

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 ...

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

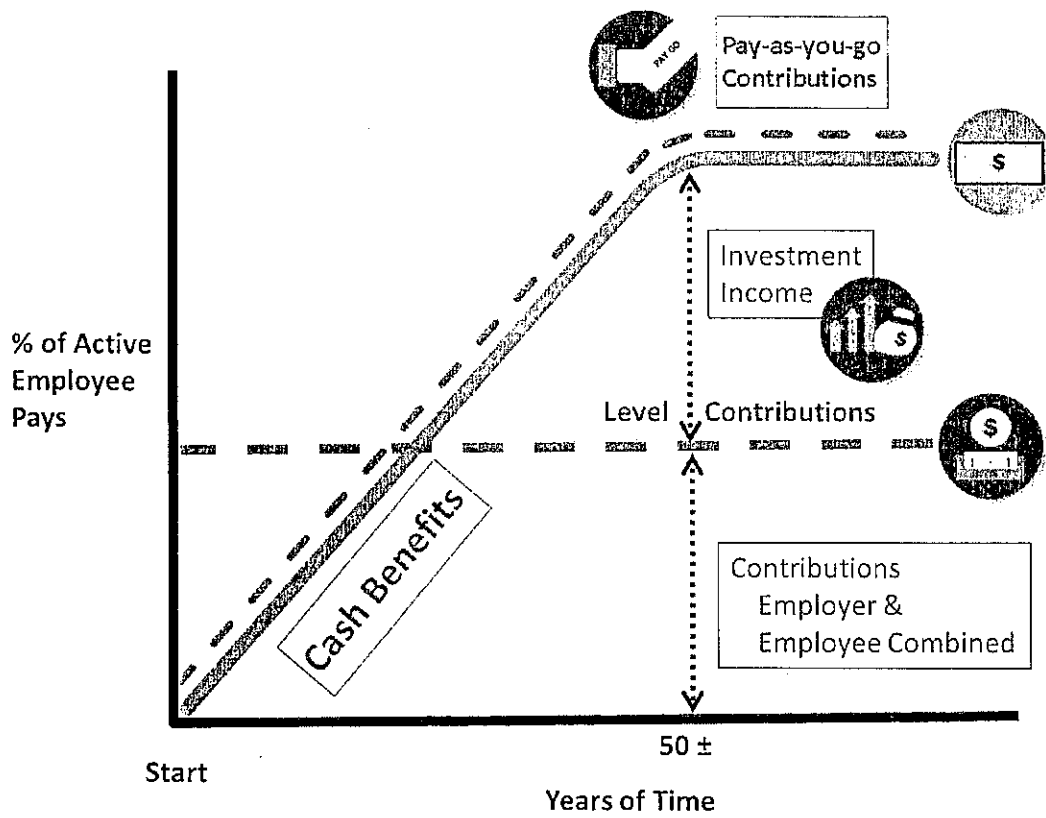
... minus ...

Expenses incurred in operating the program.

A by-product of the level percent-of-payroll contribution objective is the accumulation of invested assets for varying periods of time. Investment income becomes the third and largest contributor to the retirement program, and the amount is directly related to the amount of contributions and investment performance.

There are retirement programs designed to defer the bulk of contributions far into the future. Lured by artificially low present contributions, such programs ignore the inevitable consequence of 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.***

***Computed Contribution Rate Needed To Finance Benefits.*** From a given schedule of benefits and from the data furnished, 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.

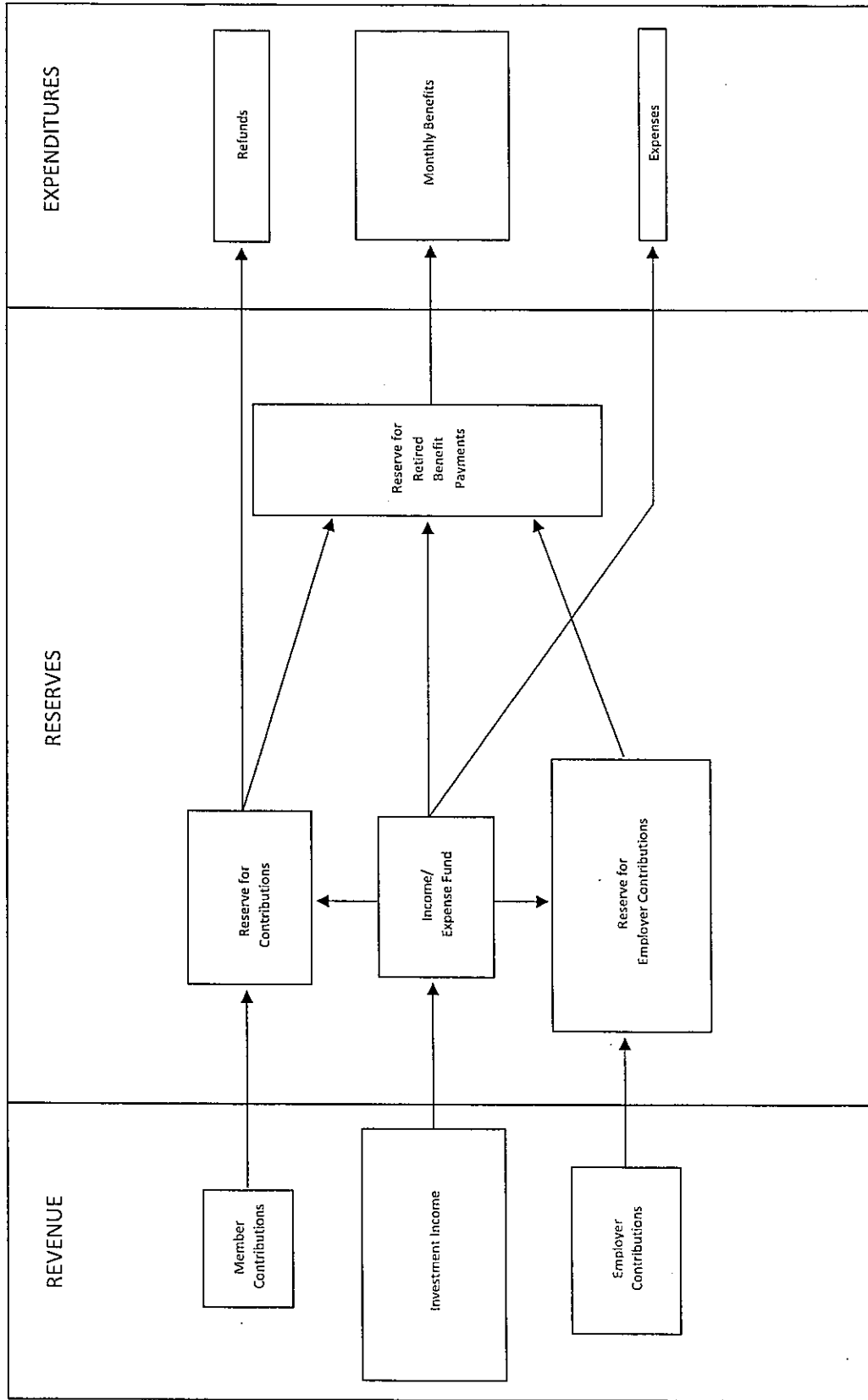


**CASH BENEFITS LINE.** This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

**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



## Valuation Methods

The assumptions and methods are based on an experience study dated September 9, 2016 adopted by the Board on October 20, 2016.

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

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

**Financing of Unfunded Actuarial Accrued Liabilities.** The Unfunded Actuarial Accrued Liability (UAAL) was determined using the funding value of assets and actuarial accrued liability calculated as of the valuation date. The UAAL amortization payment (one component of the contribution requirement), is the level percent of pay required to fully amortize the UAAL beginning on the date contributions determined by this report are scheduled to begin. In accordance with the Actuarial Funding Policy, Sections III. C. (1) and (3), a portion of the UAAL was financed over a period of one year, a portion of the UAAL was financed over a period of five years, and the remaining UAAL over a period of seven years. This UAAL payment reflects payments expected to be made between the valuation date and the date contributions determined by this report are scheduled to begin. Unfunded actuarial accrued liabilities were amortized by level (principal & interest combined) percent-of-payroll contributions.

The **valuation assets** used for funding purposes is derived as follows: Prior year valuation assets are increased by contribution and expected investment income and reduced by refunds, benefit payments and expenses. To this amount is added 25% of the difference between expected and actual investment income for each of the previous four years. The total funding value of assets is limited to 80%/120% of the market value on the valuation date. During periods when investment performance exceeds the assumed rate, actuarial value of assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, actuarial value of assets will tend to be greater than market value.

## Valuation Assumptions

The actuary calculates the contribution requirements and benefit values of the System by applying actuarial assumptions to the benefit provisions and census data furnished, using the valuation methods described on page C-5.

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

- long-term rates of investment income likely to be generated by the assets of the Retirement System;
- patterns of salary increases to members;
- rates of mortality among members, retirants and beneficiaries;
- rates of withdrawal of active members;
- rates of disability among members and their subsequent rates of recovery; and
- probabilities of retirement at various ages after benefit eligibility.

In a valuation the actuary projects the monetary effect of each assumption, for each distinct experience group, for the next year and for each year over the next half-century or longer.

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Actual experience will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions. Each valuation provides a complete recalculation of System costs based upon assumptions regarding future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of small adjustments to the computed contribution rate.

From time-to-time it is appropriate to modify one or more of the assumptions, to reflect basic experience trends (but not random year-to-year fluctuations).

## Valuation Assumptions (Continued)

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 benefit amounts will be based.

Sample Ages	Salary Increase Assumptions for an Individual Member		
	Merit & Seniority	Base (Economy)	Increase Next Year
20	2.9%	3.5%	6.4%
25	2.3%	3.5%	5.8%
30	2.0%	3.5%	5.5%
35	1.8%	3.5%	5.3%
40	1.6%	3.5%	5.1%
45	1.3%	3.5%	4.8%
50	0.9%	3.5%	4.4%
55	0.5%	3.5%	4.0%
60	0.1%	3.5%	3.6%
Ref:	458		

If the number of active members remains constant, then the total active member payroll will increase 3.5% annually, the base portion of the individual salary increase assumptions.

The rate of investment is compounded annually net of expenses.

Investment Return	7.25%
Wage Inflation	3.50%
Price Inflation	2.75%
Spread Between Investment Return and Wage Inflation	3.75%
Spread Between Investment Return and Price Inflation	4.50%

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

Economic experience during the last 5 years has been as follows:

	Year Ended June 30					5-Year Average
	2019	2018	2017	2016	2015	
1) Nominal rate of return*	5.2 %	4.3 %	5.6 %	4.6 %	5.4 %	5.0 %
2) Increase in CPI (6/30)	1.6 %	2.9 %	1.6 %	1.0 %	0.1 %	1.5 %
3) Average salary increase	(1.4)%	0.6 %	5.3 %	0.8 %	(0.9)%	0.8 %
4) Spread between recognized investment return and:						
CPI						3.5 %
Average salary increase						4.2 %

\* 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 net of expenses,  $A$  is the beginning of year asset value and  $B$  is the end of year asset value.

## Valuation Assumptions (Continued)

The **mortality rates** utilized are based upon the RP-2014 tables, as extended, and include a margin for future mortality improvements projected using a fully generational improvement scale. The tables used were as follows:

**Post-Retirement Mortality:** The RP-2014 Healthy Annuitant Generational Mortality Tables, with blue collar adjustments and extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale. A base year of 2006 is utilized with future mortality improvements assumed each year using scale MP-2015.

**Pre-Retirement Mortality:** RP-2014 Employee Generational Mortality Tables, with blue collar adjustments and extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale. A base year of 2006 is utilized with future mortality improvements assumed each year using scale MP-2015.

**Post-Retirement Disabled Mortality:** The RP-2014 Disabled Mortality Tables, extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale. A base year of 2006 is utilized with future mortality improvements assumed each year using scale MP-2015.

These tables were first used for the June 30, 2016 valuation.

Future Life Expectancy (Years)* at Sample Ages						
Sample Age	Health Pre-Retirement <sup>^</sup>		Healthy Post-Retirement		Disabled Retirement	
	Men	Women	Men	Women	Men	Women
45	40.88	46.06	39.27	42.33	29.22	34.15
50	35.66	40.84	34.24	37.24	25.64	29.97
55	30.58	35.72	29.40	32.30	22.32	26.10
60	25.72	30.71	24.81	27.54	19.20	22.46
65	21.16	25.80	20.46	22.95	16.17	18.86
70	16.96	21.02	16.39	18.59	13.23	15.34
75	13.12	16.46	12.69	14.57	10.48	12.09
80	9.70	12.18	9.47	11.01	8.02	9.30
Ref:	2308	2309	2310	2311	2137	2138
Multiplier:	1.00	1.00	1.00	1.00	1.00	1.00
Setback:	0	0	0	0	0	0
Base Year:	2006	2006	2006	2006	2006	2006
MP Scale:	919	920	919	920	919	920

\* Based on retirements in 2019. Retirements in future years will reflect improvements in life expectancy.

<sup>^</sup> 95% of Pre-Retirement Deaths are assumed to be non-duty related and 5% are assumed to be duty related.

## Valuation Assumptions (Continued)

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

Retirement Ages	Percent
50	50%
51	35%
52	30%
53	25%
54	25%
55	25%
56	25%
57	20%
58	20%
59	30%
60	100%
Ref.	557

A member is eligible for retirement at age 50 with 25 years of service or after attaining age 60.

*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
All	0	12.50%
	1	8.50%
	2	5.00%
	3	3.00%
	4	2.50%
25	5 & Over	1.62%
30		1.40%
35		0.83%
40		0.32%
45		0.18%
50		0.18%
55		0.18%
60		0.18%
Ref.		146
		237



## Valuation Assumptions (Concluded)

Rates of disability were as follows. This assumption measures the probability of members retiring with a disability benefit. 10% of disabilities are assumed to be non-duty related and 90% are assumed to be duty related.

Sample Ages	% of Active Members Becoming Disabled within Next Year
20	0.06%
25	0.07%
30	0.10%
35	0.13%
40	0.19%
45	0.29%
50	0.48%
55	0.82%
Ref	256
Multiplier	125%

## Miscellaneous and Technical Assumptions

### June 30, 2019

<b>Marriage Assumption:</b>	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. 90% of active members are assumed to be married at time of retirement. Male spouses are assumed to be three years older than female spouses.
<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>Decrement Timing:</b>	Decrements of all types are assumed to occur mid-year.
<b>Eligibility Testing:</b>	Eligibility for benefits is determined using the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
<b>Decrement Relativity:</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Decrement Operation:</b>	Disability and death decrements do not operate during the first 5 years of service. Disability also does not operate during retirement eligibility.
<b>Loads:</b>	Retirement Present Values, for benefits commencing immediately, were loaded by 17% for all Fire and Police Patrol/Command hired on or before 7/1/2008 (2% for those Police Patrol/Command hired after 7/1/2008) of active member liabilities to account for the additional amount included in the FAC due to unused sick time and unused vacation time.
<b>Option Factors:</b>	Option factors are based upon 7.25% interest and the RP-2014 Healthy Annuitant Mortality Table, with blue collar adjustments and extended via cubic spline with a 100% Unisex Blend. A base year of 2006 is utilized. Future improvements are projected to 2017 with scale MP-2015. The assumptions are effective for retirements after January 1, 2017.
<b>Incidence of Contributions:</b>	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
<b>Normal Form of Benefit:</b>	A 60% automatic joint and survivor payment is the assumed form of benefit.
<b>Benefit Service:</b>	Exact Fractional service is used to determine the amount of benefit payable.
<b>Annuity Withdrawal:</b>	The actuarial equivalent interest rate for annuity withdrawal was assumed to be 3.0% per year.

## Glossary

**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.”

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

**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, turn-over 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.

**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.

**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.

**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.

## **APPENDIX I**

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### **AMORTIZATION PAYOFF SCHEDULE**

## Amortization Payoff Schedule

Date	Period	Unfunded Actuarial Accrued Liability (UAAL) (Beg. of Year)	Funded Ratio (Beg. of Year)	UAAL Payment %	UAAL Payment \$	Interest	UAAL (End of Year)
June 30, 2019		\$ 28,151,772	62.7%				
July 1, 2020	7, 5, 1	26,222,798	65.8%	77.03%	\$ 4,345,481	\$ 1,745,467	\$ 23,622,783
July 1, 2021	6, 4	23,622,783	69.6%	76.27%	4,452,989	1,553,114	20,722,908
July 1, 2022	5, 3	20,722,908	73.7%	76.27%	4,608,843	1,337,289	17,451,354
July 1, 2023	4, 2	17,451,354	78.2%	76.27%	4,770,153	1,094,322	13,775,523
July 1, 2024	3, 1	13,775,523	83.0%	76.27%	4,937,108	821,843	9,660,258
July 1, 2025	2	9,660,258	88.3%	75.97%	5,090,125	518,004	5,088,137
July 1, 2026	1	5,088,137	93.9%	75.97%	5,268,279	180,142	0
July 1, 2027	0	0	100.0%	0.00%	-	0	(0)

UAAL at June 30, 2019 adjusted to July 1, 2020 with payments expected to be made between the valuation date and July 1, 2020. Payment based on 7.25% interest and 3.5% wage base over 7 (5, 1 for a portion) years beginning on the Fiscal Year starting July 1, 2020.

## Calculation of Excess Earnings Reserve Fund Balance

The schedule below shows the development of the current balance in the Excess Earnings Reserve Fund.

Transaction	Amount
1) Balance as of 7/1/2018	\$320,092
2) 2018 Transfer Amount	0
3) 2018/2019 Scheduled Distribution	41,112
4) 2018/2019 Distribution not made as a result of death	792
<b>5) Balance as of 7/1/2019: (1)+(2)-(3)+(4)</b>	<b>279,772</b>
6) 2019 Maximum Transfer Amount	0
7) 2019/2020 Scheduled Distribution	45,216
<b>8) Balance Available for Distribution as of 7/1/2020: (5)+(6)-(7)</b>	<b>\$234,556</b>

The calculations are based on our understanding of the Excess Earnings Distribution Program as described during the Retirement Board meeting of February 21, 2008, and assume a tiered structure payout as of July 1, 2013. This includes a maximum annual transfer equal to 10% of the excess of the rate of return on the actuarial value of Retirement System assets over the assumed rate of return (7.25%) multiplied by the actuarial present value of pensions being paid to retired members and beneficiaries. The calculation of the 2019 maximum transfer amount is detailed below.

Development of Maximum Transfer Amount	
a) Rate of return on Actuarial Value of Assets	5.19%
b) Assumed rate of return on Actuarial Value of Assets	7.25%
c) Excess rate of return: maximum ((a)-(b), 0%)	0.00%
d) Present Value of pensions for retired members and beneficiaries	\$55,604,425
<b>e) 2019 maximum transfer: (c)*(d)*10%</b>	<b>\$ 0</b>

The calculation of the maximum annual amount available to be transferred to the Excess Earnings Reserve Fund is based upon the Retirement Board's direction and is consistent with the Retirement Board's interpretation of Chapter 297.33 of the Code of Ordinances of the City of Southgate.

The balance available for distribution as of 7/1/2020 includes both expected payouts and expected transfers for the 12-month period following June 30, 2019.

## 100-Year Closed Group Projection of Benefit Payments

The benefit projections shown below are based upon the existing plan population as of the valuation date, June 30, 2019, assuming no new entrants in the plan. The projections were prepared assuming all actuarial assumptions are met during the projection period.

Fiscal Year Ending June 30,	Projected Benefit Payment	Fiscal Year Ending June 30,	Projected Benefit Payment	Fiscal Year Ending June 30,	Projected Benefit Payment
2020	\$5,294,899	2053	\$6,133,429	2086	\$934,986
2021	5,336,843	2054	5,950,971	2087	836,384
2022	5,471,219	2055	5,780,594	2088	743,018
2023	5,521,430	2056	5,615,231	2089	655,167
2024	5,668,540	2057	5,419,334	2090	573,140
2025	5,905,013	2058	5,237,095	2091	497,149
2026	6,031,544	2059	5,054,660	2092	427,270
2027	6,174,228	2060	4,872,886	2093	363,544
2028	6,344,400	2061	4,691,920	2094	305,979
2029	6,446,476	2062	4,511,905	2095	254,521
2030	6,540,848	2063	4,333,027	2096	209,019
2031	6,614,759	2064	4,155,451	2097	169,239
2032	6,636,233	2065	3,979,332	2098	134,934
2033	6,625,901	2066	3,804,805	2099	105,819
2034	6,622,121	2067	3,631,971	2100	81,520
2035	6,602,611	2068	3,461,024	2101	61,582
2036	6,582,907	2069	3,292,204	2102	45,544
2037	6,916,706	2070	3,125,711	2103	32,941
2038	7,034,907	2071	2,961,670	2104	23,266
2039	6,991,999	2072	2,800,203	2105	16,016
2040	7,053,826	2073	2,641,486	2106	10,721
2041	7,064,559	2074	2,485,758	2107	6,970
2042	7,007,412	2075	2,333,294	2108	4,400
2043	7,001,649	2076	2,184,355	2109	2,693
2044	6,913,073	2077	2,039,177	2110	1,594
2045	6,943,213	2078	1,898,043	2111	910
2046	7,134,649	2079	1,761,247	2112	501
2047	7,024,603	2080	1,629,034	2113	268
2048	6,905,653	2081	1,501,531	2114	140
2049	6,755,681	2082	1,378,729	2115	70
2050	6,625,619	2083	1,260,623	2116	34
2051	6,478,117	2084	1,147,229	2117	15
2052	6,302,041	2085	1,038,642	2118	6
				2119	1

# Actuarial Funding Policy

**WHEREAS**, the City of Southgate Police and Fire Retirement System (“Retirement System”) is established and administered pursuant to the provisions of Public Act 345 of 1937, as amended (MCL 38. 551 *et seq.*), applicable collective bargaining agreements, and applicable state and federal laws including, but not limited to Public Act 314 of 1965, as amended (“Act 314”) [MCL 38.1132 *et seq.*], and

**WHEREAS**, the Board of Trustees of the Retirement System (“Board”) is vested with the authority and fiduciary responsibility for the administration, management and operation of the Retirement System, and

**WHEREAS**, the Board, in consultation with its Actuary, has an obligation to establish the economic and demographic assumptions to be utilized in performing the required actuarial valuation of the Retirement System and in determining the required annual employer contribution to the Retirement System, and

**WHEREAS**, the Board is aware of upcoming changes to the accounting and reporting standards approved by the Governmental Accounting Standards Board (GASB) for public pension plans, and

**WHEREAS**, the Board wishes to establish a formal Actuarial Funding Policy addressing the funding objectives and actuarial assumptions to be utilized in determining the funding status of the Retirement System, therefore be it

**RESOLVED**, that the Board hereby adopts the following Actuarial Funding Policy:

**I. GENERAL**

**A. Purpose**

- (1) In light of upcoming changes to the GASB financial accounting and reporting standards for public pension plans, the Board of Trustees of the Retirement System desires to establish a formal Actuarial Funding Policy to ensure the systematic funding of future pension obligations of the Retirement System.

**B. Policy Objectives**

- (1) Maintain adequate levels of assets sufficient to fund all benefits expected to be paid to members and beneficiaries when due.
- (2) Maintain stability of employer contributions rates, consistent with other funding objectives.
- (3) Support the public policy goals of accountability and transparency.
- (4) Monitor material risks to assist in any risk management strategies the Board deems appropriate.



- (5) Promote intergenerational equity. Each generation of members and employers should incur the cost of benefits for the employees who provide services to them, rather than deferring costs to future members and employers.
- (6) Provide a reasonable margin for adverse experience to offset risk.
- (7) Review the Plan's investment return assumption, potentially in conjunction with a periodic asset liability study and in consideration of the Board's risk profile.
- (8) Continue the systematic reduction of the Plan's Unfunded Actuarial Accrued Liabilities (UAAL).

## II. LEGAL

### A. Annual Actuarial Valuation

- (1) Section 20h(4) of Act 314 [MCL 38.1140h(4)], requires the Retirement System to have an actuarial valuation performed annually as follows:

Except as otherwise provided in this subsection, a system shall have an annual actuarial valuation with assets valued on a market-related basis. The actuarial present value of total projected benefits shall include all pension benefits to be provided by the system to members or beneficiaries pursuant to the terms of the system and any additional statutory or contractual agreements to provide pension benefits through the system that are in force at the actuarial valuation date, including, but not limited to, service credits purchased by members, deferred retirement option plans, early retirement programs, and postretirement adjustment programs. A system that has less than \$20,000,000.00 is only required to have an actuarial valuation as required under this subsection done every other year.

### B. Annual Employer Contribution

- (1) The Board is required, pursuant to Section 20m of Act 314 [MCL 38.1140m], to annually certify the annual required contribution to be made by the employer as follows:

The governing board vested with the general administration, management, and operation of a system or other decision-making body that is responsible for implementation and supervision of any system shall confirm in the annual actuarial valuation required under section 20h and the summary annual report required under section 13 that each system under this act provides for the payment of the required employer contribution as provided in this section and shall confirm in the summary annual report that the system has received the required employer contribution for the year covered in the summary annual report. The required employer contribution is the actuarially determined contribution amount. An annual required employer contribution in a system under this act shall consist of a current service cost payment and a payment of at least the annual accrued amortized interest on any unfunded actuarial liability and the payment of the

annual accrued amortized portion of the unfunded principal liability. For fiscal years that begin before January 1, 2006, the required employer contribution shall not be determined using an amortization period greater than 40 years. Except as otherwise provided in this section, for fiscal years that begin after December 31, 2005, the required employer contribution shall not be determined using an amortization period greater than 30 years. In a plan year, any current service cost payment may be offset by a credit for amortization of accrued assets, if any, in excess of actuarial accrued liability. A required employer contribution for a system administered under this act shall allocate the actuarial present value of future plan benefits between the current service costs to be paid in the future and the actuarial accrued liability. The governing board vested with the general administration, management, and operation of a system or other decision-making body that is responsible for implementation and supervision of a system shall act upon the recommendation of an actuary and the board and the actuary shall take into account the standards of practice of the Actuarial Standards Board of the American Academy of Actuaries in making the determination of the required employer contribution.

### III. POLICY

#### A. Actuarial Cost Method

- (1) The individual entry age normal actuarial cost method of valuation shall be utilized in determining actuarial accrued liability and normal cost with the following characteristics:
  - (a) the annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement; and
  - (b) each annual normal cost is a constant percentage of the member's year by year projected covered pay.
- (2) Differences in the past between assumed experience and actual experience (actuarial gains and losses) shall be factored into the actuarial accrued liability.
- (3) The normal cost shall be determined on an individual basis for each active member.

#### B. Asset Smoothing Method

- (1) The investment gains or losses of each valuation period, resulting from the difference between actual investment return and assumed investment return, shall be recognized annually in level amounts over a period not to exceed five (5) years in calculating the funding value of assets.

### C. Amortization Method

- (1) A level percent of payroll amortization method shall be used to systematically pay off the unfunded actuarial accrued liabilities over a closed amortization period not to exceed 30 years.
- (2) Unfunded liabilities associated with benefit changes or assumption changes shall be funded over a period to be determined by the Board in consultation with its actuary.
- (3) Unfunded liabilities arising from benefit changes provided to retirees or in conjunction with early retirement incentive programs offered by the employer shall be separately funded over a period to be determined by the Board in consultation with its actuary.
- (4) In the event that the Retirement System's assets exceed its liabilities, all amortization schedules other than those related to benefit changes for retirees or early retirement incentive programs offered by the employer shall be considered completed, and employer contributions will be set based upon the normal cost and the completion of any remaining amortizations due to benefit changes for retirees or early retirement incentive programs offered by the employer, without regard to the overfunding status of the Retirement System.

### D. Assumptions

- (1) The economic and demographic actuarial assumptions utilized to determine the contribution requirements and benefit values of the Retirement System shall be determined by the Board in consultation with its actuary.

### E. Funding Target

- (1) The targeted funded ratio of the Retirement System shall be 100%.
- (2) The employer contribution rate shall at least be equal to the normal cost unless the funded ratio of the Retirement System exceeds 120%.
- (3) A funding plan shall be developed by the Board in consultation with its actuary if the funded ratio of the Retirement System falls below 50%, which may include additional funding requirements.

### F. Risk Management

- (1) Assumption Changes
  - (a) The actuarial assumptions utilized to determine the annual contribution requirements and valuations shall be those last adopted by the Board based on the most recent experience study and upon the advice and recommendation of the Board's actuary. The Board's actuary shall conduct an experience study at least once every five years. The results of the experience study shall be the basis for the actuarial assumptions recommended to the Board.

- (b) The actuarial assumptions may be revised during the five-year period between experience studies if significant plan design changes or other significant economic events occur, as advised by the actuary.
- (2) Risk Measures. The following risk measures will be annually determined to provide quantifiable measurements of risk as it applies to the Retirement System.
- (a) Funded ratio;
  - (b) Unfunded actuarial accrued liabilities – the years required to pay down the unfunded liabilities of the Retirement System based upon the current funding schedule;
  - (c) Total unfunded actuarial accrued liabilities as a percentage of total payroll;
  - (d) Total assets as a percentage of total payroll; and
  - (e) Total actuarial accrued liabilities as a percentage of total payroll.
- (3) Risk Control
- (a) The Board shall carefully monitor the risk measures identified above and shall consider steps to mitigate risk, particularly as the funded ratio increases.

#### IV. REVIEW AND AMENDMENT

##### A. Periodic Review

- (1) This Actuarial Funding Policy shall be reviewed no less frequently than once every five years in conjunction with the required experience study performed by the Board's actuary, and may be reviewed at any time at the Board's discretion.

##### B. Amendment

- (1) The Board, in consultation with its Actuary and Legal Counsel, may amend this Actuarial Funding Policy at any time as deemed necessary to address changes in the makeup, benefit structure and/or funding status of the Retirement System.

## **APPENDIX II**

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### **RISK COMMENTARY**

## 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>2019</u>	<u>2018</u>
Ratio of the market value of assets to payroll	8.89	9.16
Ratio of actuarial accrued liability <sup>1</sup> to payroll	14.38	14.49
Ratio of actives to retirees and beneficiaries	0.69	0.69
Ratio of net cash flow to market value of assets	-2.0%	-1.3%

<sup>1</sup> Includes excess earnings reserve

### 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 active 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.



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December 13, 2019

Mr. Marc Hatfield, Secretary  
City of Southgate  
14730 Reaume Parkway  
Southgate, Michigan 48195-2503

Dear Marc:

Please find enclosed ten copies of the report of the 65th Annual Actuarial Valuation as of June 30, 2019 for the City of Southgate Policemen and Firemen Retirement System. We look forward to meeting with you to review the report.

Sincerely,

A handwritten signature in cursive script that reads "Rebecca L. Stouffer".

Rebecca L. Stouffer, ASA, FCA, MAAA

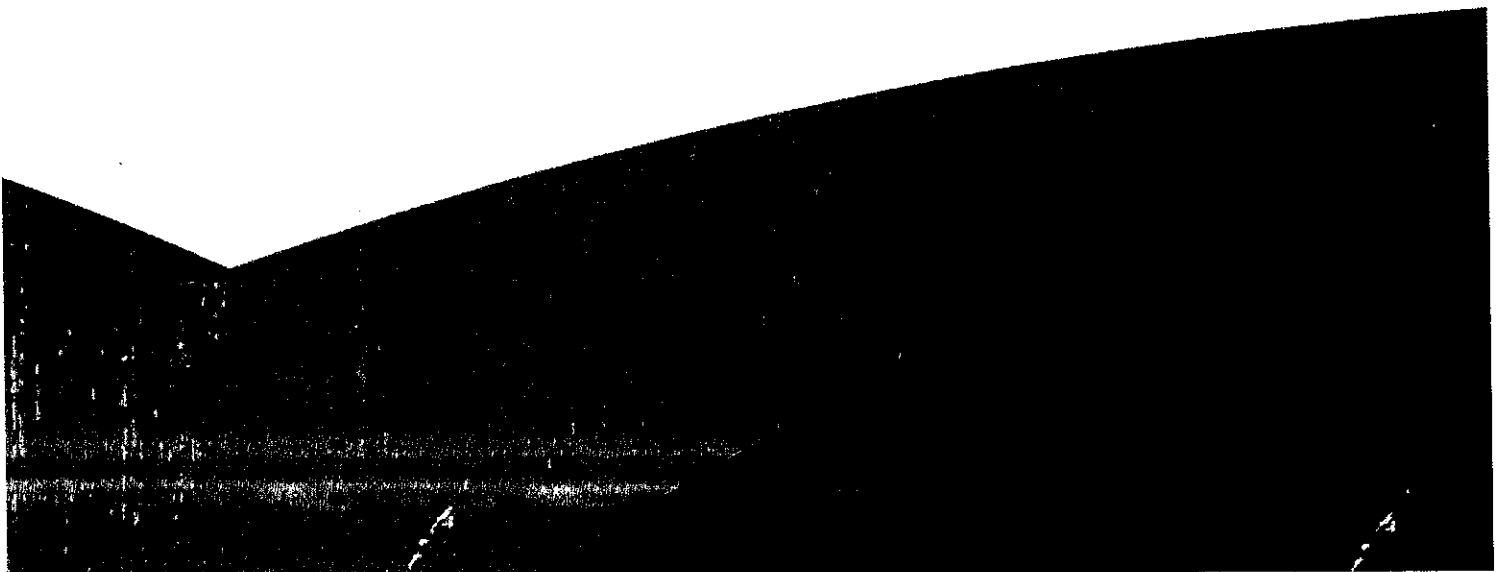
RLS:bd  
Enclosures

cc: David Angileri, Finance Director (+ 2 report copy)  
Darcie Cheney, Asst. Finance Director (+1 report copy)  
Jack Timmony (+1 report copy)



# City of Southgate Policemen and Firemen Retirement System

GASB Statements No. 67 and No. 68 Accounting and  
Financial Reporting for Pension  
June 30, 2020





November 2, 2020

Retirement Board  
City of Southgate Policemen and  
Firemen Retirement System

Dear Board Members:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the City of Southgate Policemen and Firemen Retirement System. These calculations have been made on a basis that is consistent with our understanding of these Statements.

GASB Statement No. 67 is the accounting standard that applies to the stand-alone financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

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.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The calculation of the plan's liability for this report is not applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statements No. 67 and No. 68 may produce significantly different results.

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 complements the actuarial valuation report that was provided to the Board and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2019 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

Retirement Board  
City of Southgate Policemen and  
Firemen Retirement System  
November 2, 2020  
Page 2

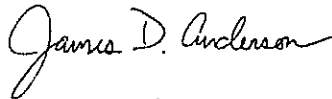
This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the City of Southgate Policemen and Firemen Retirement System. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

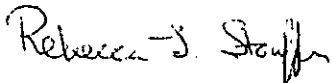
James D. Anderson and Rebecca L. Stouffer are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

The signing actuaries are independent of the plan sponsor.

Respectfully submitted,



James D. Anderson, FSA, EA, FCA, MAAA



Rebecca L. Stouffer, ASA, FCA, MAAA

JDA/RLS:dj

C0276



Auditor's Note – This information is intended to assist in preparation of the financial statements of the City of Southgate Policemen and Firemen Retirement System. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.



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## **SECTION A**

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### **EXECUTIVE SUMMARY**

# Executive Summary as of June 30, 2020

	2020
Actuarial Valuation Date	June 30, 2019
Measurement Date of the Net Pension Liability	June 30, 2020
Employer's Fiscal Year Ending Date (Reporting Date)	June 30, 2020

**Membership<sup>A</sup>**

Number of	
- Retirees and Beneficiaries	99
- Inactive, Nonretired Members	3
- Active Members	68
- Total	170
Covered Payroll	\$ 5,266,008

**Net Pension Liability**

Total Pension Liability	\$ 76,199,231
Plan Fiduciary Net Position	44,862,168
Net Pension Liability	\$ 31,337,063
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	58.87 %
Net Pension Liability as a Percentage of Covered Payroll	595.08 %

**Development of the Single Discount Rate**

Single Discount Rate	7.25 %
Long-Term Expected Rate of Investment Return	7.25 %
Long-Term Municipal Bond Rate*	2.45 %
Last year ending June 30 in the 2021 to 2120 projection period for which projected benefit payments are fully funded	2120

**Total Pension Expense** \$ 5,393,383

**Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses**

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ 1,494,022	\$ 202,877
Changes in assumptions	1,129,433	-
Net difference between projected and actual earnings on pension plan investments	5,298,135	869,633
Total	\$ 7,921,590	\$ 1,072,510

<sup>A</sup> Reflects counts and payroll as of the actuarial valuation date that is one year prior to the measurement date. This payroll may differ from the GASB Statement No. 68 definition of covered-employee payroll.

\* Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" June 30, 2020. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax exempt securities.



## Discussion

### Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

### Financial Statements

GASB Statement No. 68 requires state or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to the Retirement System subsequent to the measurement date of June 30, 2020.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The *statement of fiduciary net position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *statement of changes in fiduciary net position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.





## Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

GASB Statement No. 67 and No. 68 require the notes of the financial statements for the employers and pension plans, to include certain additional information. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The type of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.



## Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- A comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

## 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 7.25% on the actuarial value of assets), then the following outcomes are expected:

1. The employer normal cost as a percentage of pay is expected to remain approximately level as a percentage of payroll;
2. The unfunded liability is expected to decrease in dollar amount until it is fully funded; and
3. The funded status of the plan is expected to reach a 100% funded ratio at the completion of the number of years remaining in the closed amortization schedule of the unfunded liability.

This funding policy results in the expectation that the plan's assets will be able to fully pay for promised benefits through at least 2120.

## Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled-forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2019 and a measurement date of June 30, 2020.



## Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects: (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits); and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.25%; the municipal bond rate is 2.45% (based on the daily rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting Single Discount Rate is 7.25%.

