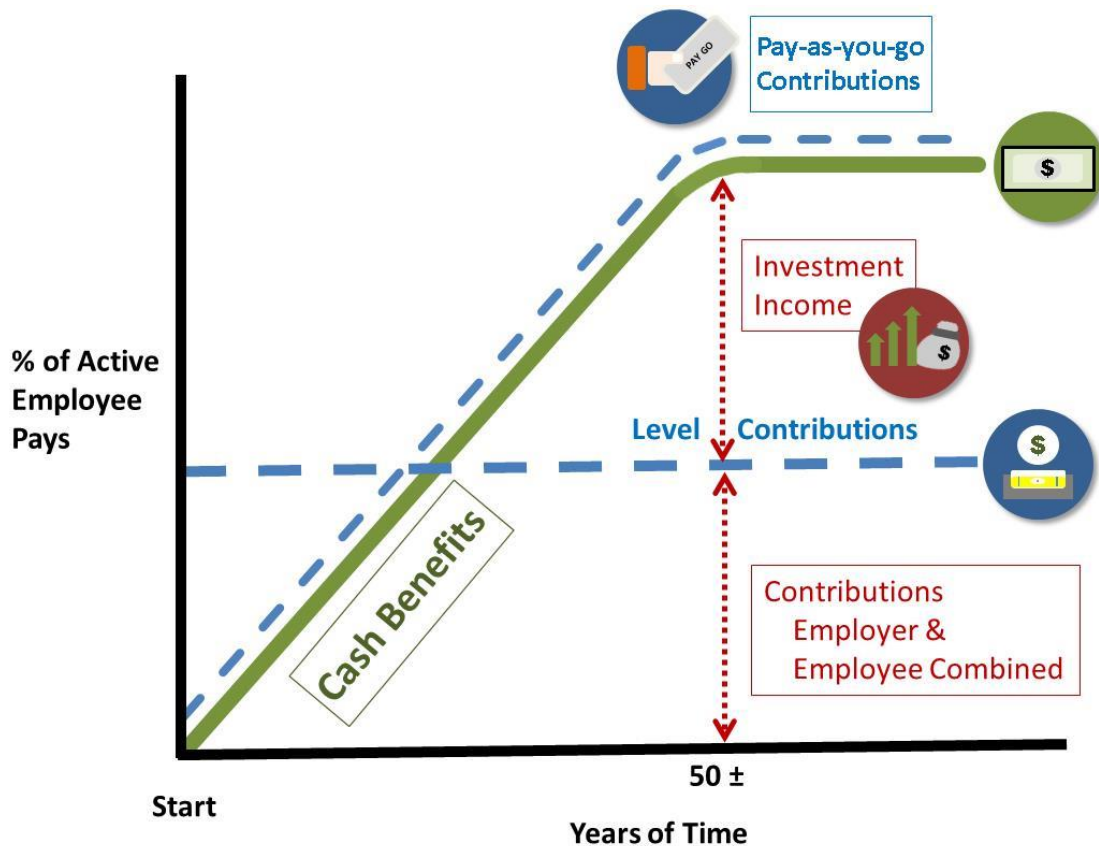
An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment; the rates of mortality; the rates of disability; the rates of pay increases; and the assumed age or ages at actual retirement.

In an actuarial valuation, assumptions must be made as to what the above rates will be for the next year and for decades in the future. The assumptions are established by the Retirement Board after receiving the advice of the actuary.

Reconciling Differences Between Assumed Experience and Actual Experience. Once actual experience has occurred and has been observed, it will not coincide exactly with assumed experience, regardless of the skill of the actuary and the many calculations made. The future cannot be predicted with 100% precision.

OPERS copes with these continually changing differences by having annual actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is ***continuing adjustments in financial position.***

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CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

- **Economic Risk Areas**
 - Rates of investment return
 - Rates of pay increase
 - Changes in active member group size
- **Non-Economic Risk Areas**
 - Ages at actual retirement
 - Rates of mortality
 - Rates of withdrawal of active members (turnover)
 - Rates of disability

The Actuarial Valuation Process

The financing diagram on the opposite page shows the relationship between *the two fundamentally different philosophies of paying* for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program) which is thus an *increasing contribution method*; and, the *level contribution method* which attempts to equalize contributions between the generations.

The actuarial valuation is the mathematical process by which the level contribution rate is determined. The activity constituting the valuation may be summarized as follows:

- A. **Census Data**, including:
 - Retired lives now receiving benefits
 - Former employees with vested benefits not yet payable
 - Active employees

- B. + **Asset data** (cash & investments)

- C. + **Benefit provisions** that establish eligibility and amounts of payments to members

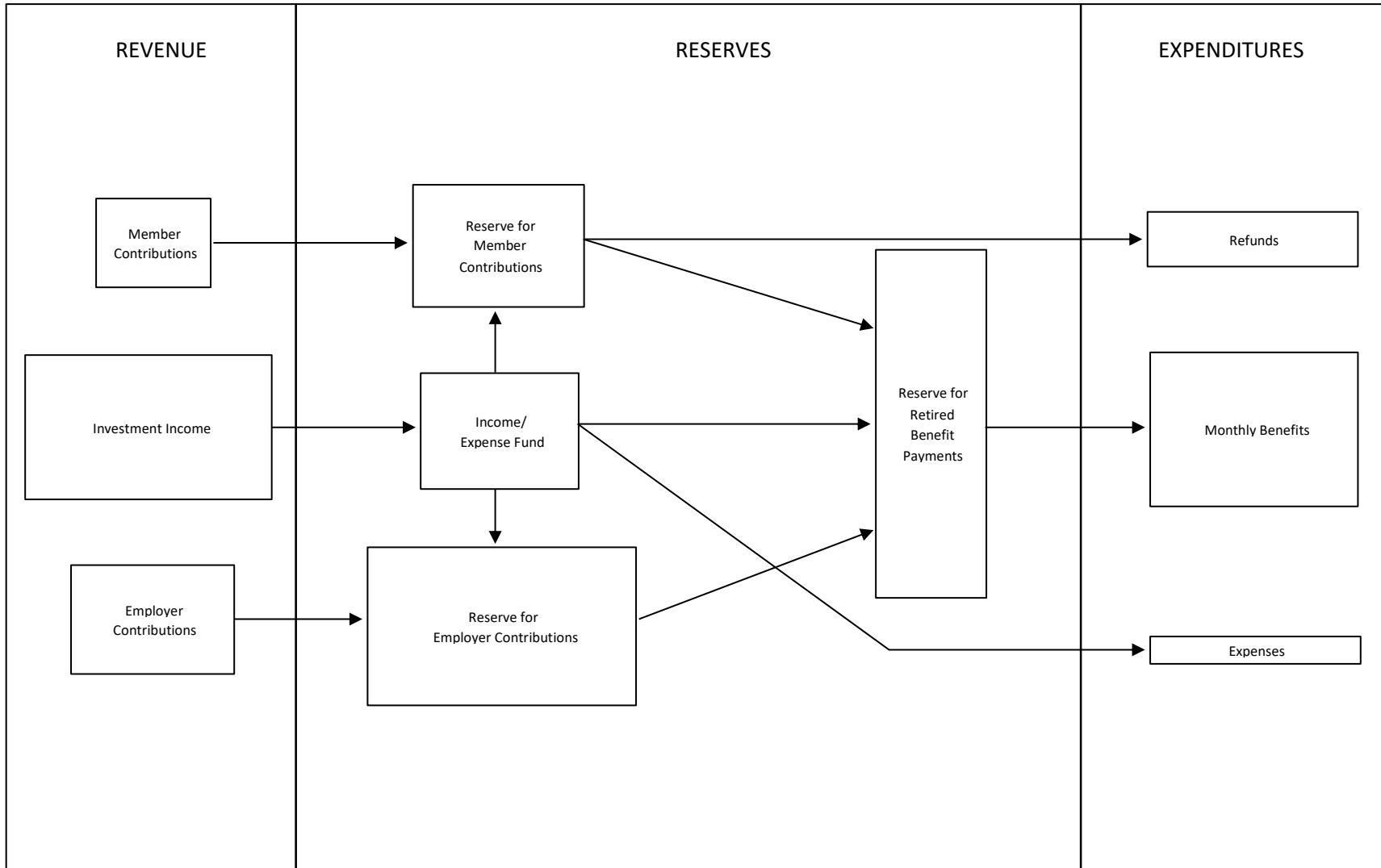
- D. + **Assumptions concerning future experience** in various risk areas

- E. + **The funding method** for employer contributions (the long-term, planned pattern for employer contributions)

- F. + **Mathematically combining the assumptions, the funding method, and the data**

- G. = Determination of:
 - Plan Financial Position; and/or
 - New Employer Contribution Rate

Flow of Money Through the Retirement System



Glossary

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Accumulated Benefit Obligation. The actuarial present value of vested and non-vested benefits based on service to date and past and current salary levels.

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

Actuarial Equivalent. A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

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.

Actuary. A person who is trained in the applications of probability and compound interest to problems in business and finance that involve payment of money in the future, contingent upon the occurrence of future events. Most actuaries in the United States are Members of the American Academy of Actuaries (MAAA). The Society of Actuaries is an international research, education and membership organization for actuaries in the life and health insurance, employee benefits, and pension fields. It administers a series of examinations leading initially to Associateship and the designation ASA and ultimately to Fellowship with the designation FSA.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience Gain (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Funding Value of Assets. The value of current plan assets recognized for valuation purposes. Generally based on a phased-in recognition of all or a portion of market related investment return. Sometimes referred to as Actuarial Value of Assets.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Plan Termination Liability. The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a “going concern” basis and is not normally determined in a routine actuarial valuation.

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. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

Meaning of “Unfunded Actuarial Accrued Liabilities”

“Actuarial accrued liabilities” are **the present value of the portions of promised benefits that are not covered by future normal cost contributions** --- a liability has been established (“accrued”) because the service has been rendered but the resulting monthly cash benefit may not be payable until years in the future.

If “actuarial accrued liabilities” at any time exceed the plan’s accrued assets (cash & investments), the difference is **“unfunded actuarial accrued liabilities.”** This is the common condition. If the plan’s assets equaled the plan’s “actuarial accrued liabilities”, the plan would be termed “fully funded.” This is an unusual condition.

Each time a plan adds a new benefit which applies to service already rendered, an “actuarial accrued liability” is created, which is also an “unfunded actuarial accrued liability” because the plan can’t print instant cash to cover the value of the new benefit promises. Payment for such unfunded actuarial accrued liabilities is spread over a period of years, commonly in the 15-30 year range.

Unfunded actuarial accrued liabilities can occur in another way: if actual plan experience is less favorable than assumed, the difference is added to unfunded actuarial accrued liabilities. For example, in plans where benefits are directly related to an employee’s pay near time of retirement, unfunded actuarial accrued liabilities increased rapidly during the 1970’s because unexpected rates of pay increase created additional actuarial accrued liabilities which could not be matched by reasonable investment results. Most of the unexpected pay increases were the direct result of inflation, which is a very destructive force on financial stability.

The existence of unfunded actuarial accrued liabilities is not bad, but the changes from year to year in the amount of unfunded actuarial accrued liabilities are important, “bad” or “good” or somewhere in between.

Nor are unfunded actuarial accrued liabilities a bill payable immediately, but it is important that policy-makers prevent the amount from becoming unreasonably high and ***it is vital for plans to have a sound method for making payments toward them*** so that they are controlled.

SECTION XII

ADDITIONAL SCHEDULES

This information is presented in draft form for review by the System's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the System's financial statements.

Schedule of Defined Benefit Funding Progress (\$ Amounts in Millions) Traditional, Combined, and Member Directed Plans

The schedule below measures the funding progress with respect to the **retirement allowance** portion of OPERS benefits. Assets and liabilities related to post-employment health care benefits are specifically excluded from the schedule.

Valuation Year	Actuarial Accrued Liabilities (AAL) @	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Covered Payroll^	UAAL as a % of Covered Payroll
2001	\$49,095	\$48,748	\$ 347	99 %	\$ 10,782	3 %
2001*	47,492	48,748	(1,256)	103 %	10,782	0 %
2002	50,872	43,706	7,166	86 %	11,207	64 %
2003	54,774	46,746	8,028	85 %	11,165	72 %
2004	57,604	50,452	7,152	88 %	11,454	62 %
2005	61,146	54,473	6,673	89 %	11,807	57 %
2005*	62,498	54,473	8,025	87 %	11,807	68 %
2006	66,161	61,296	4,865	93 %	12,175	40 %
2007	69,734	67,151	2,583	96 %	12,583	21 %
2008	73,466	55,315	18,150	75 %	12,801	142 %
2009	76,555	57,629	18,926	75 %	12,548	151 %
2010	79,630	60,600	19,031	76 %	12,450	153 %
2010*	80,485	63,649	16,836	79 %	12,450	135 %
2011	84,530	65,436	19,094	77 %	12,399	154 %
2012	87,105	67,855	19,250	78 %	12,193	158 %
2012#	83,878	67,855	16,023	81 %	12,193	131 %
2013	86,645	71,411	15,234	82 %	12,331	124 %
2014	89,285	74,865	14,420	84 %	12,486	114 %
2015	91,832	78,061	13,771	85 %	12,688	106 %
2015*	97,177	78,061	19,116	80 %	12,688	148 %
2016	100,167	80,280	19,887	80 %	13,186	151 %
2017	102,656	83,292	19,364	81 %	13,498	143 %
2017*	106,090	83,292	22,797	79 %	13,498	169 %
2018	108,705	84,287	24,418	78 %	13,807	177 %
2019	111,371	88,572	22,800	80 %	14,380	159 %
2020	113,372	93,969	19,402	83 %	14,383	135 %
2020*	115,241	93,969	21,272	82 %	14,383	148 %
2021	118,517	99,710	18,807	84 %	14,822	127 %
2022	122,463	102,852	19,611	84 %	15,806	124 %

@ Valuation years 2015 and prior exclude reserve for Member Directed future adverse experience (if any).

^ In 2014 and thereafter reported by the OPERS Staff to GRS. Prior to 2014, valuation payroll is presented. The payroll amounts exclude Member Directed payroll.

* Revised actuarial assumptions.

After benefit changes.

Schedule of Defined Benefit Funding Progress (\$ Amounts in Millions) Traditional Plan

The schedule below measures the funding progress with respect to the **retirement allowance** portion of OPERS benefits. Assets and liabilities related to post-employment health care benefits are specifically excluded from the schedule.

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Covered Payroll [^]	UAAL as a % of Covered Payroll
2001	\$49,095	\$48,748	\$ 347	99 %	\$ 10,782	3 %
2001*	47,492	48,748	(1,256)	103 %	10,782	0 %
2002	50,872	43,706	7,166	86 %	11,207	64 %
2003	54,756	46,737	8,019	85 %	11,056	73 %
2004	57,573	50,430	7,143	88 %	11,313	63 %
2005	61,099	54,433	6,666	89 %	11,633	57 %
2005*	62,447	54,433	8,014	87 %	11,633	69 %
2006	66,089	61,235	4,854	93 %	11,971	41 %
2007	69,639	67,067	2,572	96 %	12,347	21 %
2008	73,346	55,230	18,116	75 %	12,546	144 %
2009	76,407	57,519	18,888	75 %	12,290	154 %
2010	79,459	60,461	18,997	76 %	12,165	156 %
2010*	80,307	63,515	16,792	79 %	12,165	138 %
2011	84,325	65,274	19,052	77 %	12,103	157 %
2012	86,876	67,670	19,206	78 %	11,884	162 %
2012#	83,664	67,670	15,994	81 %	11,884	135 %
2013	86,407	71,175	15,232	82 %	12,000	127 %
2014	89,017	74,567	14,450	84 %	12,140	117 %
2015	91,535	77,700	13,835	85 %	12,321	110 %
2015*	96,863	77,700	19,163	80 %	12,321	152 %
2016	99,818	79,865	19,953	80 %	12,794	156 %
2017	102,274	82,797	19,477	81 %	13,085	149 %
2017*	105,691	82,797	22,894	78 %	13,085	175 %
2018	108,265	83,715	24,549	77 %	13,376	184 %
2019	110,887	87,903	22,984	79 %	13,932	165 %
2020	112,833	93,180	19,652	83 %	13,940	141 %
2020*	114,696	93,180	21,516	81 %	13,940	154 %
2021	117,910	98,796	19,114	84 %	14,364	133 %
2022	121,784	101,847	19,936	84 %	15,339	130 %

[^] In 2014 and thereafter reported by the OPERS Staff to GRS. Prior to 2014, valuation payroll is presented.

* Revised actuarial assumptions.

After benefit changes.

Schedule of Defined Benefit Funding Progress (\$ Amounts in Millions) Combined Plan

The schedule below measures the funding progress with respect to the **retirement allowance** portion of OPERS benefits. Assets and liabilities related to post-employment health care benefits are specifically excluded from the schedule.

Valuation Year	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Covered Payroll [^]	UAAL as a % of Covered Payroll
2003	\$ 18	\$ 9	\$ 9	50 %	\$109	8 %
2004	31	22	9	71 %	141	6 %
2005	47	40	7	85 %	174	4 %
2005*	51	40	11	78 %	174	6 %
2006	72	61	11	85 %	205	5 %
2007	95	84	11	88 %	236	5 %
2008	120	85	35	71 %	255	14 %
2009	148	110	38	74 %	258	15 %
2010	171	138	33	81 %	284	12 %
2010*	177	134	43	76 %	284	15 %
2011	203	161	42	79 %	296	14 %
2012	226	183	43	81 %	310	14 %
2012#	212	183	29	86 %	310	9 %
2013	230	229	1	100 %	331	0 %
2014	260	289	(29)	111 %	346	0 %
2015	288	350	(62)	122 %	367	0 %
2015*	303	350	(47)	116 %	367	0 %
2016	336	402	(66)	120 %	392	0 %
2017	365	479	(113)	131 %	413	0 %
2017*	382	479	(97)	125 %	413	0 %
2018	420	552	(132)	131 %	431	0 %
2019	461	646	(185)	140 %	448	0 %
2020	502	752	(250)	150 %	443	0 %
2020*	508	752	(244)	148 %	443	0 %
2021	567	875	(307)	154 %	458	0 %
2022	638	963	(325)	151 %	467	0 %

[^] In 2014 and thereafter reported by the OPERS Staff to GRS. Prior to 2014, valuation payroll is presented.

* Revised actuarial assumptions.

After benefit changes.

Schedule of Defined Benefit Funding Progress (\$ Amounts) Member Directed Plan

The schedule below measures the funding progress with respect to the **retirement allowance** portion of OPERS benefits. Assets and liabilities related to post-employment health care benefits are specifically excluded from the schedule.

Valuation Year	Actuarial Accrued Liabilities (AAL) @	Valuation Assets	Unfunded Actuarial Accrued Liabilities (UAAL)	Ratio of Assets to AAL	Covered Payroll	UAAL as a % of Covered Payroll
2008	\$ 166,354	\$ 147,976	\$ 18,378	89 %	NA	NA
2009	252,670	205,639	47,031	81 %	NA	NA
2010	489,792	438,982	50,810	90 %	NA	NA
2010*	496,004	454,025	41,979	92 %	NA	NA
2011	1,172,900	1,156,151	16,749	99 %	NA	NA
2012	2,665,552	2,523,879	141,673	95 %	NA	NA
2013	6,884,231	6,826,536	57,695	99 %	NA	NA
2014	8,291,077	8,771,712	(480,635)	106 %	NA	NA
2015	9,767,164	10,622,057	(854,893)	109 %	NA	NA
2015*	10,290,582	10,622,057	(331,475)	103 %	NA	NA
2016	12,961,105	12,961,105	0	100 %	NA	NA
2017	16,770,041	16,770,041	0	100 %	NA	NA
2017*	16,770,041	16,770,041	0	100 %	NA	NA
2018	19,916,815	19,916,815	0	100 %	NA	NA
2019	22,821,267	22,821,267	0	100 %	NA	NA
2020	37,150,719	37,150,719	0	100 %	NA	NA
2020*	37,150,719	37,150,719	0	100 %	NA	NA
2021	39,430,681	39,430,681	0	100 %	NA	NA
2022	41,020,063	41,020,063	0	100 %	NA	NA

@ Valuation years 2015 and prior exclude reserve for Member Directed future adverse experience (if any).

* Revised actuarial assumptions.

Schedule of Employer Contributions*

Traditional Plan		
Valuation Date December 31	Year Ended December 31	Actuarial Determined Employer Contribution (Percents of Payroll)
2005	2008	7.12%
2006	2009	7.13%
2007	2010	7.14%
2008	2011	13.33%
2009	2012	13.64%
2010	2013	13.52%
2011	2014	14.15%
2012	2015	11.16%
2013	2016	10.16%
2014	2017	10.16%
2015	2018	14.16%
2016	2019	14.17%
2017	2020	14.17%
2018	2021	14.18%
2019	2022	14.18%
2020	2023	14.18%
2021	2024	14.17%
2022	2025	14.17%

Combined Plan		
Valuation Date December 31	Year Ended December 31	Actuarial Determined Employer Contribution (Percents of Payroll)
2005	2008	7.29%
2006	2009	7.33%
2007	2010	7.22%
2008	2011	10.00%
2009	2012	10.00%
2010	2013	13.00%
2011	2014	14.00%
2012	2015	11.00%
2013	2016	10.00%
2014	2017	10.00%
2015	2018	14.00%
2016	2019	14.00%
2017	2020	14.00%
2018	2021	14.00%
2019	2022	14.00%
2020	2023	14.00%
2021	2024	14.00%
2022	2025	14.00%

Member Directed Plan		
Valuation Date December 31	Year Ended December 31	Actuarial Determined Employer Contribution
2008	2011	\$ 1,570
2009	2012	4,019
2010	2013	4,342
2011	2014	1,669
2012	2015	14,121
2013	2016	5,751
2014	2017	0
2015	2018	0
2016	2019	0
2017	2020	0
2018	2021	0
2019	2022	0
2020	2023	0
2021	2024	0
2022	2025	0

* The amounts reported in this schedule do not include contributions for post-employment healthcare benefits.



Schedule of Unfunded Actuarial Accrued Liability@ Traditional, Combined and Member Directed Plans

	December 31, 2022					
	General			Public Safety	Law Enforcement	Grand Total
	State	Local	Total			
Accrued Liabilities						
Active and Inactive Members	\$ 17,588,844,355	\$ 25,304,222,268	\$ 42,893,066,623	\$ 8,202,618	\$ 2,254,746,725	\$ 45,156,015,966
Retirees and Beneficiaries	30,693,381,837	43,235,477,233	73,928,859,070	58,127,393	3,320,014,483	77,307,000,946
Total Accrued Liabilities	\$ 48,282,226,192	\$ 68,539,699,501	\$ 116,821,925,693	\$ 66,330,011	\$ 5,574,761,208	\$ 122,463,016,912
Assets						
Active and Inactive Members						
EAF*	\$ (1,678,084,668)	\$ 775,062,971	\$ (903,021,697)	\$ (34,869,343)	\$ 488,371,640	\$ (449,519,400)
ESF	6,190,500,137	9,155,481,456	15,345,981,593	3,461,158	814,967,705	16,164,410,456
Unallocated	48,864,449	73,836,136	122,700,585	37,483	6,485,932	129,224,000
Funding Value of Assets Adjustment	3,671,423,440	5,544,324,134	9,215,747,574	2,785,715	482,025,721	9,700,559,010
Total Active and Inactive Assets	\$ 8,232,703,358	\$ 15,548,704,697	\$ 23,781,408,055	\$ (28,584,987)	\$ 1,791,850,998	\$ 25,544,674,066
Retirees and Beneficiaries						
A & PR Fund*	\$ 29,864,444,355	\$ 41,913,491,097	\$ 71,777,935,452	\$ 30,954,868	\$ 3,238,355,305	\$ 75,047,245,625
SBF Fund*	823,675,736	1,315,468,101	2,139,143,837	27,172,525	81,659,178	2,247,975,540
Reserve for Future MD Adverse Experience^	5,261,746	6,518,035	11,779,781	0	0	11,779,781
Total R&B Assets	\$ 30,693,381,837	\$ 43,235,477,233	\$ 73,928,859,070	\$ 58,127,393	\$ 3,320,014,483	\$ 77,307,000,946
Total Assets	\$ 38,926,085,195	\$ 58,784,181,930	\$ 97,710,267,125	\$ 29,542,406	\$ 5,111,865,481	\$ 102,851,675,012
Unfunded Actuarial Accrued Liability	\$ 9,356,140,997	\$ 9,755,517,571	\$ 19,111,658,568	\$ 36,787,605	\$ 462,895,727	\$ 19,611,341,900

@ The amounts reported in this schedule do not include contributions for post-employment healthcare benefits.

* After reserve transfers.

^ Includes funds for pending Member Directed retirements.

Schedule of Unfunded Actuarial Accrued Liability@ Traditional Plan

	December 31, 2022					
	General			Public Safety	Law Enforcement	Grand Total
	State	Local	Total			
Accrued Liabilities						
Active and Inactive Members	\$ 17,338,001,968	\$ 24,987,617,531	\$ 42,325,619,499	\$ 8,202,618	\$ 2,254,746,725	\$ 44,588,568,842
Retirees and Beneficiaries	30,652,713,420	43,164,333,932	73,817,047,352	58,127,393	3,320,014,483	77,195,189,228
Total Accrued Liabilities	\$ 47,990,715,388	\$ 68,151,951,463	\$ 116,142,666,851	\$ 66,330,011	\$ 5,574,761,208	\$ 121,783,758,070
Assets						
Active and Inactive Members						
EAF*	\$ (2,009,024,143)	\$ 315,961,971	\$ (1,693,062,172)	\$ (34,869,343)	\$ 488,371,640	\$ (1,239,559,875)
ESF	6,188,260,088	9,152,171,986	15,340,432,074	3,461,158	814,967,705	16,158,860,937
Unallocated	48,864,449	73,836,136	122,700,585	37,483	6,485,932	129,224,000
Funding Value of Assets Adjustment	3,631,540,246	5,487,402,480	9,118,942,726	2,785,715	482,025,721	9,603,754,162
Total Active and Inactive Assets	\$ 7,859,640,640	\$ 15,029,372,573	\$ 22,889,013,213	\$ (28,584,987)	\$ 1,791,850,998	\$ 24,652,279,224
Retirees and Beneficiaries						
A & PR Fund*	\$ 29,829,037,684	\$ 41,848,865,831	\$ 71,677,903,515	\$ 30,954,868	\$ 3,238,355,305	\$ 74,947,213,688
SBF Fund*	823,675,736	1,315,468,101	2,139,143,837	27,172,525	81,659,178	2,247,975,540
Total R&B Assets	\$ 30,652,713,420	\$ 43,164,333,932	\$ 73,817,047,352	\$ 58,127,393	\$ 3,320,014,483	\$ 77,195,189,228
Total Assets	\$ 38,512,354,060	\$ 58,193,706,505	\$ 96,706,060,565	\$ 29,542,406	\$ 5,111,865,481	\$ 101,847,468,452
Unfunded Actuarial Accrued Liability	\$ 9,478,361,328	\$ 9,958,244,958	\$ 19,436,606,286	\$ 36,787,605	\$ 462,895,727	\$ 19,936,289,618

@ The amounts reported in this schedule do not include contributions for post-employment healthcare benefits.

* After reserve transfers.

Schedule of Unfunded Actuarial Accrued Liability@ Combined Plan

	December 31, 2022					
	General			Public Safety	Law Enforcement	Grand Total
	State	Local	Total			
Accrued Liabilities						
Active and Inactive Members	\$ 250,842,387	\$ 316,604,737	\$ 567,447,124			\$ 567,447,124
Retirees and Beneficiaries	25,382,956	45,408,699	70,791,655			70,791,655
Total Accrued Liabilities	\$ 276,225,343	\$ 362,013,436	\$ 638,238,779			\$ 638,238,779
Assets						
Active and Inactive Members						
EAF*	\$ 332,435,611	\$ 461,866,339	\$ 794,301,950			\$ 794,301,950
ESF	2,219,364	3,028,200	5,247,564			5,247,564
Unallocated	0	0	0			0
Funding Value of Assets Adjustment	38,407,743	54,437,585	92,845,328			92,845,328
Total Active and Inactive Assets	\$ 373,062,718	\$ 519,332,124	\$ 892,394,842			\$ 892,394,842
Retirees and Beneficiaries						
A & PR Fund*	\$ 25,382,956	\$ 45,408,699	\$ 70,791,655			\$ 70,791,655
SBF Fund*	0	0	0			0
Total R&B Assets	\$ 25,382,956	\$ 45,408,699	\$ 70,791,655			\$ 70,791,655
Total Assets	\$ 398,445,674	\$ 564,740,823	\$ 963,186,497			\$ 963,186,497
Unfunded Actuarial Accrued Liability	\$ (122,220,331)	\$ (202,727,387)	\$ (324,947,718)			\$ (324,947,718)

@ The amounts reported in this schedule do not include contributions for post-employment healthcare benefits.

* After reserve transfers.

Schedule of Unfunded Actuarial Accrued Liability[@] DB Portion of Member Directed Plan

	December 31, 2022					
	General			Public Safety	Law Enforcement	Grand Total
	State	Local	Total			
Accrued Liabilities						
Active and Inactive Members	\$ 0	\$ 0	\$ 0			\$ 0
Retirees and Beneficiaries	15,285,461	25,734,602	41,020,063			41,020,063
Total Accrued Liabilities	\$ 15,285,461	\$ 25,734,602	\$ 41,020,063			\$ 41,020,063
Assets						
Active and Inactive Members						
EAF*	\$ (1,496,136)	\$ (2,765,339)	\$ (4,261,475)			\$ (4,261,475)
ESF	20,685	281,270	301,955			301,955
Unallocated	0	0	0			0
Funding Value of Assets Adjustment	1,475,451	2,484,069	3,959,520			3,959,520
Total Active and Inactive Assets	\$ 0	\$ 0	\$ 0			\$ 0
Retirees and Beneficiaries						
A & PR Fund*	\$ 10,023,715	\$ 19,216,567	\$ 29,240,282			\$ 29,240,282
SBF Fund*	0	0	0			0
Reserve for Future Adverse Experience^	5,261,746	6,518,035	11,779,781			11,779,781
Total R&B Assets	\$ 15,285,461	\$ 25,734,602	\$ 41,020,063			\$ 41,020,063
Total Assets	\$ 15,285,461	\$ 25,734,602	\$ 41,020,063			\$ 41,020,063
Unfunded Actuarial Accrued Liability	\$ 0	\$ 0	\$ 0			\$ 0

[@] The amounts reported in this schedule do not include contributions for post-employment healthcare benefits.

* After reserve transfers.

^ Includes funds for pending Member Directed retirements.

Supplementary Information

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest valuation date follows:

Valuation date	December 31, 2022		
Actuarial cost method	Individual entry age		
Amortization method for unfunded actuarial accrued liabilities	Level percent closed - Traditional and Combined Level dollar closed - Member-Directed		
Equivalent Single Amortization Period			
Traditional Plan	16 years	(Ending December 31, 2039)	
Combined Plan	N/A	(Plan has funded ratio of at least 100%)	
Member-Directed Plan	N/A	(Plan has funded ratio of at least 100%)	
Asset valuation method	4-year smoothed market		
Actuarial assumptions:			
Investment rate of return	6.90%		
Projected salary increases including wage inflation at 2.75%	2.75% - 10.75%		
Cost-of-living adjustments	Pre 1/7/2013 Retirees: 3.0% simple Post 1/7/2013 Retirees: 3.0% for calendar year 2023, then 2.05% simple		

	Traditional	Combined	Member Directed	Total
Retirees and beneficiaries receiving benefits	227,048	1,019	423	228,490
Terminated plan members entitled to but not yet receiving benefits				
Less than 5 years of service	664,599	1,490	0	666,089
5 or more years of service	41,577	1,039	0	42,616
Total	706,176	2,529	0	708,705
Active plan members				
Less than 5 years of service	122,811	1,228	0	124,039
5 or more years of service	159,155	5,354	0	164,509
Total	281,966	6,582	0	288,548
Total				
Less than 5 years of service	787,410	2,718	0	790,128
5 or more years of service	427,780	7,412	423	435,615
Total	1,215,190	10,130	423	1,225,743





August 30, 2023

Ms. Karen E. Carraher
Executive Director
Ohio Public Employees Retirement System
277 East Town Street
Columbus, Ohio 43215

Re: Report of the December 31, 2022 Actuarial Valuation

Dear Karen:

Enclosed are the 20 bound copies of the final report.

Sincerely,
Gabriel, Roeder, Smith & Company

A handwritten signature in black ink that reads "Mita Drazilov". The signature is written in a cursive, flowing style.

Mita D. Drazilov, ASA, FCA, MAAA

MDD:rmn
Enclosures

cc: Mr. Spencer Tawa
Plante Moran