

Oakland County Employees' Retirement System
Annual Actuarial Valuation Report
September 30, 2020



Table of Contents

Section	Page	Item
		<i>Introduction</i>
A	1-3	Executive Summary
B	1	Computed Contributions
	2	Determination of Unfunded Actuarial Accrued Liability
	3	Development of Experience Gain/(Loss)
	4	Closed Group Cash Flow Projection
	5	Retirement System Risks
C	1-2	Summary of Benefit Provisions
	3	Reported Financial Information
	4	Determination of Valuation Assets
	5	Retired Life Data
	6	Inactive Member Data
	7	Active Member Data
D	1	Valuation Methods
	2-5	Actuarial Assumptions Used for the Valuation
	6-7	Glossary
E	1-2	Financial Disclosure Information



April 16, 2021

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

Dear Commission Members:

Submitted in this report are the results of the September 30, 2020 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 2021-2022 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 and 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 2022 contributions shown 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.

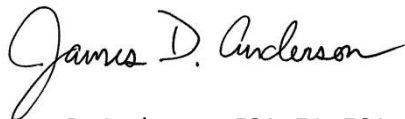
This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the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

This report was prepared 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, 2021

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>2020-2021</u>	<u>2021-2022</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 an increase 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, favorable. During the year ended September 30, 2020, there were more retiree deaths than anticipated by actuarial assumptions. In addition, pay increases were lower than expected. This favorable experience was offset in part by unfavorable investment experience. Although 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 6.92%. Details of this asset smoothing method are shown on page C-4 of this report.

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:

	General County	Command Officers	Sheriff Deputies*	Total
Retiree Liability	\$485,238,968	\$ 47,257,377	\$127,346,067	\$659,842,412
Retiree Reserve	<u>443,902,449</u>	<u>42,300,360</u>	<u>112,583,952</u>	<u>598,786,761</u>
Difference	\$ 41,336,519	\$ 4,957,017	\$ 14,762,115	\$ 61,055,651

** 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 102.2% as of September 30, 2020. Last year, the funding percent measured on the same basis was 101.1%. If the market value of assets were used to determine the System's funding percent as of September 30, 2020, the result would be a funded percent of 98.4%.

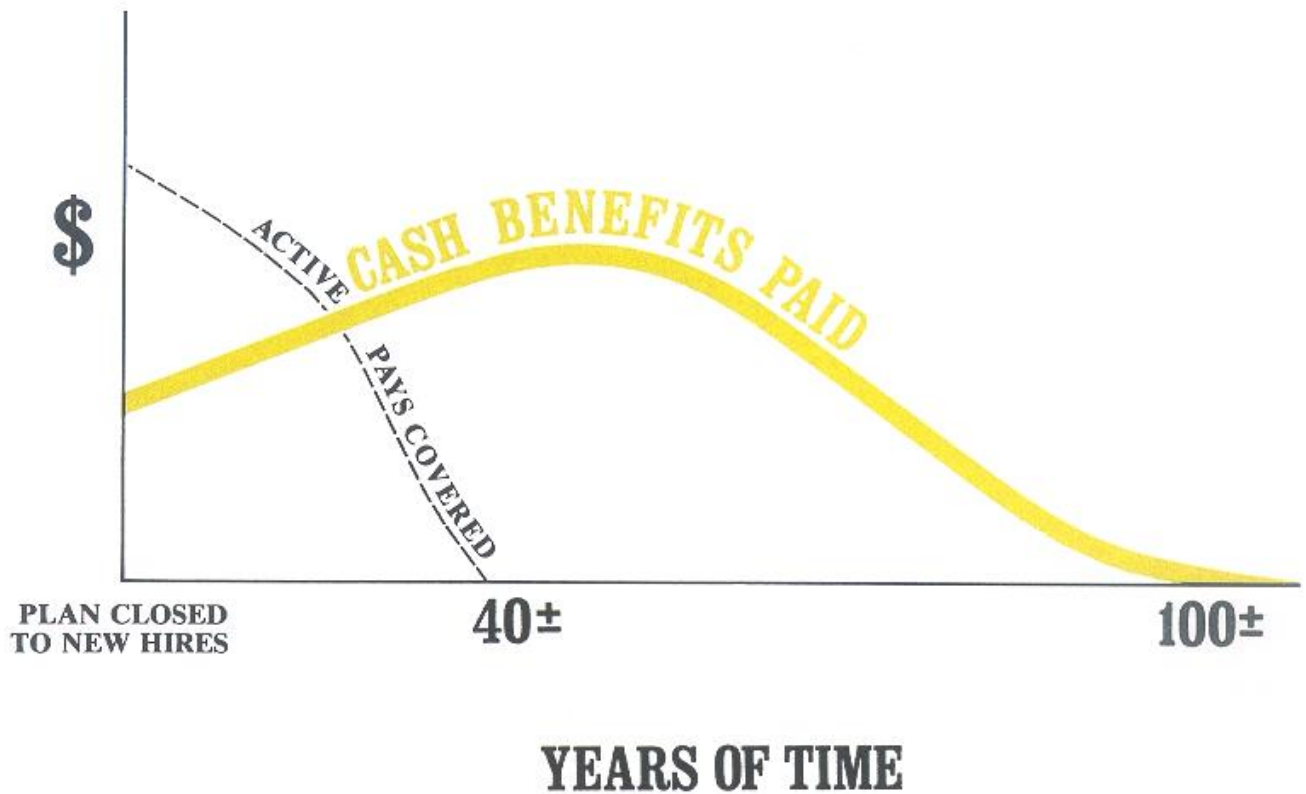
Unless otherwise indicated, a funding status measurement presented in this report is based upon the actuarial accrued liability and the funding value of assets. Unless otherwise indicated, it is important to note that the funding status measurement presented in this report is inappropriate for assessing 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 increased since last year. The current practice of using the funding surplus to reduce County contributions coupled with any unfavorable future System experience will erode the value of the surplus. 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 \$690 thousand.

This valuation of the System does not reflect any activity related to the recent Voluntary Employee Separation Incentive Program (ending May 1, 2021, the last day for employee separation). The impact of this program on the System will be reflected in the 2021 valuation.

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, 2021

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	9.67 %	16.35 %	15.65 %	15.17 %	
Disability	0.52	1.11	1.06	1.62	
Death before retirement	0.61	0.60	0.58	0.70	
Future refunds of member contributions	0.00	0.28	0.15	0.14	
Totals	10.80	18.34	17.44	17.63	11.99 %
B Member contributions @	0.65	5.00	5.00	5.00	1.39
C Employer Normal Cost %	10.15 %	13.34 %	12.44 %	12.63 %	10.60 %
D Employer Normal Cost \$	\$579,493	\$41,418	\$44,083	\$23,311	\$688,305
E UAL payment / (credit)*	(1,789,249)	(154,155)	(225,059)	(88,039)	
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, 2020

	General County	Command Officers	Road Deputies	Corrections Deputies	Total
A. Accrued Liability					
1. For retirees and beneficiaries	\$485,238,968	\$47,257,377	\$65,380,091	\$61,965,976	\$659,842,412
2. For vested and other terminated members	4,586,239	404,981	550,991	298,575	5,840,786
3. For present active members					
a. Value of expected future benefit payments	52,347,579	6,899,282	5,734,370	2,243,306	67,224,537
b. Value of future normal costs	3,036,333	207,139	214,084	114,828	3,572,384
c. Active member accrued liability: (a) - (b)	49,311,246	6,692,143	5,520,286	2,128,478	63,652,153
4. Total accrued liability	539,136,453	54,354,501	71,451,368	64,393,029	729,335,351
B. Valuation Assets (Funding Value)	552,004,521	55,463,166	73,069,968	65,026,192	745,563,847
C. Unfunded Accrued Liability: (A.4) - (B)	(12,868,068)	(1,108,665)	(1,618,600)	(633,163)	(16,228,496)
D. Funding Ratio: (B) / (A.4)	102.4%	102.0%	102.3%	101.0%	102.2%

Development of Experience Gain/(Loss) Period Ended September 30, 2020

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	\$(8,337,507)
(2) Normal cost for period	1,338,793
(3) Actual contributions	165,954
(4) Interest accrual on (1), (2) and (3) at 7.25%	(561,954)
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	(7,726,622)
(6) Change from plan provisions	0
(7) Change in actuarial assumptions/methods	0
(8) Expected UAAL after changes: (5) + (6) + (7)	(7,726,622)
(9) Actual UAAL at end of period	(16,228,496)
(10) Gain/(loss): (8) - (9)	8,501,874
(11) Gain/(loss) as percent of actuarial accrued liabilities at start of period	1.14%

* *Unfunded Actuarial Accrued Liabilities (UAAL)*

Closed Group Cash Flow Projection (Dollar Amounts in Thousands)

Year Ending	Expected Benefits for Current			Total
	Actives	Retirees	Inactives	
9/30/2021	\$ 756	\$60,261	\$ 46	\$61,063
9/30/2022	2,050	60,088	130	62,268
9/30/2023	2,986	59,829	170	62,985
9/30/2024	3,723	59,491	226	63,440
9/30/2025	4,359	59,033	292	63,684
9/30/2026	4,915	58,496	399	63,810
9/30/2027	5,397	57,875	466	63,738
9/30/2028	5,813	57,154	509	63,476
9/30/2029	6,163	56,330	563	63,056
9/30/2030	6,447	55,405	597	62,449

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.

Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

The determination of the actuarial 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 actuarial 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 System's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

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

1. Investment risk – actual investment returns may differ from the expected returns;
2. Asset/Liability mismatch – changes in asset values may not match changes in liabilities, thereby altering the gap between the actuarial liability and assets and consequently altering the funded status and contribution requirements;
3. 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;
4. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future actuarial liability and contributions differing from expected;
5. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
6. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future actuarial 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.

SECTION C

SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA

Brief Summary of Benefit Provisions

September 30, 2020

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, 2020

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, 2020

Income and Disbursements

Market Value of Assets Beginning of Year: \$745,194,410

Revenues:

a. Member contributions	\$ 165,954	
b. Employer contributions	-	
c. Investment income	<u>35,158,215</u>	
d. Total		35,324,169

Disbursements:

a. Retirement incentive payments	-	
b. Pension benefits paid	60,628,743	
c. Administrative expenses	179,361	
d. Investment expenses	<u>1,941,825</u>	
e. Total		<u>62,749,929</u>

Market Value of Assets End of Year: \$717,768,650

Assets and Reserves as of September 30, 2020

Assets:

a. Cash and Deposits*	\$ 15,578,755
b. Interest*	1,692,127
c. Fixed Income	185,475,903
d. Equities	352,272,294
e. Real Estate	70,883,018
f. Other	99,415,349
g. Accounts Payable	<u>(7,548,796)</u>

Total \$ 717,768,650

Reserve Accounts:

a. Member contributions	\$ 431,667
b. Reserve for benefits now being paid	598,786,761
c. Reserve for future benefits	<u>118,550,222</u>
Total	<u><u>\$717,768,650</u></u>

* Includes accounts receivable



Determination of Valuation Assets as of September 30, 2020

	2019	2020	2021	2022	2023	2024
A. Funding Value Beginning of Year	\$769,933,304	\$755,848,393				
B. Market Value End of Year	745,194,410	717,768,650				
C. Market Value Beginning of Year	777,052,179	745,194,410				
D. Non-Investment Net Cash Flow	(59,123,950)	(60,462,789)				
E. Investment Income						
E1. Market Total: B - C - D	27,266,181	33,037,029				
E2. Assumed Rate (I)	7.25%	7.25%				
E3. Amount for Immediate Recognition: 7.25% x (A + D/2)	53,676,921	52,607,232				
E4. Amount for Phased-In Recognition: E1-E3	(26,410,740)	(19,570,203)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: E4/5	(5,282,148)	(3,914,041)				
F2. First Prior Year	(978,154)	(5,282,148)	\$ (3,914,041)			
F3. Second Prior Year	5,663,719	(978,154)	(5,282,148)	\$ (3,914,041)		
F4. Third Prior Year	2,081,635	5,663,719	(978,154)	(5,282,148)	\$ (3,914,041)	
F5. Fourth Prior Year	(10,122,934)	2,081,635	5,663,719	(978,154)	(5,282,148)	\$ (3,914,041)
F6. Total Recognized Investment Gain/(Loss)	(8,637,882)	(2,428,989)	(4,510,624)	(10,174,343)	(9,196,189)	(3,914,041)
G. Funding Value End of Year: A + D + E3 + F6	\$755,848,393	\$745,563,847				
H. Difference Between Market & Funding Value	(10,653,983)	(27,795,197)				
I. Recognized Rate of Return	6.08%	6.92%				
J. Market Value Rate of Return	3.65%	4.62%				
K. Ratio of Funding Value to Market Value	1.014	1.039				

Retirees and Beneficiaries, September 30, 2020 Tabulated by Type of Benefit and Option Elected

Benefit Option Elected	Type of Benefit			
	Age & Service*	Disability		Total
		Non-Duty	Duty	
Regular	685	1		686
A-100% J & S	392	6	1	399
B-50% J & S	115			115
C-10 Year Certain	100	4		104
D(1)-100% J & S with pop-up	256	1	1	258
D(2)-50% J & S with pop-up	166			166
E-Social Security Equated				
Survivor	269			269
Total	1,983	12	2	1,997

* Includes alternate payees receiving EDRO benefits, beneficiaries of deceased members, and 31 individuals reported with \$0 pension benefits as of September 30, 2020, receiving retiree health benefits only.

Inactive Members as of September 30, 2020

Tabulated by Attained Age

There were 52 Inactive members reported as of September 30, 2020 involving estimated deferred annual retirement allowances totaling \$635,130. 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	1	\$ 6,267
45 - 49	3	56,440
50 - 54	19	263,868
55 - 59	26	282,525
60 - 64	3	26,030
Totals	52	\$635,130

Active Members as of September 30, 2020 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
45-49						7		7	\$ 445,603
50-54						14	17	31	2,290,254
55-59					2	15	31	48	3,449,448
60						2	2	4	320,832
61							9	9	709,169
62							3	3	229,661
63						2	1	3	162,315
64							5	5	323,254
65					1		2	3	208,706
66					1		2	3	185,868
67							4	4	266,792
68							3	3	251,974
69							1	1	69,376
70+							4	4	254,258
Totals					4	40	84	128	\$9,167,510

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 107 General County division employees, 8 Command Officers, 9 Road Patrol Deputies, and 4 Corrections Officers.

Group Averages:

Age: 58.0 years
Service: 31.6 years
Annual Pay: \$ 71,621

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				
	2020	2019	2018	2017	2016
Rate of Investment Return	4.62%	3.65%	6.52%	11.35%	9.11%

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: 2.50% 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 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)	Valuation Payroll (c)	UAAL as a Percentage of Valuation Payroll [(b) – (a)] / (c)
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	--
9/30/2019	755,848,393	747,510,886	(8,337,507)	101.1	11,941,422	--
9/30/2020	745,563,847	729,335,351	(16,228,496)	102.2	9,167,510	--

Assumption/method change

Schedule of Employer Contributions

Actuarial Valuation Date	Fiscal Year Beginning	Annual Required Contribution	Percentage Contributed
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	100.00
9/30/2019	10/1/2020	0	100.00
9/30/2020	10/1/2021	0	



April 16, 2021

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 most recent annual actuarial valuation of the pension liabilities covering the Oakland County Employees' Retirement System.

Sincerely,

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

Louise M. Gates

Enclosure