

# City of Birmingham Employees Retirement System

78th Annual Actuarial Valuation  
as of June 30, 2022



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November 28, 2022

Retirement Board  
City of Birmingham Employees Retirement System  
Birmingham, Michigan

**Re: City of Birmingham Employees Retirement System Actuarial Valuation as of June 30, 2022  
Actuarial Disclosures**

Dear Board Members:

The results of the June 30, 2022 annual actuarial valuation of the City of Birmingham Employees Retirement System are presented in this report.

This report 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 purposes of the valuation are to measure the System's funding progress and to determine the employer contribution for the fiscal year ending June 30, 2024. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

The computed contribution amount shown in this report is determined using the actuarial assumptions and methods disclosed in Section C of this report. This report includes risk metrics in the Appendix, but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

The findings in this report are based on data and other information through June 30, 2022. The valuation was based upon information furnished by the City, concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the City.

This report was prepared using assumptions adopted by the Board. All actuarial assumptions used in this report are reasonable for the purposes of this valuation. All actuarial assumptions and methods used in the valuation follow the guidance in the applicable Actuarial Standards of Practice. Additional information about the actuarial assumptions is included in the section of this report entitled Summary of Valuation Methods and Assumptions.

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 was prepared during the recent and still-developing COVID-19 pandemic, which is likely to influence demographic and economic experience, at least in the short term. Results in this report are developed based on available data without adjustment. We will continue to monitor these developments and their impact on the Retirement System. Actual experience will be reflected in each subsequent report, as experience emerges.

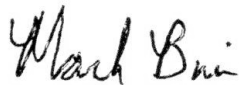
This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the City of Birmingham Employees Retirement System as 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.

Mark Buis and Richard C. Koch Jr. are Members of the American Academy of Actuaries. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein.

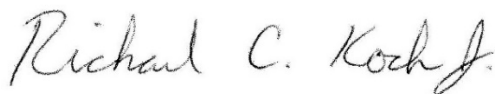
The signing actuaries are independent of the plan sponsor.

Gabriel, Roeder, Smith & Company will be pleased to review this valuation and report with the Board of Trustees and to answer any questions pertaining to the valuation.

Respectfully submitted,  
Gabriel, Roeder, Smith & Company



Mark Buis, FSA, EA, FCA, MAAA



Richard C. Koch Jr., ASA, EA, MAAA

MB/RCK:rmn



## SECTION A

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### VALUATION RESULTS

## Funding Objective

The funding objective of the Retirement System is to establish and receive contributions that will accumulate assets during each member's working years which, together with regular interest, will be sufficient to pay promised benefits after retirement.

## Contribution Amounts

The Retirement System is supported by member contributions, City contributions and investment income from Retirement System assets.

Contributions which satisfy the funding objective are determined by the annual actuarial valuation and are sufficient to:

- (1) Cover the actuarial present value of benefits allocated to the current year by the actuarial cost methods described in Section C (the normal cost); and
- (2) Finance over a period of future years the actuarial present value of benefits not covered by valuation assets and anticipated future normal costs (the unfunded actuarial accrued liability).

**Computed contribution amounts** for the fiscal year beginning July 1, 2023 are shown on page A-2.

# Contributions to Provide Benefits

**Computed June 30, 2022  
for Fiscal Year Beginning July 1, 2023**

Contributions for	General	Police & Fire	Total
Normal Cost of Benefits:			
Age & service	\$ 279,545	\$ 455,565	
Disability <sup>^</sup>	10,579	142,396	
Death-in-service <sup>^</sup>	7,541	23,820	
Refunds of member contributions	5,841	2,739	
Total normal cost	\$ 303,506	\$ 624,520	
Expected member contributions	61,519	66,800	
Employer Normal Cost	\$ 241,987	\$ 557,720	
Payment for Unfunded Actuarial Liabilities*	\$ 857,187	\$ 1,171,819	
<b>Actuarially Determined Contribution</b>	<b>\$ 1,099,174</b>	<b>\$ 1,729,539</b>	<b>\$ 2,828,713</b>

\* Amortized as a level dollar amount over a closed period of 16 years.

<sup>^</sup> Includes normal cost for Police & Fire DC plan members.

**Computed June 30, 2021  
for Fiscal Year Beginning July 1, 2022**

Contributions for	General	Police & Fire	Total
Normal Cost of Benefits:			
Age & service	\$ 308,580	\$ 530,196	
Disability <sup>^</sup>	11,483	124,342	
Death-in-service <sup>^</sup>	8,142	22,417	
Refunds of member contributions	6,543	3,117	
Total normal cost	\$ 334,748	\$ 680,072	
Expected member contributions	68,129	77,193	
Employer Normal Cost	\$ 266,619	\$ 602,879	
Payment for Unfunded Actuarial Liabilities*	\$ 678,170	\$ 1,017,473	
<b>Actuarially Determined Contribution</b>	<b>\$ 944,789</b>	<b>\$ 1,620,352</b>	<b>\$ 2,565,141</b>

\* Amortized as a level dollar amount over a closed period of 17 years.

<sup>^</sup> Includes normal cost for Police & Fire DC plan members.

## Present Value of Future Benefits and Accrued Liabilities

	June 30,	
	2021	2022
A. Accrued Liability		
1. For retirees and beneficiaries	\$ 88,575,955	\$ 95,054,676
2. For vested terminated members	3,433,767	2,511,919
3. For present active members		
a. Value of expected future benefit payments	35,771,143	30,722,069
b. Value of future normal costs	5,909,988	5,286,097
c. Active member accrued liability: (a) - (b)	29,861,155	25,435,972
4. Total accrued liability	121,870,877	123,002,567
B. Present Assets (Funding Value)	104,463,058	102,863,074
C. Unfunded Accrued Liability: (A.4) - (B)	17,407,819	20,139,493
D. Funding Ratio: (B) / (A.4)	85.7%	83.6%
E. Funding Ratio: Market Value Basis	95.4%	77.8%



## Development of Funding Value of Retirement System Assets June 30, 2022

	2021	2022	2023	2024	2025
A. Funding Value Beginning of Year	\$ 100,562,943	\$ 104,463,058			
B. Market Value End of Year	116,214,116	95,649,121			
C. Market Value Beginning of Year	94,674,404	116,214,116			
D. Non-Investment Net Cash Flow Member and Employer Contributions Less Benefit Payments	(5,998,528)	(6,004,606)			
E. Investment Income					
E1. Market Total: B - C - D	27,538,240	(14,560,389)			
E2. Assumed Rate (I)	6.75%	6.75%			
E3. Amount for Immediate Recognition I * (A + D / 2)	6,585,548	6,848,601			
E4. Amount for Phased-In Recognition: E1-E3	20,952,692	(21,408,990)			
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.25 x E4	5,238,173	(5,352,248)			
F2. First Prior Year	(1,633,558)	5,238,173	\$(5,352,248)		
F3. Second Prior Year	(696,348)	(1,633,558)	5,238,173	\$(5,352,248)	
F4. Third Prior Year	404,828	(696,346)	(1,633,557)	5,238,173	\$(5,352,246)
F5. Total Recognized Investment Gain	3,313,095	(2,443,979)	(1,747,632)	(114,075)	(5,352,246)
<b>G. Funding Value End of Year: A + D + E3 + F5</b>	<b>104,463,058</b>	<b>102,863,074</b>			
H. Difference Between Market & Funding Value	11,751,058	(7,213,953)			
<b>I. Recognized Rate of Return</b>	<b>10.1 %</b>	<b>4.3 %</b>			
<b>J. Market Value Rate of Return</b>	<b>30.0 %</b>	<b>(12.9)%</b>			
<b>K. Ratio of Funding Value to Market Value</b>	<b>89.9 %</b>	<b>107.5 %</b>			

The Funding Value of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased-in over a closed four-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. The Funding Value of Assets is **unbiased** with respect to Market Value. At any time it may be either greater or less than Market Value.



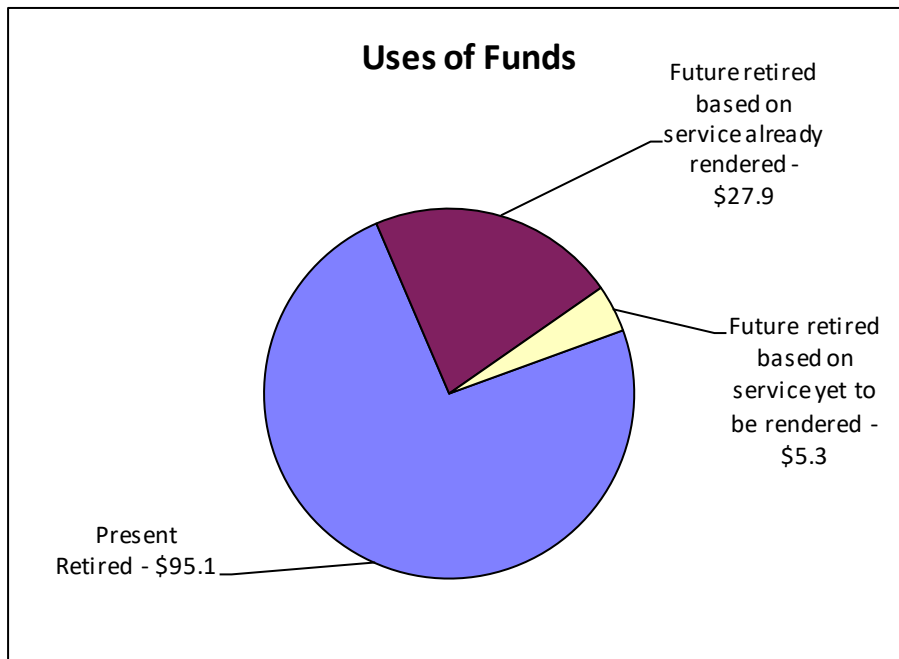
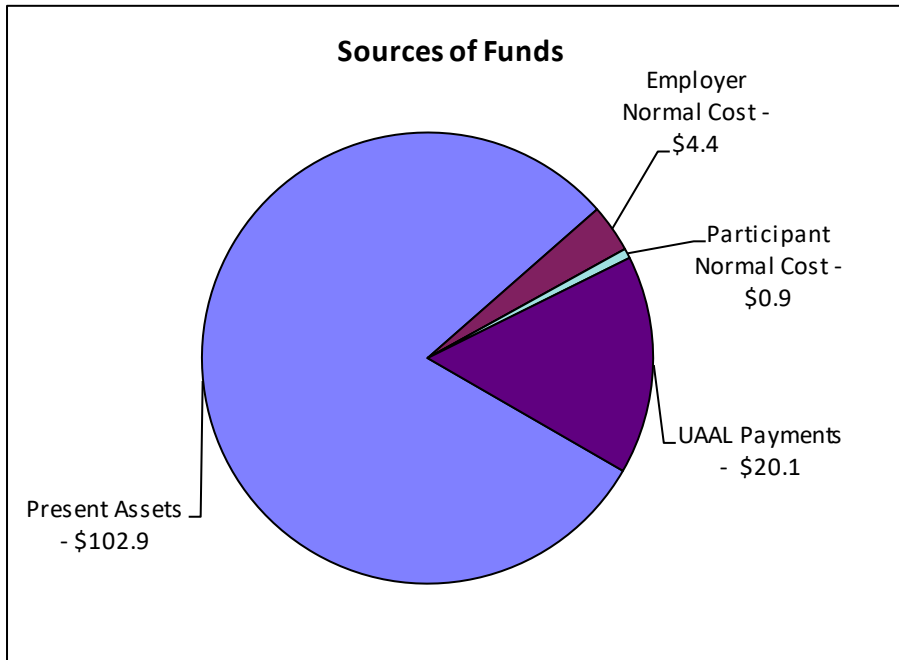
## Derivation of Experience Gain (Loss) Year Ended June 30, 2022

Actual experience will never (except by coincidence) coincide exactly with assumed experience. Gains and losses often offset one another over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below:

	2020-2021	2021-2022
(1) UAAL* at start of year	\$19,898,149	\$17,407,819
(2) Normal cost from last valuation	892,228	869,498
(3) Actual employer contributions	2,704,242	3,697,716
(4) Interest	6.75%	6.75%
(5) Interest accrual: $(1) \times (4) + ((2) - (3)) \times (4) / 2$	1,281,970	1,079,575
(6) Expected UAAL before changes: $(1) + (2) - (3) + (5)$	19,368,105	15,659,176
(7) Change from benefit improvements and revised actuarial assumptions	0	0
(8) Expected UAAL after changes: $(6) + (7)$	19,368,105	15,659,176
(9) Actual UAAL at end of year	17,407,819	20,139,493
(10) Gain (loss): $(8) - (9)$	\$ 1,960,286	\$ (4,480,317)
(11) Gain (loss) as percent of actuarial accrued liabilities at start of year $\$(121,870,877)$	1.6%	(3.7%)

\* *Unfunded Actuarial Accrued Liability.*

# Financing \$128.3 Million of Benefit Promises for Present Active and Retired Participants June 30, 2022



# Computed Employer Contributions Comparative Statement

Valuation Date	Active Members <sup>^</sup>				Retirees & Beneficiaries			Employer Contribution Rate			
	Valuation Payroll				Annual Benefits			General		Police & Fire	
	No.	Total	Average	% Incr.	No.	Dollars	% of Payroll	Normal Cost	Total	Normal Cost	Total
1998	194	\$ 8,583,532	\$44,245	0.1 %	149	\$ 2,286,657	26.6 %	9.69 %	0.00 %	13.01 %	0.00 %
1999@	200	9,236,258	46,181	4.4 %	154	2,441,622	26.4 %	9.74 %	0.00 %	13.02 %	0.00 %
2000@	200	9,867,703	49,339	6.8 %	157	2,586,692	26.2 %	10.81 %	0.00 %	13.07 %	0.00 %
2001@	189	9,741,497	51,542	4.5 %	155	2,611,012	26.8 %	11.61 %	0.00 %	13.19 %	0.00 %
2002#@	209	10,877,102	52,044	1.0 %	154	2,617,301	24.1 %	12.69 %	0.00 %	13.37 %	0.00 %
2003	214	10,975,158	51,286	(1.5)%	158	2,830,541	25.8 %	12.64 %	0.41 %	13.39 %	0.00 %
2004@	216	11,553,759	53,490	4.3 %	159	2,892,045	25.0 %	12.93 %	4.21 %	15.78 %	0.75 %
2005	209	12,007,486	57,452	7.4 %	167	3,262,981	27.2 %	12.61 %	7.55 %	15.96 %	8.09 %
2006	202	11,761,335	58,224	1.3 %	175	3,625,646	30.8 %	12.62 %	8.37 %	16.07 %	8.98 %
2007	194	11,561,631	59,596	2.4 %	178	3,899,366	33.7 %	12.57 %	7.04 %	16.05 %	7.23 %
2008#@	181	11,756,272	64,952	9.0 %	183	4,093,987	34.8 %	13.98 %	\$ 639,175	18.01 %	13.00 %
2009	168	11,059,972	65,833	1.4 %	196	4,625,993	41.8 %	13.92 %	858,385	17.98 %	18.58 %
2010	157	10,714,397	68,245	3.7 %	200	4,975,725	46.4 %	13.99 %	974,904	18.01 %	21.93 %
2011	137	9,789,046	71,453	4.7 %	208	5,726,690	58.5 %	13.96 %	1,248,942	18.04 %	28.00 %
2012@	130	9,204,012	70,800	(0.9)%	215	6,062,872	65.9 %	13.97 %	1,298,454	17.92 %	\$ 1,632,052
2013#	122	8,638,321	70,806	0.0 %	215	6,202,843	71.8 %	12.55 %	1,081,701	17.88 %	1,440,630
2014@	113	8,055,081	71,284	0.7 %	216	6,539,905	81.2 %	12.45 %	850,032	17.86 %	1,090,037
2015@	101	7,417,243	73,438	3.0 %	220	6,914,351	93.2 %	12.49 %	814,051	18.01 %	1,049,798
2016	88	6,621,902	75,249	2.5 %	226	7,328,692	110.7 %	12.52 %	781,626	18.20 %	1,046,188
2017	82	6,422,232	78,320	4.1 %	225	7,413,473	115.4 %	12.54 %	801,317	18.32 %	1,105,917
2018#	75	6,111,829	81,491	4.0 %	225	7,553,694	123.6 %	12.23 %	929,244	20.70 %	1,448,880
2019	70	5,714,295	81,633	0.2 %	228	7,872,792	137.8 %	\$ 358,258	1,158,840	\$ 590,157	1,545,402
2020	63	5,278,978	83,793	2.6 %	226	7,984,660	151.3 %	322,607	1,161,504	569,621	1,610,552
2021	56	4,938,365	88,185	5.2 %	225	8,156,027	165.2 %	266,619	944,789	602,879	1,620,352
2022	45	4,300,297	95,562	8.4 %	232	8,639,047	200.9 %	241,987	1,099,174	557,720	1,729,539

# Actuarial assumptions revised.

@ Plan amended.

^ Does not include Police & Fire DC Plan members.



# Actuarial Accrued Liabilities and Valuation Assets Comparative Statement

Valuation Date	Actuarial Accrued Liability (AAL)	Funding Value of Assets	Unfunded Actuarial Accrued Liability (UAAL)	Ratio of Present Assets to AAL	Ratio of UAAL to Valuation Payroll
1998	\$ 47,162,594	\$ 75,696,740	\$ (28,534,146) #	160.5 %	-
1999@	49,913,637	85,246,634	(35,332,997) #	170.8 %	-
2000@	53,812,167	93,811,587	(39,999,420) #	174.3 %	-
2001@	56,216,921	97,938,389	(41,721,468) #	174.2 %	-
2002@*	64,898,186	89,780,104	(24,881,918) #	138.3 %	-
2003	68,301,496	89,339,691	(21,038,195) #	130.8 %	-
2004@	74,106,298	89,606,401	(15,500,103) #	120.9 %	-
2005@	80,909,787	89,847,749	(8,937,962) #	111.0 %	-
2006	85,554,832	93,194,651	(7,639,819) #	108.9 %	-
2007	89,832,272	99,375,118	(9,542,846) #	110.6 %	-
2008@*	96,642,109	102,374,310	(5,732,201) #	105.9 %	-
2009	100,123,655	99,632,855	490,800	99.5 %	4.4 %
2010	101,747,595	95,403,870	6,343,725	93.8 %	59.2 %
2011	106,978,900	91,659,219	15,319,681	85.7 %	156.5 %
2012@	108,646,323	89,850,235	18,796,088	82.7 %	204.2 %
2013*	110,233,144	94,113,412	16,119,732	85.4 %	186.6 %
2014@	112,737,047	102,701,637	10,035,410	91.1 %	124.6 %
2015@	114,460,214	104,554,429	9,905,785	91.3 %	133.6 %
2016	114,374,122	103,972,731	10,401,391	90.9 %	157.1 %
2017	115,695,678	104,215,618	11,480,060	90.1 %	178.8 %
2018*	118,830,905	102,864,859	15,966,046	86.6 %	261.2 %
2019	120,399,683	101,289,587	19,110,096	84.1 %	334.4 %
2020	120,461,092	100,562,943	19,898,149	83.5 %	376.9 %
2021	121,870,877	104,463,058	17,407,819	85.7 %	352.5 %
2022	123,002,567	102,863,074	20,139,493	83.6 %+	468.3 %

@ Plan amended.

# Full funding credit.

\* Actuarial assumptions revised.

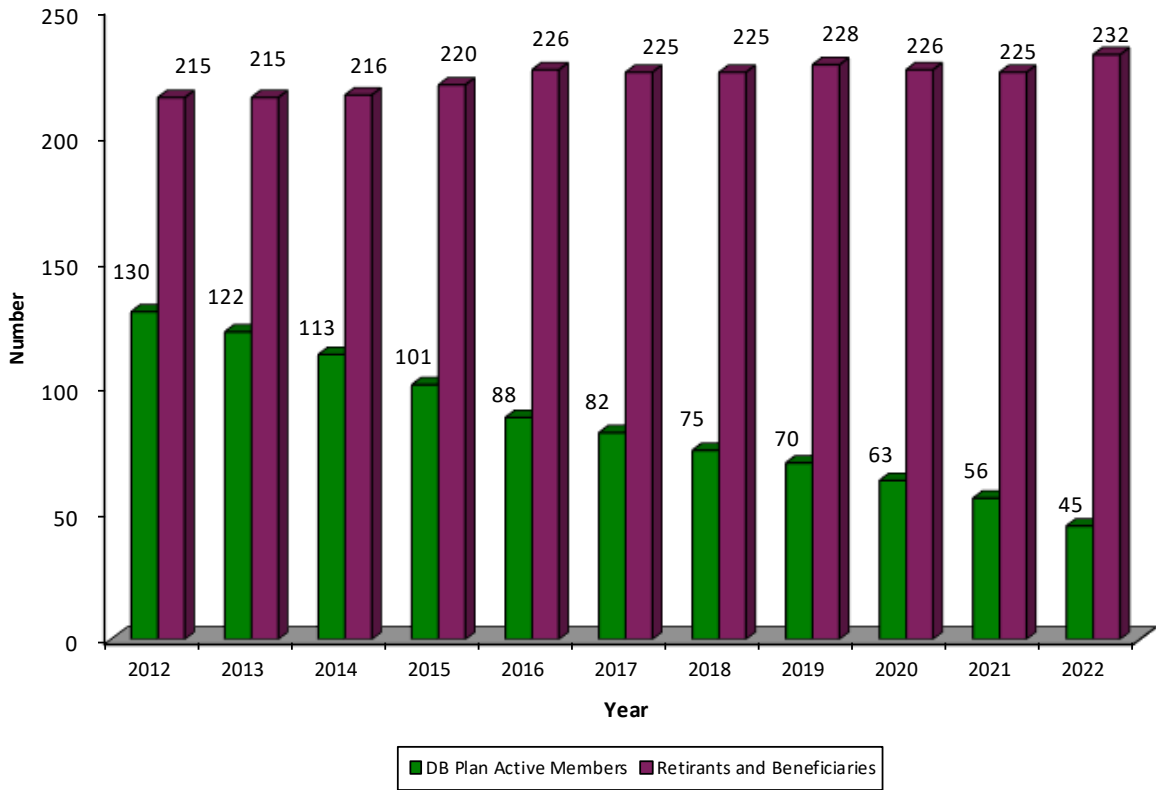
+ 77.8% on a market value basis.

**The Ratio of Valuation Assets to AAL** is a traditional measure of a system's funding progress. Except in years when the system is amended or actuarial assumptions are revised, this ratio can be expected to move gradually toward 100%.

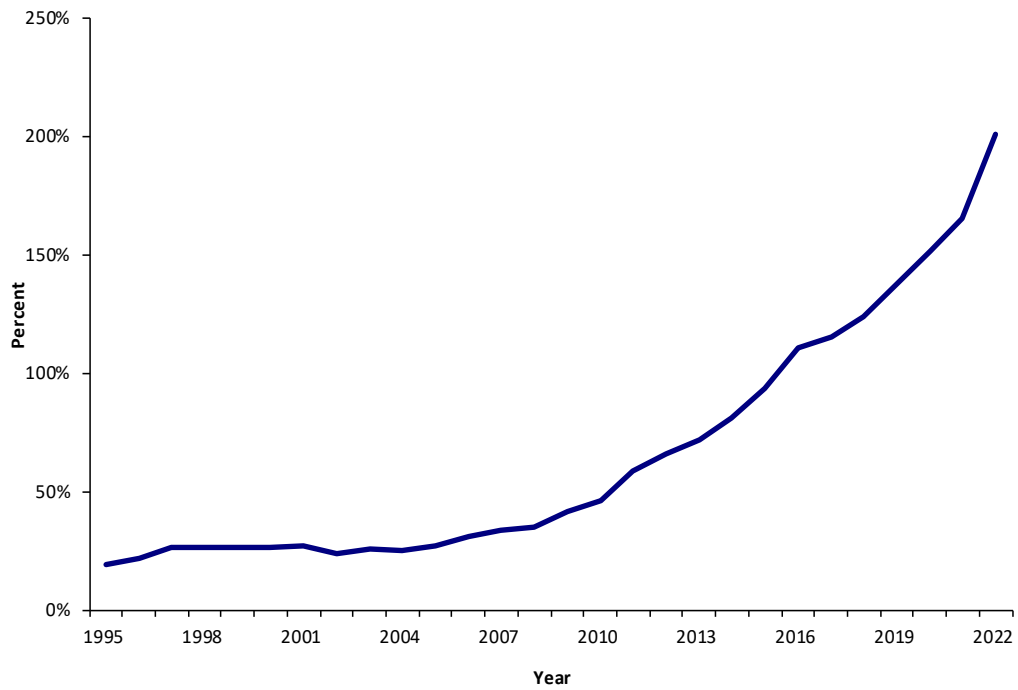
**The Ratio of UAAL to Valuation Payroll** is another relative index of condition. Actuarial unfunded liabilities represent debt, while active member payroll represents the system's capacity to collect contributions to pay toward debt. The lower the ratio, the greater the financial strength – and vice versa.



### Active and Retired Members



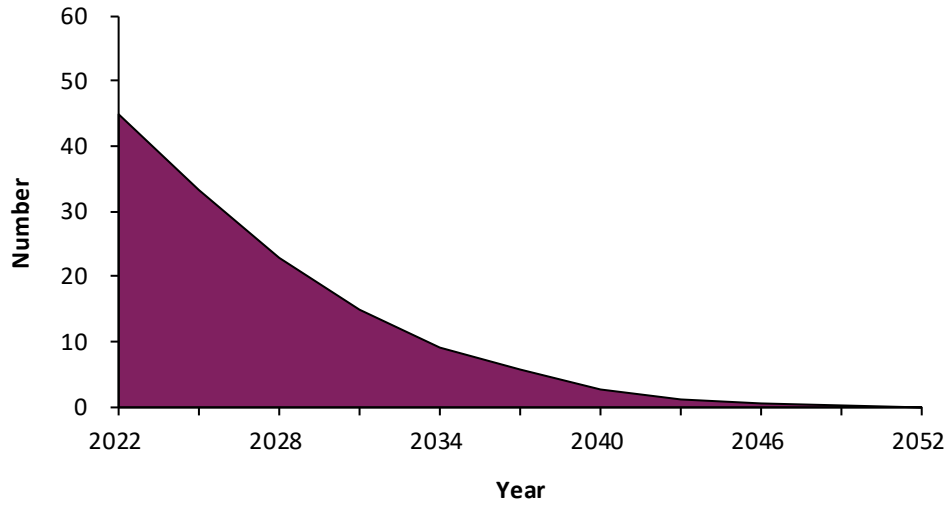
### Benefits as a Percent of Payroll\*



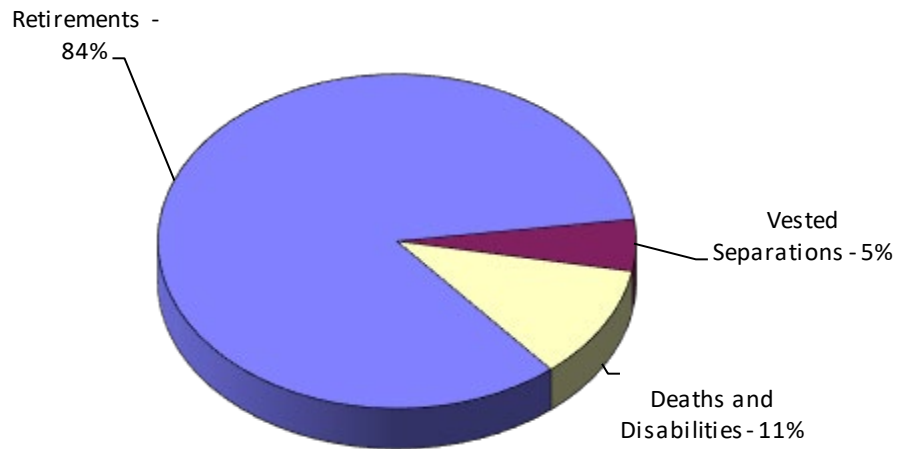
\* Payroll is that of DB plan members only.

# Expected Development of Present Population

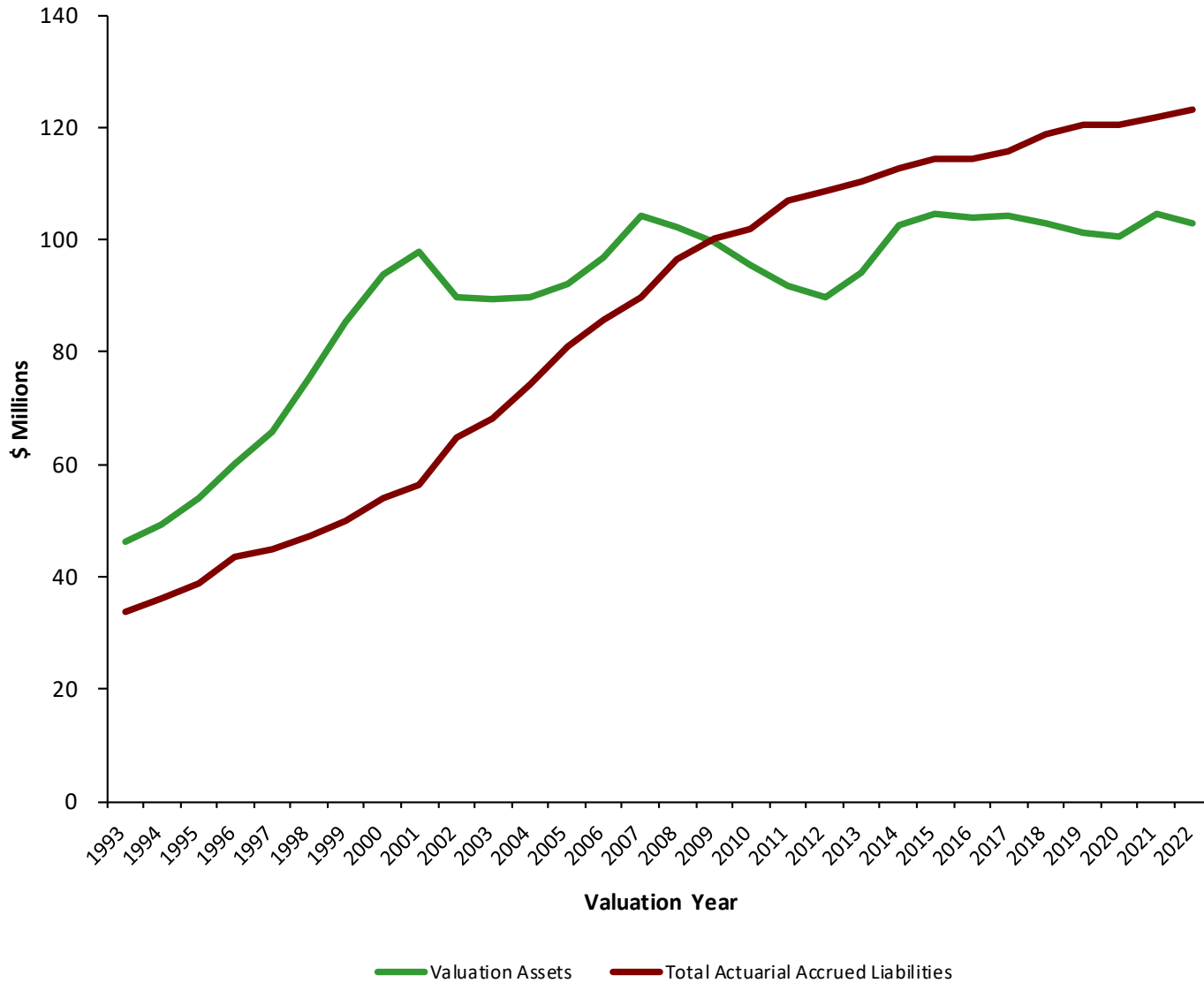
## Closed Group DB Plan Active Population Projection



## Expected Terminations from Active Employment for Current Active Members



# Assets and Accrued Liabilities





## Comments and Recommendation

**Comment 1:** Contribution requirements increased from the prior year. This was primarily due to unfavorable investment performance and higher than assumed pay increases.

**Comment 2:** Investment return of (12.9)% was lower than the assumed level of 6.75% on a market value basis. However, under the asset valuation method, investment gains and losses are spread over a four-year period. Partial recognition of this year's loss was combined with the continued phase-in of investment gains and losses from prior years resulting in a net recognized asset loss for 2022. The Market Value of Assets is now less than the Funding Value by approximately \$7,210,000 (see page A-4), which is the net amount of unrecognized prior year gains and losses to be recognized over the coming three years.

**Comment 3:** This report reflects the impact of COVID-19 experience through June 30, 2022. It does not reflect the ongoing impact of COVID-19, which is likely to influence demographic and economic experience, at least in the short term. We will continue to monitor these developments and their impact on the Retirement System. Actual experience will be reflected in each subsequent funding valuation, as experience emerges.

**Comment 4:** The last experience review was completed in March of 2018 and reflected in the June 30, 2018 actuarial valuation. Prior to the next valuation, we plan to complete an experience study covering the five-year period from July 1, 2017 through June 30, 2022 with updated assumptions first being reflected in the June 30, 2023 actuarial valuation. New State laws passed in late 2017 now require an experience study every five years.

**Recommendation:** Reserve transfers between the active and retired life accounts are required whenever retired life liabilities differ from the Reserve for Retired Benefit Payments. As of June 30, 2022, reserve assets were less than liabilities by \$3,720,512. Accordingly, we recommend that \$3,720,512 be transferred to the Reserve for Retired Benefit Payments from the Reserve for Employer Contributions as of July 1, 2022. For the purposes of this valuation, it was assumed that this transfer would be made.

**PA 202:** Michigan Public Act 202 of 2017 (PA 202) created new reporting and other requirements for local units of government. We are able to certify that the assumptions and/or methods used in this valuation match or fall in the range of uniform assumptions established by the Treasurer for PA 202 reporting purposes.

## **SECTION B**

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### **SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA**

# Brief Summary of Benefit Provisions Evaluated

## June 30, 2022

### Regular Retirement (no reduction factor for age):

**Eligibility** - AFSCME and Police Support hired prior to January 1, 2007: Age 57 with 25 or more years of service or age 60 with 10 or more years of service.

General and Library hired prior to January 1, 2007: Age 57 with 25 or more years of service or age 60 with 7 or more years of service.

General Executive: Age 55 with 15 or more years of service or age 60 with 10 or more years of service.

Teamsters hired prior to July 1, 2006: Age 55 with 25 or more years of service or age 60 with 10 or more years of service, or age 55 with 10 years of service with actuarial reduction of ½ of 1% for each month retired prior to age 60.

Police Patrol and Police Command hired prior to July 1, 2011: Age 50 with 25 or more years of service or age 55 with 10 or more years of service.

Police Officials hired prior to July 1, 2011: Age 53 with 25 or more years of service or age 55 with 10 or more years of service.

Fire and Fire Command hired prior to April 1, 2012: Age 50 with 25 or more years of service or age 55 with 10 or more years of service.

General, Non-organized Library and AFSCME employees hired after January 1, 2007, Teamster employees hired after July 1, 2006, General Executive employees hired after December 1, 2010, Police Patrol, Police Command, Police Officials, and Police Support hired after July 1, 2011, and Fire and Fire Command hired after April 1, 2012: participate in a Defined Contribution Plan.

For Police and Fire members, new hires will continue in the City of Birmingham Employees Retirement System for the purposes of death and disability.

**Type of Final Average Compensation (FAC)** - Highest 3 consecutive years out of last 10.

**Annual Amount** - General, Library, AFSCME and Police Support: 2.5% of FAC times total years of service.

General Executive: 3.0% of FAC times the first 30 years of service.

Teamsters: 2.5% of FAC times the first 30 years of service and 1% of FAC times years of service over 30, subject to a maximum of 90% of FAC.

Police Patrol: 3.0% of FAC times the first 30 years of service and 1% of FAC times years of service over 30. Subject to a maximum of 95% of FAC.

Police Officials hired before 11/1/1973: 2.85% of FAC times the first 30 years of service and 1% of FAC times years of service over 30.

Police Command and Police Officials hired after 11/1/1973: 3.0% of FAC times the first 30 years of service, subject to a maximum of 90% of FAC.

Fire and Fire Command: 3.0% of FAC times the first 30 years of service and 1% of FAC times years of service over 30, subject to a maximum of 95% of FAC.

# Brief Summary of Benefit Provisions Evaluated

## June 30, 2022

**Annuity Withdrawal** - Upon regular retirement, a member may elect to withdraw accumulated contributions. If this lump sum election is made, the retirement allowance is reduced by the actuarial equivalent of the amount withdrawn.

### Deferred Retirement Option Program (DROP):

**Eligibility** - *Police Command and Fire Command Member as of January 1, 2005:* Age 50 with 30 or more years of service.

*Police Officials Member as of January 1, 2005:* Age 53 with 30 or more years of service.

**Benefit** - If a member elects to participate, the member's benefit is deposited into an account that receives 4% compound interest annually while the member remains an active member. No member contributions are made while in the DROP and no additional retirement benefits are earned. Members may remain in the DROP for a maximum of 5 years at which time they receive their account balance and begin receiving the benefit accrued to the date of entry into the program.

### Deferred Retirement (vested benefit):

**Eligibility** - *AFSCME, General, Library, Police Support hired before January 1, 2007 and Teamster employees hired before July 1, 2006:* 10 years of service (7 for General members effective September 1, 2000 and Library members effective July 1, 2004). Benefit begins at age 60.

*General Executive:* 10 years of service. Benefit begins at age 60.

*Police-Fire:* 10 years of service. Benefit begins at age 55.

**Annual Amount** - *General and Library:* Computed as regular retirement but based upon service and final average compensation at time of termination.

*General Executive:* 2.85% of FAC times total years of service.

*Teamsters:* 2.0% of FAC times total years of service.

*AFSCME:* 2.25% of FAC times total years of service.

*Police Support:* 2.5% of FAC times total years of service.

*Police Patrol:* 2.85% of FAC times the first 30 years of service, subject to a maximum of 90% of FAC.

*Police Command, Police Officials, Fire and Fire Command:* 2.25% of FAC times the first 30 years of service and 1% of FAC times service over 30 years based upon service and FAC at time of termination.

# Brief Summary of Benefit Provisions Evaluated

## June 30, 2022

### Duty and Non-Duty Disability and Death Benefits:

**Eligibility** - All plan members, including new police and fire hires included in the City's defined contribution plan, are eligible for duty and non-duty disability and death benefits.

### Duty Disability Retirement:

**Eligibility** - No age or service requirement. (*General*: payable upon expiration of worker's compensation.)

**Annual Amount** - To voluntary retirement age: 60% of FAC. Maximum total disability income, including worker's compensation, is 70% of FAC. Minimum disability benefit after worker's compensation offset is 20% of FAC. Upon attaining voluntary retirement age, additional service credit is granted and benefit is recomputed.

### Non-Duty Disability Retirement:

**Eligibility** - 10 or more years of service.

**Annual Amount** - Computed as regular retirement with a maximum benefit which when added to worker's compensation shall not exceed 70% of FAC. Minimum benefit is 20% of FAC. (Multiplier is 2.25% of FAC at the time of disability for Teamsters.)

### Duty Death Before Retirement:

**Eligibility** - No age or service requirements.

**Annual Amount** - *AFSCME, General, General Executive, Library, Police Support and Teamsters*: Refund of accumulated contributions plus the same amount that was paid by worker's compensation to the widow or dependent widower, unmarried children under 18, and dependent children and dependent parents.

*Members not covered by Social Security*: Refund of accumulated contributions plus 1/3 of final compensation to the widow or dependent widower, plus 1/4 of final compensation to dependent or unmarried children under 18 plus 1/6 of final compensation to dependent parents. Worker's compensation payments are offset. Pensions to widows and parents are paid for life or until remarriage.

### Non-Duty Death Before Retirement:

**Eligibility** - *Fire members hired prior to April 1, 2012*: 15 years of service.

*All other members*: 20 years of service or age 55 with 10 or more years of service.

**Annual Amount** - Computed as regular retirement but actuarially reduced in accordance with a 100% joint and survivor election.



# Brief Summary of Benefit Provisions Evaluated June 30, 2022

## Member Contributions:

*All others:* 3.0% of annual compensation.

Member contributions are pre-tax under the provisions of Section 414(h) of the Internal Revenue Code for all groups except AFSCME.

## Post-Retirement Increases:

No provision.

## Compensation:

Compensation for retirement purposes includes base salary, overtime pay, longevity pay, cost of living allowances and pay in lieu of holiday and/or vacation time. Lump sum payments at retirement in consideration of unused sick-leave or vacation time from prior years is not included. Retroactive payments are excluded from compensation consistent with state law (Public Act 54). General Executive includes FLSA.

## Retirees and Beneficiaries Added to and Removed from Rolls Comparative Schedule

Year Ended June 30	No. Added to Rolls	No. Removed from Rolls	Rolls End of Year		Present Value of Allowances
			No.	Annual Allowances	
1998	4	4	149	\$ 2,286,657	\$ 22,774,752
1999	10	5	154	2,441,622	24,440,859
2000	11	8	157	2,586,692	25,871,992
2001	3	5	155	2,611,012	25,865,692
2002	7	8	154	2,617,301	27,966,910
2003	9	5	158	2,830,541	30,227,816
2004	6	5	159	2,892,045	30,714,102
2005*	14	6	167	3,262,981	35,468,877
2006*	9	2	174	3,625,646	40,434,280
2007*	10	6	178	3,899,366	43,968,878
2008*	11	6	183	4,093,987	45,973,198
2009*	17	4	196	4,625,993	51,486,650
2010*	13	9	200	4,975,725	54,158,770
2011*	16	8	208	5,726,690	63,013,794
2012*	15	8	215	6,062,872	66,387,847
2013*	8	8	215	6,202,843	67,982,360
2014*	12	11	216	6,539,905	72,218,520
2015*	13	9	220	6,914,351	76,737,037
2016	12	6	226	7,328,692	79,672,011
2017	6	7	225	7,413,473	80,059,505
2018*	8	8	225	7,553,694	82,596,799
2019*	8	5	228	7,872,792	86,160,311
2020*	9	11	226	7,984,660	87,092,622
2021*	13	14	225	8,156,027	88,575,955
2022*	16	9	232	8,639,047	95,054,676

\* Includes DROP retirees.

## Retirees and Beneficiaries June 30, 2022 Tabulated by Type of Allowances Being Paid

Type of Allowances Being Paid	No.	Annual Retirement Allowances	Actuarial Present Value
<b>Age and Service Allowances</b>			
Regular allowance - benefit terminating at death of retiree	46	\$1,259,579	\$ 12,536,807
Option I allowance - 10 years certain and life	6	72,141	632,731
Option II allowance - joint and survivor benefit	107	4,987,597	59,993,544
Option III allowance - modified joint and survivor benefit	34	1,275,904	13,022,644
Survivor beneficiary of deceased retiree	29	805,743	6,446,051
<b>Total age and service allowances</b>	<b>222</b>	<b>\$ 8,400,964</b>	<b>\$92,631,777</b>
<b>Casualty Allowances</b>			
Duty disability			
Life	3	\$ 80,009	\$ 559,693
Survivor beneficiary	1	3,574	8,506
Non-duty disability			
Life			
Option I	1	10,323	66,816
Option II	2	61,914	824,565
Survivor beneficiary	1	13,893	142,431
Non-duty death			
Survivor beneficiary	2	68,370	820,888
<b>Total casualty allowances</b>	<b>10</b>	<b>\$ 238,083</b>	<b>\$ 2,422,899</b>
<b>Total Allowances Being Paid</b>	<b>232</b>	<b>\$8,639,047</b>	<b>\$95,054,676</b>



## Retirees and Beneficiaries June 30, 2022 Tabulated by Attained Ages

Attained Ages	Age and Service		Casualty			Total
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
Under 50			1	\$ 40,517	1	\$ 40,517
50-54	8	\$ 612,404	1	48,436	9	660,840
55-59	23	1,410,303			23	1,410,303
60-64	29	1,173,549			29	1,173,549
65-69	39	1,767,226	3	76,818	42	1,844,044
70-74	52	1,845,970	2	37,446	54	1,883,416
75-79	24	714,730	1	10,323	25	725,053
80-84	18	388,856			18	388,856
85-89	20	371,863	1	20,969	21	392,832
90 & Over	9	116,063	1	3,574	10	119,637
<b>Totals</b>	<b>222</b>	<b>\$ 8,400,964</b>	<b>10</b>	<b>\$ 238,083</b>	<b>232</b>	<b>\$ 8,639,047</b>

## Inactive Members Eligible for Deferred Benefits June 30, 2022 Tabulated by Attained Ages

Attained Ages	No.	Annual Allowances
43	1	\$ 3,585
44	2	66,901
47	1	14,844
49	1	93,660
52	1	18,282
53	1	23,712
54	1	5,096
56	1	43,760
58	1	28,524
59	2	16,485
66	1	11,256
71	1	4,511
<b>Totals</b>	<b>14</b>	<b>\$330,616</b>

## Retirees and Beneficiaries June 30, 2022 Tabulated by Valuation Divisions

Valuation Divisions	No.	Annual Allowances
General Members	141	\$3,768,403
Police	42	2,084,941
Fire	49	2,785,703
Total	232	\$8,639,047

## Inactive Members Eligible for Deferred Benefits June 30, 2022 Tabulated by Valuation Divisions

Valuation Divisions	No.	Estimated Annual Allowances
General Members	14	\$330,616
Police	0	0
Fire	0	0
Total	14	\$330,616

## Active Members June 30, 2022 Tabulated by Valuation Divisions

Valuation Divisions	No.	Annual Payroll
General Members	26	\$ 2,121,513
Police and Fire	19	2,178,784
<b>Total Active Members*</b>	<b>45</b>	<b>\$ 4,300,297</b>

\* Does not include 50 Police and Fire members in defined contribution plan but eligible for death and disability benefits in defined benefit plan.

Note: Police Support members are included in the General Division.

### Active Members Added to and Removed from Rolls<sup>^</sup>

Year	No. Added During Year	Terminations During the Year										Active Members End of Year
		Normal Retirement		Disabled		Died-in-Service		Withdrawals				
		A	E	A	E	A	E	Vested	Other	Total		
2013*		5	7			1		1	1	2	2	122
2014		7	9			1		1		1	2	113
2015		10	8			1		1		1	2	101
2016		10	8					3		3	1	88
2017		4	6					2		2	1	82
2018*		5	7						2	2	1	75
2019		4	6	1							1	70
2020		7	6								1	63
2021		6	6					1		1	1	56
2022		10	6					1		1	1	45
<b>10-Year Total</b>		<b>68</b>	<b>69</b>	<b>1</b>		<b>3</b>		<b>10</b>	<b>3</b>	<b>13</b>	<b>13</b>	

A = Actual  
E = Expected

\* Revised actuarial assumptions.

<sup>^</sup> Does not include 50 Police and Fire members in defined contribution plan but eligible for death and disability benefits in defined benefit plan.



## General Members June 30, 2022 by Age and Years of Service

Age	Years of Service to Valuation Date							No.	Totals
	0-4	5-9	10-14	15-19	20-24	25-30	30 Plus		Valuation Payroll
35-39				2				2	\$ 122,403
40-44				1				1	64,938
45-49				1	2			3	296,612
50-54				1	3	1		5	489,193
55-59				1	3		2	6	489,490
60				1	1			2	187,373
61					1			1	55,595
62					1			1	79,440
64				2				2	112,824
69					1			1	91,864
70				1				1	50,804
87					1			1	80,977
<b>Totals</b>				<b>10</b>	<b>13</b>	<b>1</b>	<b>2</b>	<b>26</b>	<b>\$ 2,121,513</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age:           56.02 years  
Service:       21.87 years  
Annual Pay:   \$81,597

# Police and Fire June 30, 2022 by Age and Years of Service

## Defined Benefit Members

Age	Years of Service to Valuation Date							No.	Totals
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus		Valuation Payroll
30-34			1					1	\$ 131,130
35-39			2					2	196,812
40-44			1	4	2			7	844,346
45-49				1	4	2		7	777,612
50-54					1			1	117,889
55-59				1				1	110,995
<b>Totals</b>			<b>4</b>	<b>6</b>	<b>7</b>	<b>2</b>		<b>19</b>	<b>\$ 2,178,784</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 43.86 years  
Service: 19.41 years  
Annual Pay: \$114,673

## Defined Contribution Members (Eligible for Death and Disability Benefits)

Age	Years of Service to Valuation Date							No.	Totals
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus		Valuation Payroll
20-24	2							2	\$ 146,315
25-29	9	1						10	847,013
30-34	6	10						16	1,508,559
35-39	4	9						13	1,299,716
40-44	3	4						7	689,462
50-54	1	1						2	166,699
<b>Totals</b>	<b>25</b>	<b>25</b>						<b>50</b>	<b>\$ 4,657,764</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 33.67 years  
Service: 4.63 years  
Annual Pay: \$93,155



# Summary of Current Asset Information

## Balance Sheet

Valuation Assets		Reserves for	
Cash, receivables, accruals and other short-term	\$ (49,498)	Member contributions	\$ 3,399,891
Equity securities	66,464,815	Employer contributions	915,066
Debt securities	24,652,901	Retired benefit payments	90,626,061
Other - sundry, notes, and mortgages	4,595,899	DROP payments	708,103
Accounts payable	(14,996)		
Funding value adjustment	7,213,953	Funding value adjustment	7,213,953
Total Current Assets	\$102,863,074	Total Applied Reserves	\$102,863,074

## Revenues and Expenditures

	2021-2022	2020-2021
Balance - July 1	\$104,463,058	\$100,562,943
<b>Revenues</b>		
Member contributions	145,322	160,600
Employer contributions	3,697,716	2,704,242
Service purchase account/other	0	0
Recognized investment income	4,770,210	10,472,173
Total	8,613,248	13,337,015
<b>Expenditures</b>		
Benefit payments	8,324,561	7,974,269
Refund of member contributions	1,523,083	889,101
Administrative and investment expenses	365,588	573,530
Total	10,213,232	9,436,900
Balance - June 30	\$102,863,074	\$104,463,058
Net investment income/mean assets	4.3%	10.1%



## Allocation of Unfunded Liability\* by Component Unit

Component Unit	Unfunded Actuarial Liability (UAL)	Amortization Payment for UAL
Building	\$ 441,172	\$ 44,447
Clerk	250,775	25,265
DPS	2,892,376	291,401
DPS Garage	159,420	16,061
DPS Golf Course	75,265	7,583
Engineering	403,850	40,687
Finance	573,748	57,804
Fire	5,837,104	588,074
Fire/Admin	294,078	29,628
HR/Admin	228,644	23,035
IT	155,213	15,637
Library	704,686	70,995
Maint/Admin	26,848	2,705
Maintenance	137,877	13,891
Mgr/Admin	314,122	31,647
Museum	33,435	3,368
Parking	83,707	8,433
Planning	220,088	22,173
Police	5,500,047	554,117
Police Dispatch	482,090	48,569
Police General	435,122	43,838
Principal Shopping District	63,655	6,413
Treasury	562,404	56,661
Treasury/Assessor	86,116	8,676
Water Meter	177,651	17,898
	\$ 20,139,493	\$ 2,029,006

\* Includes 50 Police and Fire members in defined contribution plan but eligible for death and disability benefits in defined benefit plan.



## SECTION C

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### SUMMARY OF VALUATION METHODS AND ASSUMPTIONS

## Basic Financial Objective and Operation of the Retirement System

**Benefit Promises Made Which Must Be Paid For.** A retirement program is an orderly means of handing out, keeping track of, and financing contingent pension promises to a group of employees. As each member of the retirement program acquires a unit of service credit they are, in effect, handed an “IOU” which reads: “Your Retirement System promises to pay you one unit of retirement benefits, payments in cash commencing when you retire.”

The principal related financial question is: When shall the money required to cover the “IOU” be contributed? This year, when the benefit of the member’s service is received? Or, some future year when the “IOU” becomes a cash demand?

The Constitution of the State of Michigan is directed to the question:

“Financial benefits arising on account of service rendered in each fiscal year shall be funded during that year and such funding shall not be used for financing unfunded accrued liabilities.”

This Retirement System meets this constitutional requirement by having the following **Financial Objective: To establish and receive contributions, which will remain approximately level** from year-to-year and will not have to be increased for future generations of taxpayers.

Translated into actuarial terminology, a level percent-of-payroll contribution objective means that the contribution rate must be at least:

**Normal Cost** (the current value of benefits likely to be paid on account of members’ service being rendered in the current year)

. . . plus . . .

**Interest on the Unfunded Actuarial Accrued Liability** (the difference between the actuarial accrued liability and current system assets).

If contributions to the retirement program are less than the preceding amount, the difference, **plus investment earnings not realized thereon**, will have to be contributed at some later time, or, benefits will have to be reduced, to satisfy the fundamental fiscal equation under which all retirement programs must operate; that is:

$$B = C + I - E$$

Benefit payments to any group of members and their beneficiaries cannot exceed the sum of:

Contributions received on behalf of the group

. . . plus . . .

Interest earnings on contributions received and not required for immediate payment of benefits

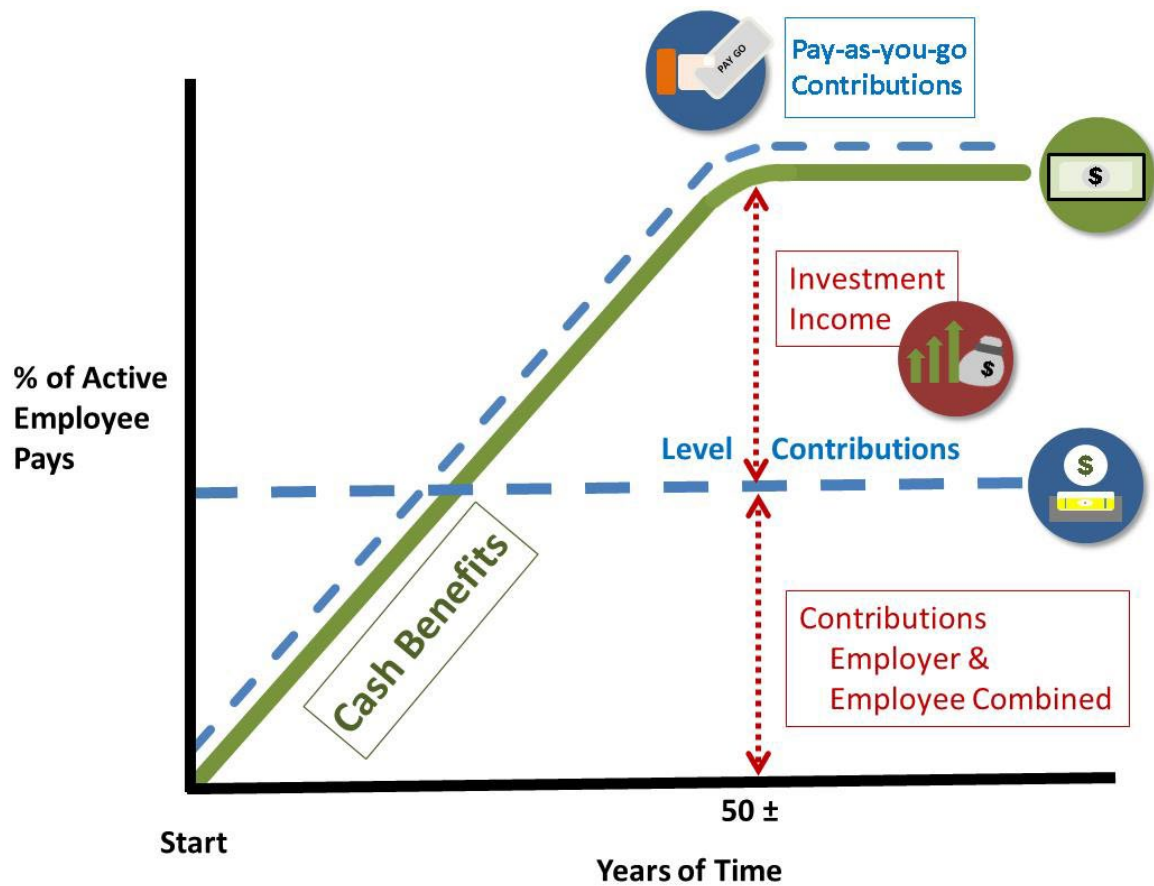
. . . minus . . .

Expenses incurred in operating the program.

There are retirement programs designed to defer the bulk of contributions far into the future. Lured by artificially low present contributions, the inevitable consequence is a relentlessly increasing contribution rate to a level greatly in excess of the level percent-of-payroll rate. ***This method of financing is prohibited in Michigan by the state constitution.***

A by-product of the level percent-of-payroll contribution objective is the accumulation of invested assets for varying periods of time. Invested assets are a by-product of level percent-of-payroll contributions, not the objective. ***Investment income becomes the major contributor*** to the retirement program, and the amount is directly related to the amount of contributions and investment performance.

***Computed Contribution Amount Needed to Finance Benefits.*** From a given schedule of benefits and from the data furnished him, the actuary calculates the contribution rate ***by means of an actuarial valuation*** - the technique of assigning monetary values to the risks assumed in operating a retirement program.

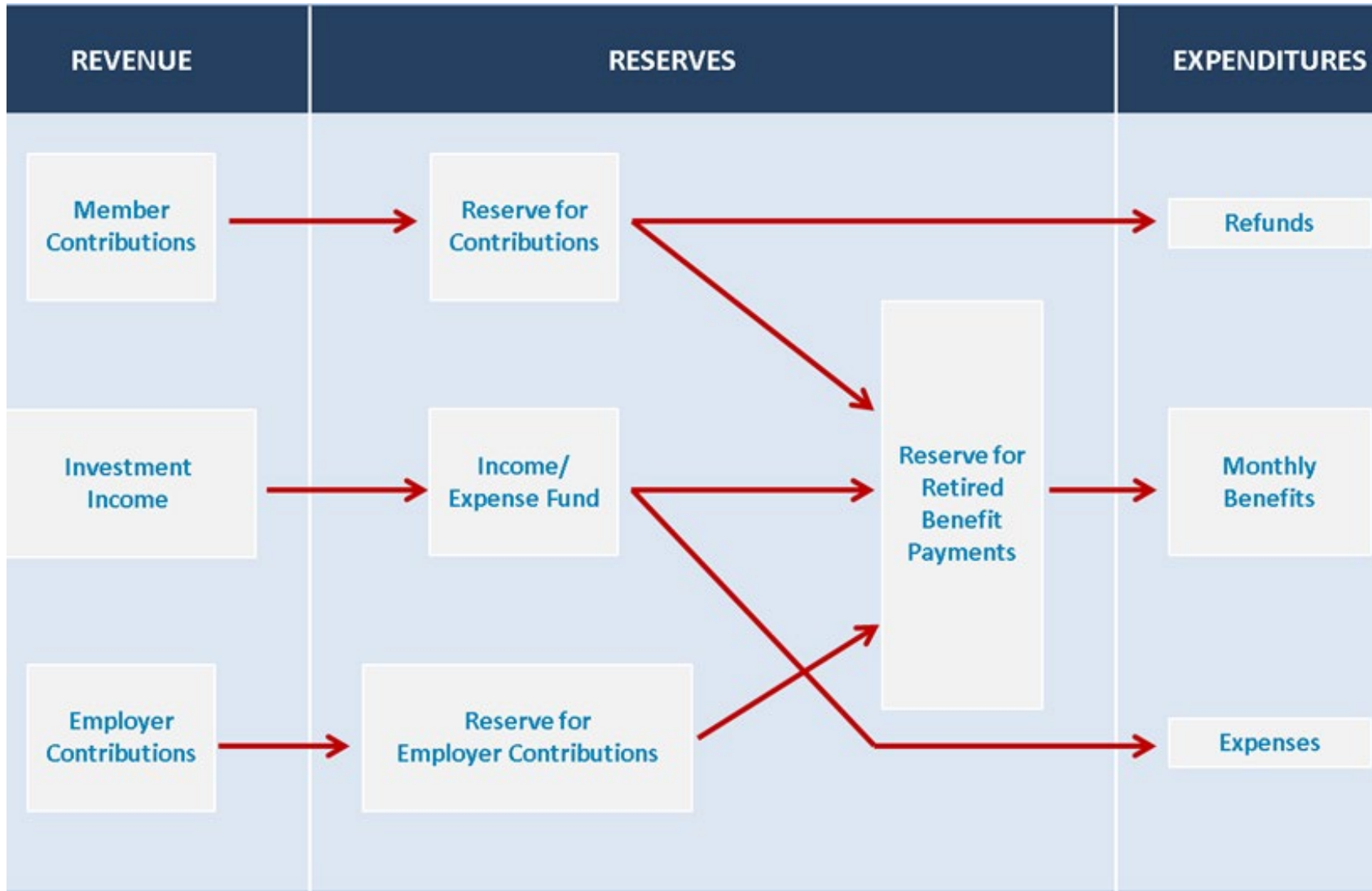


**CASH BENEFITS LINE.** This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

**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

## Flow of Money through the Retirement System



## Actuarial Cost Methods

**Normal Cost.** Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using an individual entry-age actuarial cost method having the following characteristics:

- (i) The annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and
- (ii) Each annual normal cost is a constant percentage of the member's year by year projected covered pay.

**Financing of Unfunded Actuarial Accrued Liabilities.** Unfunded actuarial accrued liabilities (full funding credit of assets exceed liabilities) are amortized by level dollar contributions over a closed period of 16 years.

## Actuarial Assumptions

The actuary calculates the contribution requirements and benefit values by applying actuarial assumptions to the benefit provisions and census data furnished, using the actuarial cost methods described on the previous page.

The principal areas of financial risk which require assumptions about future experiences are:

- Long-term rates of investment return to be generated by system assets;
- Patterns of pay increases to members;
- Rates of mortality among members, retirees and beneficiaries;
- Rates of separation (withdrawal) from active membership;
- Rates of disability among active members; and
- The age patterns of actual retirement.

In a valuation, the actuary calculates the monetary effect of each assumption for as long as each covered person survives — a period of time which can be as long as a century.

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Actual experience of the Fund will not coincide exactly with assumed experience, regardless of the quality of the assumptions, or the skill of the actuary and the precision of the many calculations made. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time it is appropriate to modify one or more of the assumptions to reflect experience trends (but not random year-to-year fluctuations). Actuarial assumptions were last revised for the June 30, 2018 valuation.

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. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

**The rates of salary increase** used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefits will be based.

Sample Ages	% Increase in Salary at Sample Ages				
	Merit and Seniority		Base (Economic)	Increase Next Year	
	General	P-F		General	P-F
20	2.01%	1.58%	3.25%	5.26%	4.83%
25	1.64%	1.58%	3.25%	4.89%	4.83%
30	1.41%	1.37%	3.25%	4.66%	4.62%
35	1.25%	0.58%	3.25%	4.50%	3.83%
40	1.12%	0.11%	3.25%	4.37%	3.36%
45	0.88%	0.11%	3.25%	4.13%	3.36%
50	0.60%	0.11%	3.25%	3.85%	3.36%
55	0.35%	0.05%	3.25%	3.60%	3.30%
60	0.08%	0.00%	3.25%	3.33%	3.25%
61	0.03%	0.00%	3.25%	3.28%	3.25%
Ref	505	506			

**The rate of investment** is compounded annually net of expenses.

Investment Return	6.75%
Wage Inflation	3.25%
Price Inflation	2.50%
Spread Between Investment Return and Wage Inflation	3.50%
Spread Between Investment Return and Price Inflation	4.25%

These assumptions are used to equate the value of payments due at different points in time.

Experience over the last 5 years is shown below:

	Year Ended June 30					5-Year Average
	2022	2021	2020	2019	2018	
1) Nominal rate (net)	4.3 %	10.1 %	5.2 %	4.9 %	4.5 %	5.8 %
2) Increase in CPI	9.1 %	5.4 %	0.6 %	1.6 %	2.9 %	3.9 %
3) Average salary increase	8.4 %	5.2 %	2.6 %	0.2 %	4.0 %	4.1 %
4) Real return as measured by						
- CPI: (1)-(2)						1.9 %
- Salary increases: (1)-(3)						1.7 %

The nominal rate of return was computed using the approximate formula:  $i = I$  divided by  $1/2 (A+B-I)$ , where  $I$  is realized investment income,  $A$  is the beginning of year asset value and  $B$  is the end of year asset value.



**Mortality.** This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. The mortality rates utilized are based upon the RP-2014 tables, as extended, and include a margin for future mortality improvement projected using a fully generational improvement scale.

Descriptions of the tables and sample life expectancies are as follows:

- **Healthy Pre-Retirement:** The RP-2014 Employee Generational Mortality Table, with blue-collar adjustments and extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale, resulting in a base year of 2006 with future mortality improvements assumed each year using scale MP-2017.
- **Healthy Post-Retirement:** The RP-2014 Healthy Annuitant Generational Mortality Table, with blue-collar adjustments and extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale, resulting in a base year of 2006 with future mortality improvements assumed each year using scale MP-2017.
- **Disability Retirement:** The RP-2014 Disabled Mortality Table, extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale, resulting in a base year of 2006 with future mortality improvements assumed each year using scale MP-2017.

Sample Attained Ages	Healthy Pre-Retirement		Healthy Post-Retirement		Disabled Retirement	
	Future Life		Future Life		Future Life	
	Expectancy (Years)*		Expectancy (Years)*		Expectancy (Years)*	
	Men	Women	Men	Women	Men	Women
55	30.01	35.16	28.80	31.64	21.58	25.31
60	25.16	30.17	24.23	26.92	18.50	21.72
65	20.66	25.30	19.94	22.41	15.59	18.27
70	16.55	20.58	15.98	18.13	12.81	14.89
75	12.80	16.05	12.37	14.16	10.17	11.71
80	9.42	11.78	9.19	10.62	7.77	8.94

\* Based on retirements in 2022. Retirements in future years will reflect improvements in life expectancy.

**The rates of retirement** used to measure the probability of eligible members retiring during the next year were as follows:

Retirement Ages	General	Teamsters	Retirement Ages	Police-Fire	Retirement Service	DROP Police-Fire
55		20%				
56		20%				
57	20%	20%	50-54	30%		
58	20%	20%	55-59	30%		
59	20%	20%				
60	20%	20%	60	30%		
61	20%	20%	61	30%		
62	25%	25%	62	30%		
63	20%	20%	63	30%		
64	15%	15%	64	30%		
65	40%	40%	65	100%	30	45%
66	25%	25%	66		31	25%
67	25%	25%	67		32	25%
68	25%	25%	68		33	25%
69	25%	25%	69		34	25%
70-74	25%	25%	70		35	100%
75	100%	100%				
Ref	1563	1565		1875		2308

An AFSCME, General, General Executive, Library, Police Support or Teamster member was assumed to be eligible for retirement after attaining age 57 (55 for Teamsters and General Executive) with 25 or more years of service (15 for General Executive) or age 60 with 10 or more years of service (or age 60 with 7 or more years of service for General and Library). A Police Patrol, Police Command, Police Official, or Fire member was assumed to be eligible for retirement after attaining age 50 (53 for Police Officials) with 25 or more years of service or age 55 with 10 or more years of service.

**Rates of separation from active membership** were as shown below (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members remaining in employment.

Sample Ages	Years of Service	% of Active Members Separating within Next Year	
		General	Police-Fire
25	5 & Over	8.10%	2.70%
30		5.85%	1.65%
35		4.70%	1.05%
40		4.00%	0.60%
45		3.40%	0.36%
50		2.80%	0.33%
55		2.30%	0.30%
60		1.60%	0.30%
65		0.50%	0.30%
Ref		358 x 1	143 x 0.3

**Rates of disability** among active members.

Sample Ages	% Becoming Disabled within Next Year	
	General	Police-Fire
20	0.04%	0.08%
25	0.04%	0.08%
30	0.05%	0.08%
35	0.05%	0.08%
40	0.10%	0.20%
45	0.16%	0.27%
50	0.32%	0.49%
55	0.63%	0.89%
60	1.16%	1.41%
65	1.34%	1.66%
Ref	99	9

## Glossary

<b>Actuarial Accrued Liability</b>	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.”
<b>Accrued Service</b>	The service credited under the plan which was rendered before the date of the actuarial valuation.
<b>Actuarial Assumptions</b>	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.
<b>Actuarial Cost Method</b>	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.”
<b>Actuarial Equivalent</b>	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.
<b>Actuarial Present Value</b>	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.
<b>Amortization</b>	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.
<b>Experience Gain (Loss)</b>	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.

## Glossary

### 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 the 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.”

### Valuation Assets

The value of current plan assets recognized for valuation purposes. Generally related to market value in a manner which spreads unexpected gains or losses over a period of future years.

## Pensions in an Inflationary Environment

### Value of \$1,000/month Retirement Benefit to an Individual Who Retires at Age 55 in an Environment of 3.25% Inflation

Age	COLA Rate	
	2.5%	0%
55	\$1,000	\$1,000
56	993	969
57	986	938
58	978	909
59	971	880
60	964	852
65	930	726
70	896	619
75	864	527
80	833	450
85	804	383

The life expectancy of a healthy 55-year-old male retiree is about age 84. The life expectancy for a healthy 55-year-old female retiree is about age 87. Half of the people will outlive their life expectancy. The effects of even moderate amounts of inflation can be significant for those who live to an advanced age.

# Miscellaneous and Technical Assumptions

## June 30, 2022

<b>Benefit Service:</b>	Exact Fractional service is used to determine the amount of benefit payable.
<b>Data Adjustments:</b>	For active members who were indicated as being on disability or a leave of absence during the current year, prior year pay was used for valuation purposes.
<b>Decrement Operation:</b>	Disability and mortality decrements do not operate during the first five years of service. Disability also does not operate during retirement eligibility.
<b>Decrement Relativity:</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Decrement Timing:</b>	Decrements of all types are assumed to occur mid-year.
<b>Eligibility Testing:</b>	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.
<b>Incidence of Contributions:</b>	Contributions are assumed to be received continuously throughout the year based upon the computed dollar amount shown in this report.
<b>Liability Adjustments:</b>	Six percent has been added to Normal and Early Retirement liabilities to account for using the PBGC rate in effect at retirement when a member chooses to take an annuity withdrawal option.
<b>Marriage Assumption:</b>	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
<b>Normal Form of Benefit:</b>	A straight life benefit is the normal form of benefit.
<b>Option Factors:</b>	Option factors are based upon 6.75% interest and the RP-2014 Generational Mortality Tables, as extended.
<b>Pay Increase Timing:</b>	Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
<b>Service Credit Accruals:</b>	It is assumed that members accrue one year of service credit per year.

## SECTION D

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### FINANCIAL REPORTING

NOTE: GASB Statements No. 67 and No. 68 are effective for Governmental Retirement Plans for the fiscal year beginning after June 15, 2013 (GASB Statement No. 67) and the fiscal year beginning after June 15, 2014 (GASB Statement No. 68). These statements replace GASB Statements No. 25 and No. 27.



## Statement of Plan Net Assets Market Value as of June 30, 2021 and 2022

	2022	2021
Assets:		
Cash and Short-term Investments	\$ (65,671)	\$ 1,412,860
Receivables:		
Accrued Interest	16,173	135,000
Accounts Payable:	14,996	0
Investments, at Fair Value:		
Debt Securities	24,652,901	20,599,213
Equity Securities	66,464,815	89,449,003
Other	4,595,899	4,618,040
Total	95,713,615	114,666,256
Net assets held in trust for pension benefits*	\$ 95,649,121	\$ 116,214,116

\* A schedule of funding progress for the plan is presented on page D-4.

## Statement of Changes in Plan Net Assets for the Fiscal Years Ended June 30, 2021 and June 30, 2022

	June 30, 2022	June 30, 2021
Additions:		
Contributions		
Employer	\$ 3,697,716	\$ 2,704,242
Plan Members	145,322	160,600
Transfer of Assets	0	0
Service Purchase Account/Redeposit	0	0
Total	3,843,038	2,864,842
Investment Income	(14,560,389)	27,538,240
Total Additions	(10,717,351)	30,403,082
Deductions:		
Benefits Paid	8,324,561	7,974,269
Refund of Contributions	1,523,083	889,101
Total Deductions	9,847,644	8,863,370
Net Increase	(20,564,995)	21,539,712
Net assets held in Trust Fund:		
Beginning of year	\$116,214,116	\$ 94,674,404
End of year	\$ 95,649,121	\$116,214,116

**Plan Description.** The City of Birmingham Employees Retirement System is a single-employer defined benefit pension plan that covers the employees of the City of Birmingham.

The plan provides retirement, disability, and death benefits to plan members and their beneficiaries.

**Contributions.** Plan members' contributions in accordance with the schedule on page B-4.

The employer's funding policy provides for periodic employer contributions based upon a ***fundamental financial objective of having rates of contribution which remain relatively level from generation to generation of the City of Birmingham citizens.*** To determine the employer contribution rates and to assess the extent to which the fundamental financial objective is being achieved, the System has actuarial valuations prepared annually. In preparing those valuations, the entry age actuarial cost method is used to determine normal cost and actuarial accrued liabilities.

Unfunded actuarial accrued liabilities (full funding credit) are amortized by level dollar over a period of future years as outlined on page C-5.

On the basis of the June 30, 2022 actuarial valuation, the employer contribution amounts were determined to be as follows:

<b>Contributions for</b>	<b>General</b>	<b>Police &amp; Fire</b>	<b>Total</b>
Normal Cost	\$ 241,987	\$ 557,720	\$ 799,707
Accrued Liabilities (Full Funding Credit)	<u>857,187</u>	<u>1,171,819</u>	<u>2,029,006</u>
Total	\$1,099,174	\$1,729,539	\$2,828,713

## Accounting Information Schedule of Funding Progress (Dollar Amounts in Millions)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) - Entry Age (b)	Unfunded AAL (UAAL) (b)-(a)	Funded Ratio (a)/(b)	Covered Payroll (c)	UAAL as a Percent of Covered Payroll [(b)-(a)]/(c)
6/30/13#	\$ 94.1	\$ 110.2	\$ 16.1	85.4 %	\$ 8.6	186.6 %
6/30/14@	102.7	112.7	10.0	91.1 %	8.1	124.6 %
6/30/15@	104.6	114.5	9.9	91.3 %	7.4	133.6 %
6/30/16	104.0	114.4	10.4	90.9 %	6.6	157.1 %
6/30/17	104.2	115.7	11.5	90.1 %	6.4	178.8 %
6/30/18#	102.9	118.8	15.9	86.6 %	6.1	261.2 %
6/30/19	101.3	120.4	19.1	84.1 %	5.7	334.4 %
6/30/20	100.6	120.5	19.9	83.5 %	5.3	376.9 %
6/30/21	104.5	121.9	17.4	85.7 %	4.9	352.5 %
6/30/22	102.9	123.0	20.1	83.6 %	4.3	468.3 %

# Actuarial assumptions revised.

@ Plan amended.

## Schedule of Employer Contributions

<b>Fiscal Year Ended June 30</b>	<b>Estimated Annual Required Contributions</b>
2008	\$ 1,014,067
2009	823,031
2010	1,336,970
2011	1,798,758
2012	2,159,904
2013	2,600,130
2014	2,930,506
2015	2,522,331
2016	1,940,069
2017	1,863,849
2018	1,827,814
2019	1,907,234
2020	2,378,124
2021	2,704,242
2022	2,772,056
2023	2,565,141
2024	2,828,713

## Summary of Actuarial Methods and Assumptions

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 actuarial valuation follows:

Valuation date	June 30, 2022
Actuarial cost method	Entry age actuarial cost method
Amortization method	Level Dollar
Remaining amortization period	16 years closed
Asset valuation method	4-year smoothed market
Actuarial assumptions:	
Investment rate of return (net)	6.75%
Projected salary increases:	
General	3.25% - 5.26%
Police and Fire	3.25% - 4.83%
Assumed rate of payroll growth	3.25%
Assumed rate of membership growth	0%
Cost-of-living adjustments	N/A

## APPENDIX

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### RISK MEASURES

## Risk Measures

Actuarial Valuation Date	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL) Entry Age	(3) Unfunded AAL (UAAL) (2) - (1)	(4) Covered Payroll	(5) Funded Ratio (1) / (2)	(6) Assets / Payroll (1) / (4)	(7) Liability / Payroll (2) / (4)	(8) Unfunded / Payroll (3) / (4)
6/30/2013 *	\$ 94,113,412	\$110,233,144	\$16,119,732	\$8,638,321	85.4 %	1089.5 %	1276.1 %	186.6 %
6/30/2014	102,701,637	112,737,047	10,035,410	8,055,081	91.1	1275.0	1399.6	124.6
6/30/2015	104,554,429	114,460,214	9,905,785	7,417,243	91.3	1409.6	1543.2	133.6
6/30/2016	103,972,731	114,374,122	10,401,391	6,621,902	90.9	1570.1	1727.2	157.1
6/30/2017	104,215,618	115,695,678	11,480,060	6,422,232	90.1	1622.7	1801.5	178.8
6/30/2018 *	102,864,859	118,830,905	15,966,046	6,111,829	86.6	1683.0	1944.3	261.2
6/30/2019	101,289,587	120,399,683	19,110,096	5,714,295	84.1	1772.6	2107.0	334.4
6/30/2020	100,562,943	120,461,092	19,898,149	5,278,978	83.5	1905.0	2281.9	376.9
6/30/2021	104,463,058	121,870,877	17,407,819	4,938,365	85.7	2115.3	2467.8	352.5
6/30/2022	102,863,074	123,002,567	20,139,493	4,300,297	83.6	2392.0	2860.3	468.3

\* Revised actuarial assumptions.

(5) The Funded Ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

(6) and (7) The ratios of assets and liabilities to payroll gives an indication of both maturity and volatility. Many systems have ratios between 5 and 7. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of pay. For systems that are closed to new hires, it is expected that these ratios will grow as payroll declines.

(8) The ratio of the unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A ratio above approximately 3 or 4 may indicate difficulty in discharging the unfunded liability within a reasonable time frame.



## Risk Commentary

The determination of the accrued liability and the actuarially determined contribution 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 the accrued liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

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

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

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

The computed contribution amount shown on page A-2 may be considered as a minimum contribution rate that complies with the Board's funding policy. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined amounts do not necessarily guarantee benefit security.



# Risk Commentary (Concluded)

## Plan Maturity Measures

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

	<u>2022</u>	<u>2021</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>
Ratio of the market value of assets to payroll	22.24	23.53	17.93	17.56	16.83
Ratio of actuarial accrued liability to payroll	28.60	24.68	22.82	21.07	19.44
Ratio of actives to retirees and beneficiaries	0.19	0.25	0.28	0.31	0.33
Ratio of net cash flow to market value of assets	-6.3%	-5.2%	-6.1%	-6.4%	-5.7%

## Ratio of Market Value of Assets to Payroll

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 10.0 times the payroll, a return on assets 5% different than assumed would equal 50% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

## Ratio of Actuarial Accrued Liability to Payroll

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time. The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

## Ratio of Actives to Retirees and Beneficiaries

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

## Ratio of Net Cash Flow to Market Value of Assets

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

## Additional Risk Assessment

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability.

