

Oakland County Employees' Retirement System
Annual Actuarial Valuation Report
September 30, 2018



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February 5, 2019

The Retirement Commission
Oakland County Employees' Retirement System
Waterford, Michigan

Dear Commission Members:

Submitted in this report are the results of the September 30, 2018 actuarial valuation of the liabilities, funded position and contribution requirements associated with benefits provided by the Oakland County Employees' Retirement System. The purpose of the valuation was to measure the System's funding progress and determine the employer contribution for the 2019-2020 fiscal year. This report should not be relied upon for any other purpose. This report may be provided to parties other than the Retirement Commission only in its entirety and only with the permission of the Commission. GRS is not responsible for unauthorized use of this report.

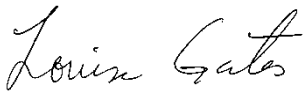
The valuation was based upon the actuarial assumptions and methods adopted by the Retirement Commission, information furnished by the Retirement System, including System benefits, financial transactions, and individual members, terminated members, retirees and beneficiaries. Data was checked for internal and year to year consistency, but was not audited by us. As a result, we are unable to assume responsibility for the accuracy or completeness of the data provided.

The Fiscal year 2020 contributions in this report were determined using the actuarial assumptions and methods disclosed in Section D of this report. This report includes risk metrics on pages C-4, D-2 and E-1 but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. These additional risk metrics were beyond the scope of this assignment. We encourage a review and assessment of investment and other significant risks which may have a material impact on the System's financial condition.

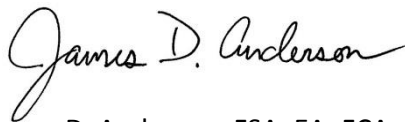
Future actuarial measurements may differ significantly from those presented in this report due to such factors as experience differing from that anticipated by actuarial assumptions, changes in plan provisions, actuarial assumptions/methods or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. This valuation assumes the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination of the plan sponsor's ability to make the necessary contributions is beyond the scope of our expertise and was not performed by GRS.

This report was prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, this report is complete and accurate and the valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board in compliance with the applicable state statutes. Louise M. Gates and James D. Anderson are independent of the plan sponsor and are Members of the American Academy of Actuaries (MAAA) who meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. It is our opinion that the actuarial assumptions used for the valuation produce results which are reasonable.

Respectfully submitted,



Louise M. Gates, ASA, FCA, MAAA



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

SECTION A

EXECUTIVE SUMMARY

1. Required Employer Contributions – Fiscal Year Beginning October 1, 2019

The computed County contributions are as follows:

<u>Division</u>	<u>Computed Employer Contributions</u>
General County	\$ 0
Command Officers	0
Road Deputies	0
Corrections Deputies	0
Total	\$ 0

2. Contribution Comparison

The table below compares the required employer contributions in the current and prior year's valuations:

<u>Total County Contributions for the Indicated Fiscal Year</u>	
<u>2018-2019</u>	<u>2019-2020</u>
\$0	\$0

3. Reasons for Change

There are three general reasons why contribution rates change from one valuation to the next. The first is a change in the benefits or eligibility conditions of the plan. The second is a change in the valuation assumptions used to predict future occurrences. The third is the difference during the year between the plan's actual experience and what the assumptions predicted. Although there was no change in the employer contribution from the prior year, there was a decrease in the Retirement System's funding surplus.

There were no benefit or assumption changes made in connection with this valuation of the System. Changes in the Retirement System's funding surplus from the prior year are due to System experience which was overall, unfavorable. During the year ended September 30, 2018 the investment return on plan assets was lower than long term expectations. The market smoothing techniques used in this valuation of the System recognize both past and present investment experience. As a result, the recognized rate of return for the year was 6.80%. Details of this asset smoothing method are shown on page C-4 of this report. This unfavorable experience was offset in part by more retiree deaths during the year than anticipated by actuarial assumptions.

4. Reserve Transfers

For all employment divisions, the computed liability for members who have already retired and their beneficiaries is larger than the reported balance of the retiree reserve accounts. Transfers will be necessary to balance the retiree reserve with the retiree liabilities, as follows:

	<u>General County</u>	<u>Command Officers</u>	<u>Sheriff Deputies*</u>	<u>Total</u>
Retiree Liability	\$488,965,739	\$ 44,439,863	\$114,830,745	\$648,236,347
Retiree Reserve	<u>391,080,544</u>	<u>37,311,984</u>	<u>89,261,430</u>	<u>517,653,958</u>
Difference	\$ 97,885,195	\$ 7,127,879	\$ 25,569,315	\$130,582,389

* Road patrol and corrections divisions are combined.

We recommend that the Retirement Commission authorize the transfers described above.

5. System Funded Percent

The System's funding percent based on the actuarial value of assets (funding value) is 102.3% as of September 30, 2018. Last year, the funding percent measured on the same basis was 102.6%. If the market value of assets were used to determine the System's funding percent as of September 30, 2018, the result would be a funded percent of 103.2%.

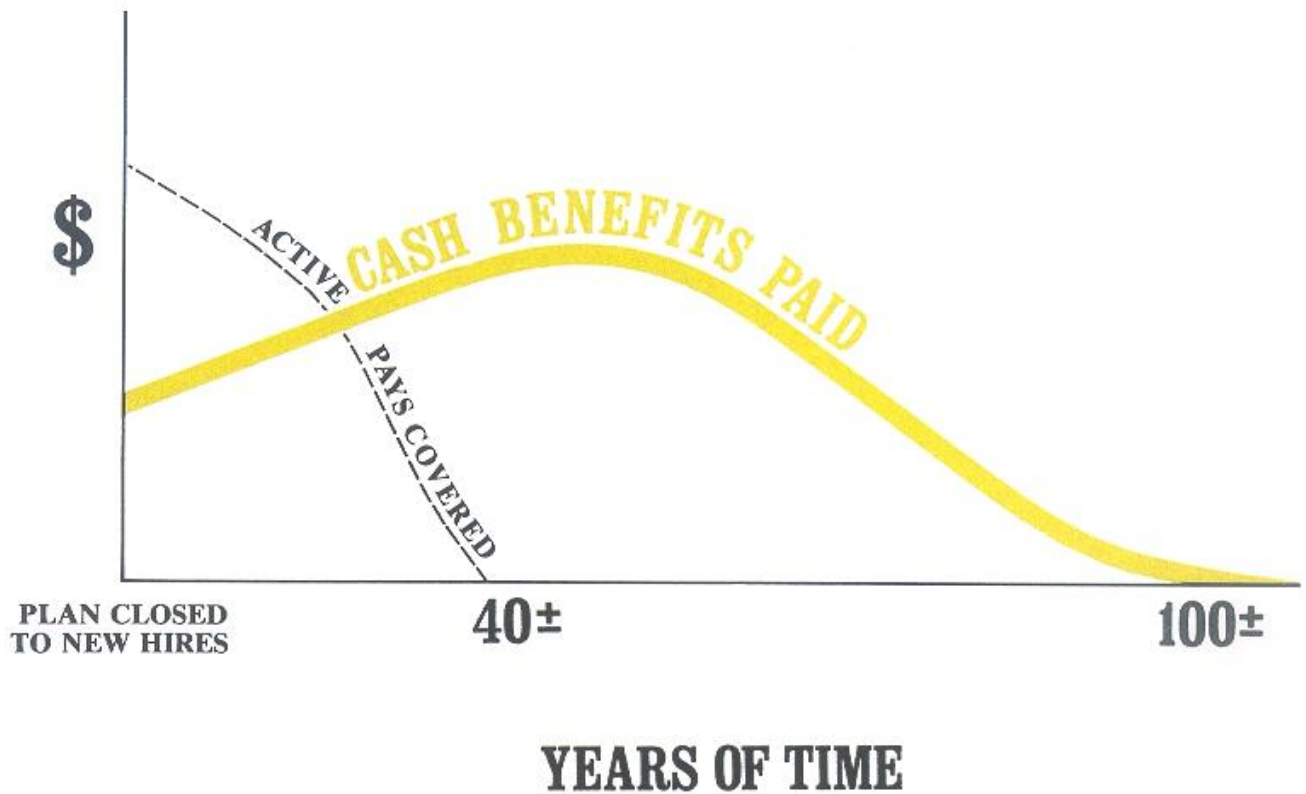
Unless otherwise indicated, a funding status measurement presented in this report is based upon the actuarial accrued liability and the funding value of assets. Unless otherwise indicated, it is important to note that the funding status measurement presented in this report is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations and the need for or the amount of future employer contributions.

6. Looking Ahead

Based on System experience the value of the funding surplus decreased since last year. The current practice of using the funding surplus to reduce County contributions coupled with any unfavorable future System experience will further erode the value of the surplus over time. Once the surplus is depleted, County contributions to the System will again be required. These contributions will be at least equal to employer normal cost payments. Currently these payments are \$1.1 million.

Michigan Public Act 202 of 2017 (the Act) has created new reporting and other requirements for local units of government. Recently, the Department of Treasury (the DOT) issued guidance on uniform actuarial assumptions needed in connection with the Act. The actuarial assumptions currently used in the annual valuations of the System differ from those prescribed by the DOT for reporting purposes under the Act. In the absence of any assumption changes, a separate valuation of the System using DOT compliant assumptions will be needed.

A CLOSED PENSION PLAN



A plan becomes closed when no new hires are admitted to active membership. The persons covered by the plan at the time of closing continue their normal activities and continue to be covered by the plan, until the last survivor dies.

CASH BENEFITS LINE. After a pension plan becomes closed, the usual pattern is for cash benefits to continue to increase for decades of time. Eventually the cash benefits will peak, and then gradually decrease over more decades of time, ultimately to zero. The last cash benefit is likely to occur a century after the time the plan is closed.

The precise amounts of cash benefits cannot be known now, and must be estimated by assumptions of future experiences in a variety of financial risk areas.

SECTION B

VALUATION RESULTS

Required Contributions for the Fiscal Year Beginning October 1, 2019

Contributions for	Expressed as a % of Covered Payroll and Dollar Amounts				
	General County	Command Officers	Road Deputies	Corrections Deputies	All Groups Combined
A Normal Cost of Benefits					
Age & service	9.84 %	16.42 %	15.74 %	15.27 %	
Disability	0.54	1.08	1.04	1.34	
Death before retirement	0.61	0.58	0.56	0.64	
Future refunds of member contributions	0.00	0.28	0.15	0.15	
Totals	10.99	18.36	17.49	17.40	
B Member contributions @	0.68	5.00	5.00	5.00	
C Employer Normal Cost %	10.31 %	13.36 %	12.49 %	12.40 %	
D Employer Normal Cost \$	\$862,510	\$81,126	\$140,844	\$58,956	\$1,143,436
E UAL payment / (credit)*	(1,914,236)	(142,060)	(243,187)	(102,040)	
Total Employer Contribution \$ (D+E)	\$0	\$0	\$0	\$0	\$0

* *Unfunded Accrued Liabilities were amortized over a period of 10 years using level dollar financing.*

@ *Reflects a weighted average*

Determination of Unfunded Actuarial Accrued Liability as of September 30, 2018

	General County	Command Officers	Road Deputies	Corrections Deputies	Total
A. Accrued Liability					
1. For retirees and beneficiaries	\$488,965,739	\$44,439,863	\$55,782,230	\$59,048,515	\$648,236,347
2. For vested and other terminated members	5,391,030	347,765	475,703	345,993	6,560,491
3. For present active members					
a. Value of expected future benefit payments	71,516,496	10,583,119	15,995,110	5,804,078	103,898,803
b. Value of future normal costs	4,665,493	396,683	676,282	295,343	6,033,801
c. Active member accrued liability: (a) - (b)	66,851,003	10,186,436	15,318,828	5,508,735	97,865,002
4. Total accrued liability	561,207,772	54,974,064	71,576,761	64,903,243	752,661,840
B. Valuation Assets (Funding Value)	574,974,731	55,995,741	73,325,730	65,637,102	769,933,304
C. Unfunded Accrued Liability: (A.4) - (B)	(13,766,959)	(1,021,677)	(1,748,969)	(733,859)	(17,271,464)
D. Funding Ratio: (B) / (A.4)	102.5%	101.9%	102.4%	101.1%	102.3%

Development of Experience Gain/(Loss) Period Ended September 30, 2018

Actual experience will never (except by coincidence) exactly match assumed experience. It is hoped that gains and losses will cancel each other 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.

	All Groups Combined
(1) UAAL* at start of period	\$(19,350,225)
(2) Normal cost for period	2,128,819
(3) Actual contributions	301,807
(4) Interest accrual on (1), (2) and (3) at 7.25%	(1,336,662)
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	(18,859,875)
(6) Change from plan provisions	0
(7) Change in actuarial assumptions/methods	0
(8) Expected UAAL after changes: (5) + (6) + (7)	(18,859,875)
(9) Actual UAAL at end of period	(17,271,464)
(10) Gain/(loss): (8) - (9)	(1,588,411)
(11) Gain/(loss) as percent of actuarial accrued liabilities at start of period	(0.21%)

* *Unfunded Actuarial Accrued Liabilities (UAAL)*

Closed Group Cash Flow Projection (Dollar Amounts in Thousands)

Year Ending	Expected Benefits for Current			Total
	Actives	Retirees	Inactives	
9/30/2019	\$ 1,064	\$58,133	\$ 37	\$59,234
9/30/2020	2,900	58,037	103	61,040
9/30/2021	4,333	57,861	170	62,364
9/30/2022	5,584	57,603	254	63,441
9/30/2023	6,626	57,260	295	64,181
9/30/2024	7,459	56,839	352	64,650
9/30/2025	8,176	56,297	418	64,891
9/30/2026	8,792	55,679	525	64,996
9/30/2027	9,315	54,980	593	64,888
9/30/2028	9,766	54,183	636	64,585

The projection was based on the assumptions and methods shown in Section D of this report and data reported for use in this valuation of the System.

SECTION C

SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA

Brief Summary of Benefit Provisions

September 30, 2018

Eligibility

Amount

Regular Retirement

Sheriff's Deputies: 25 years of service regardless of age, or age 60 with 8 years of service.

2.2% of final average compensation (FAC) times the first 14 years of service plus 2.5% of FAC for each additional year.

Command Officers: 25 years of service regardless of age, or age 60 with 8 years of service.

Total service times 2.5% of FAC.

All Others: Age 55 with 25 years of service, or age 60 with 8 years.

Total service times 2.0% of FAC for Plan A members (2.2% for years in excess of 14 for contributing members). Total service times 1.8% of FAC for Plan B members (1.98% for years in excess of 14 for contributing members).

Maximum County Portion is 75% of FAC.

Type of final average compensation - Highest 5 consecutive years out of the last 10. Some lump sums are included. Sheriff's Deputies hired after 12/31/92, Command Officers entering BU after 5/31/94 and BU48 nurses hired after 12/31/92 overtime pay is excluded from FAC.

Deferred Retirement

8 years of service - benefit begins at age 60.
25 years of service - benefit at age 55.

Computed as a regular retirement but based upon service and final average compensation at termination date.

Non-Duty Death-in-Service

10 years of service.

Computed as a regular retirement but actuarially reduced in accordance with a 100% joint and survivor election (50% joint and survivor benefit if less than 15 years of service and under age 60).

Duty Death-in-Service

No age or service requirements.

Upon termination of Worker's Compensation, a benefit equal to the Worker's Compensation benefit is payable to the spouse, children under age 18 and dependent parents.

Brief Summary of Benefit Provisions

September 30, 2018

Eligibility

Amount

Non-Duty Disability

10 years of service.

Computed as a regular retirement.

Duty Disability

No age or service requirements.

Computed as a regular retirement with additional service credited until attainment of age 60. Retirement benefits are offset by Worker's Compensation payments.

Cost-of-Living Adjustments

Annual increase based upon change in CPI, not in excess of 1-1/2% of base benefit. Additional one-time increases granted January 1, 1976, 1979, 1981, 1982, July 1, 1984, January 1, 1986, 1987, 1988 and October 1, 1997. A special one-time payment was made to retirees during 1990.

Member Contributions

Sheriff's Deputies.

3% of annual earnings for the first 14 years of service and 5% thereafter.

Command Officers.

5% of annual earnings.

All Others.

1% of annual earnings for years after 14 years of service for members electing the 2.2% or 1.98% benefit.

County Contributions

Actuarially determined amounts which, together with member contributions, are sufficient to cover value of future benefits during the expected future working lifetimes of present members.

Coverage

The System was closed to new hires effective at various dates during 1994 and 1995.

Reported Financial Information at Market Value Year Ended September 30, 2018

Income and Disbursements

Market Value of Assets Beginning of Year: \$785,011,127

Revenues:

a.	Member contributions	\$ 301,807	
b.	Employer contributions	-	
c.	Net investment income	<u>49,559,010</u>	
d.	Total		49,860,817

Disbursements:

a.	Retirement incentive payments	-	
b.	Pension benefits paid	57,579,562	
c.	Administrative expenses	<u>240,203</u>	
d.	Total		<u>57,819,765</u>

Market Value of Assets End of Year: \$777,052,179

Assets and Reserves as of September 30, 2018

Assets:

a.	Cash and Deposits	\$ 39,111,577	
b.	Interest and Dividends	2,666,112	
c.	Fixed Income	199,589,666	
d.	Equities	348,858,601	
e.	Real Estate	91,041,305	
f.	Other	96,312,132	
g.	Accounts Payable	<u>(527,214)</u>	
	Total	<u><u>\$ 777,052,179</u></u>	

Reserve Accounts:

a.	Member contributions	\$ 895,916	
b.	Reserve for benefits now being paid	517,653,958	
c.	Reserve for future benefits	<u>258,502,305</u>	
	Total	<u><u>\$777,052,179</u></u>	

Determination of Valuation Assets as of September 30, 2018

	2017	2018	2019	2020	2021	2022
A. Funding Value Beginning of Year	\$779,685,235	\$776,357,214				
B. Market Value End of Year	785,011,127	777,052,179				
C. Market Value Beginning of Year	757,642,972	785,011,127				
D. Non-Investment Net Cash Flow	(55,466,944)	(57,277,755)				
E. Investment Income						
E1. Market Total: B - C - D	82,835,099	49,318,807				
E2. Assumed Rate (I)	7.25%	7.25%				
E3. Amount for Immediate Recognition: 7.25% x (A + D)/2	54,516,503	54,209,579				
E4. Amount for Phased-In Recognition: E1-E3	28,318,596	(4,890,772)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: E4/5	5,663,719	(978,154)				
F2. First Prior Year	2,081,635	5,663,719	(\$978,154)			
F3. Second Prior Year	(10,122,934)	2,081,635	5,663,719	(\$978,154)		
F4. Third Prior Year	0	(10,122,934)	2,081,635	5,663,719	(\$978,154)	
F5. Fourth Prior Year	0	0	(10,122,934)	2,081,635	5,663,719	(\$978,154)
F6. Total Recognized Investment Gain/(Loss)	(2,377,580)	(3,355,734)	(3,355,734)	6,767,200	4,685,565	(978,154)
G. Funding Value End of Year: A + D + E3 + F6	\$776,357,214	\$769,933,304				
H. Difference Between Market & Funding Value	8,653,913	7,118,875				
I. Recognized Rate of Return	6.93%	6.80%				
J. Market Value Rate of Return	11.35%	6.52%				
K. Ratio of Funding Value to Market Value	98.90%	99.08%				

Retirees and Beneficiaries, September 30, 2018 Tabulated by Type of Benefit and Option Elected

Benefit Option Elected	Type of Benefit			Total
	Age & Service*	Disability		
		Non-Duty	Duty	
Regular	705	2		707
A-100% J & S	399	8	1	408
B-50% J & S	123			123
C-10 Year Certain	98	4		102
D(1)-100% J & S with pop-up	253	1	1	255
D(2)-50% J & S with pop-up	167			167
E-Social Security Equated				
Survivor	261			261
Total	2,006	15	2	2,023

**Includes alternate payees receiving EDRO benefits, beneficiaries of deceased members, and 28 individuals with \$0 pension benefits as of September 30, 2018, receiving retiree health benefits only.*

Inactive Members as of September 30, 2018 Tabulated by Attained Age

There were 66 Inactive members reported as of September 30, 2018 involving estimated deferred annual retirement allowances totaling \$760,531. An inactive member is a person who has left County employment with entitlement retirement benefits upon attaining their deferred retirement age. The schedule below shows the inactive members by age.

Attained Age	No.	Estimated Deferred Allowance
40 - 44	2	\$ 16,471
45 - 49	8	152,299
50 - 54	23	257,775
55 - 59	31	319,710
60 - 64	1	11,239
65 - 69	1	3,037
Totals	66	\$760,531

Active Members as of September 30, 2018 by Age and Years of Service

Age	Years of Service on Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
40-44					1			1	\$ 60,590
45-49					8	12	1	21	1,442,072
50-54					5	30	17	52	4,102,720
55-59					7	28	32	67	4,987,152
60					1	1	4	6	466,423
61						3	3	6	357,081
62					1	2	6	9	586,194
63					1	2	3	6	418,789
64					1	1	4	6	416,421
65						3	5	8	551,951
66						1	2	3	252,790
67						1	1	2	151,802
68						1		1	52,663
70+						2	4	6	463,222
Totals					25	87	82	194	\$14,309,870

While not used in the financial computations, the following group averages are computed and shown because of their general interest. The chart shown above includes 152 General County division employees, 13 Command Officers, 21 Road Patrol Deputies, and 8 Corrections Officers.

Group Averages:

Age: 56.6 years
Service: 29.8 years
Annual Pay: \$ 73,762

SECTION D

ACTUARIAL COST METHODS, ACTUARIAL ASSUMPTIONS AND GLOSSARY

Valuation Methods

The Individual Entry-Age Actuarial Cost Method is a method for determining the normal cost and the allocation of benefit values between service rendered before and after the valuation date. It has 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.

Actuarial gains/(losses), as they occur, reduce (increase) the Unfunded Actuarial Accrued Liability.

Starting with the September 30, 2015 actuarial valuation, the individual entry age cost method was used to determine employer contributions.

Valuation Assets - The funding value of assets recognizes assumed investment income fully each year. Differences between actual and assumed investment income are phased-in over a closed 5-year period. During periods when investment performance exceeds the assumed rate, funding value of assets will tend to be lower 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.

System assets are reported to the actuary in total. Reported investment income is allocated among the various employment divisions such that the rate of return for each division is the same as the rate of return for the entire System.

Actuarial Assumptions Used for the Valuation

Investment Return (net of expenses): 7.25% per year compounded annually. The assumed rate of investment return is the rate of return in excess of either wage or price inflation. Considering a wage inflation assumption of 3.25% per year, the 7.25% nominal return translates into a real rate of return of 4.00% per year in excess of wage inflation.

This assumption is used to equate the value of payments due at different points in time and was first used for the September 30, 2015 valuation.

Net market value rates of investment return during the last 5 plan years are shown below:

	For the Year Ending September 30th				
	2018	2017	2016	2015	2014
Rate of Investment Return	6.52%	11.35%	9.11%	0.63%	9.06%

Pay Projections: These assumptions are used to project current pays to those upon which benefits will be based. The base economic assumption was first used for the September 30, 2015 valuation.

Sample Ages	Annual Rate of Pay Increase for Sample Ages						
	General County Members			Years of Service	Sheriff's Department		
	Base (Economic)	Merit & Longevity	Total		Base (Economic)	Merit & Longevity	Total
20	3.25%	4.00%	7.25%	1 to 7	3.25%	6.00%	9.25%
25	3.25	3.00	6.25	8 to 15	3.25	3.00	6.25
30	3.25	2.00	5.25	thereafter	3.25	0.00	3.25
35	3.25	2.00	5.25				
40	3.25	1.00	4.25				
45	3.25	1.00	4.25				
50	3.25	0.50	3.75				
55	3.25	0.50	3.75				
60	3.25	0.25	3.50				

Price Inflation: 2.75% per year.

Actuarial Assumptions Used for the Valuation

Lump Sum Payments: Lump sum payments for unused sick leave and vacation were assumed to increase final average compensation for the present members by 1%.

Mortality: The RP-2014 Healthy Annuitant Mortality Table (unadjusted) projected to 2021 using a static projection based on the 2-dimensional MP-2014 improvement scales. This assumption was first used for the September 30, 2015 valuation. Sample values follow:

Sample Ages	Actuarial Present Value of \$1 Monthly for Life		Future Life Expectancy (Years)	
	Men	Women	Men	Women
50	\$147.31	\$151.52	33.50	36.20
55	140.72	145.66	29.15	31.69
60	132.68	138.11	24.96	27.26
65	122.70	128.61	20.91	22.97
70	110.60	117.00	17.05	18.88
75	96.35	103.26	13.44	15.06
80	80.32	87.66	10.17	11.58

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 membership size in this group is not sufficiently large to determine if there is a margin for mortality improvements. However, based upon our experience with a broad cross section of public sector plans similar in nature to this plan, it is our opinion that there is a provision for future mortality improvement in the current mortality assumption.

Actuarial Assumptions Used for the Valuation

Rates of Separation from Active Membership: The 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	Percent of Active Members Separating within Next Year	
	General	Sheriffs
20	5.00%	4.00%
25	5.00	4.00
30	4.00	3.40
35	4.00	2.50
40	3.00	1.80
45	3.00	1.30
50	2.00	0.80
55	1.00	0.40
60	0.50	0.10
65	0.50	0.00

The rates were first used for the September 30, 2007 valuation.

Rates of Disability: These rates represent the probabilities of active members becoming disabled.

Sample Ages	Percent Becoming Disabled within Next Year	
	General	Sheriffs
20	0.02%	0.14%
25	0.02	0.15
30	0.04	0.18
35	0.06	0.23
40	0.16	0.30
45	0.19	0.51
50	0.31	1.00
55	0.71	1.55

These rates were first used for the December 31, 1992 valuation.

Actuarial Assumptions Used for the Valuation

Rates of Retirement: These rates are used to measure the probabilities of an eligible member retiring during the next year.

Percent of Active Members Retiring within One Year					
General County		Sheriff's Department			
Ages	%	Ages	%	Service	%
55	20%	60	20%	25	40%
56	15	61	40	26	35
57	15	62	70	27	35
58	15	63	50	28	35
59	15	64	50	29	35
60	20	65	100	30	40
61	15			31	40
62	25			32	50
63	15			33	70
64	15			34	70
65	35			35	100
66	40				
67	50				
68	70				
69	80				
70	100				

A member was assumed to be eligible for retirement after attaining age 55 with 25 or more years of service (after 25 years of service regardless of age for Deputies and Command Officers), or age 60 with 8 or more years of service.

The rates were first used for the September 30, 2007 valuation.

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.” Under the actuarial cost method used the “AAL” differs somewhat from the value of future payments based on benefits earned as of the valuation date.

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, retirement, investment income and salary increases. Decrement assumptions (rates of mortality, separation 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 appropriate 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 normal costs to be paid in the future and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

Actuarial Equivalent - Benefits whose actuarial present values are equal.

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

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

Glossary

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

Normal Cost - The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” An amortization payment toward the unfunded actuarial accrued liability is in addition to 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.

SECTION E

OTHER FINANCIAL DISCLOSURES

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Entry Age Accrued Liability (b)	Unfunded AAL (UAAL) (b) – (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b) – (a)] / (c)
9/30/2009	\$750,432,703	\$683,077,469	\$ (67,355,234)	109.9 %	\$44,884,070	--
9/30/2010#	745,094,735	692,409,285	(52,685,450)	107.6	42,686,155	--
9/30/2011	727,690,746	712,159,061	(15,531,685)	102.2	38,275,780	--
9/30/2012	717,654,902	713,972,065	(3,682,837)	100.5	33,706,963	--
9/30/2013	716,944,068	719,348,810	2,404,742	99.7	29,498,703	8.15 %
9/30/2014#	787,896,080	726,487,842	(61,408,238)	108.5	26,271,160	--
9/30/2015#	786,151,565	760,839,312	(25,312,253)	103.3	23,739,756	--
9/30/2016	779,685,235	762,520,988	(17,164,247)	102.3	20,976,409	--
9/30/2017	776,357,214	757,006,989	(19,350,225)	102.6	18,113,662	--
9/30/2018	769,933,304	752,661,840	(17,271,464)	102.3	14,309,870	--

Assumption/method change

Schedule of Employer Contributions

Actuarial Valuation Date	Fiscal Year Beginning	Annual Required Contribution	Percentage Contributed
9/30/2009	10/1/2010		100.00 %
9/30/2010	10/1/2011	\$ 3,279,107	100.00
9/30/2011	10/1/2012	5,400,095	100.00
9/30/2012	10/1/2013	5,770,835	100.00
9/30/2013	10/1/2014	4,554,832	100.00
9/30/2014	10/1/2015	0	100.00
9/30/2015	10/1/2016	0	100.00
9/30/2016	10/1/2017	0	100.00
9/30/2017	10/1/2018	0	100.00
9/30/2018	10/1/2019	0	



February 5, 2019

Ms. Silvia Frank
Retirement System Secretary
Oakland County Employees'
Retirement System
2100 Pontiac Lake Road
Waterford, MI 48328-0440

Dear Silvia:

Enclosed is a copy of the report of the seventy-fourth annual actuarial valuation of the pension liabilities covering the Oakland County Employees' Retirement System.

Sincerely,

A handwritten signature in cursive script that reads "Louise M. Gates". The signature is written in a dark blue or black ink.

Louise M. Gates

Enclosure