Oakland County Employees' Retirement System

Annual Actuarial Valuation Report

September 30, 2023

Table of Contents

Section	Page	Item
		Introduction
A	1-3	Executive Summary
B	1	Computed Contributions
	2	Determination of Unfunded Actuarial Accrued Liability
	3	Development of Experience Gain/(Loss)
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
	2-6	Actuarial Assumptions Used for the Valuation
	7	Miscellaneous and Technical Assumptions
	8	Additional Information
	9	Glossary
E	1-2	Other Financial Disclosures
Appendix	1	Retirement System Risks
	2	Low-Default-Risk Obligation Measure

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February 22, 2024

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

Dear Board Members:

Submitted in this report are the results of the September 30, 2023 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 2024-2025 fiscal year. This report should not be relied upon for any other purpose. This report may be provided to parties other than the Retirement Board only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The valuation was based upon the actuarial assumptions and methods adopted by the Retirement Board 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 2025 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 page 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.

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This report was prepared using assumptions adopted by the Retirement Board. All actuarial assumptions are reasonable for the purpose of this valuation. The combined effect of the assumptions is expected to have no significant bias (i.e., not significantly optimistic or pessimistic). In addition, 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 purpose 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 and in compliance with the applicable state statutes. Louise Gates and Mark Buis 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,
Gabriel, Roeder, Smith & Company

Louise Gates

Louise Gates, ASA, FCA, MAAA

Mark Buis

Mark Buis, FSA, EA, FCA, MAAA

SECTION A

EXECUTIVE SUMMARY

1. Required Employer Contributions – Fiscal Year Beginning October 1, 2024

The computed County contributions are as follows:

Division	Computed Employer Contributions
General County	$ 2,554,900
Command Officers	250,077
Road Deputies	536,453
Corrections Deputies	300,950
Total	$ 3,642,380

2. Contribution Comparison

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

Total County Contributions for the Indicated Fiscal Year	
2023-2024	**2024-2025**
$1,193,986	$3,642,380

3. Reasons for Change

There are three general reasons why contributions 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.

There were no benefit changes reported to GRS in connection with this valuation of the System.
There were no assumption changes made in connection with this valuation of the System.

Retirement System experience was, overall, unfavorable during the year ended September 30, 2023. The investment return on plan assets was higher than long term expectations during the year. However, 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 4.34%. This unfavorable experience was offset in part due to lower than projected retiree liabilities as a result of more retiree deaths than projected. Details of the 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	$487,043,568	$ 51,743,581	$131,877,322	$670,664,471
Retiree Reserve	401,859,332	44,528,514	112,366,058	558,753,904
Difference	85,184,236	7,215,067	19,511,264	111,910,567

* *Road patrol and corrections divisions are combined.*

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

5. System Funded Percent

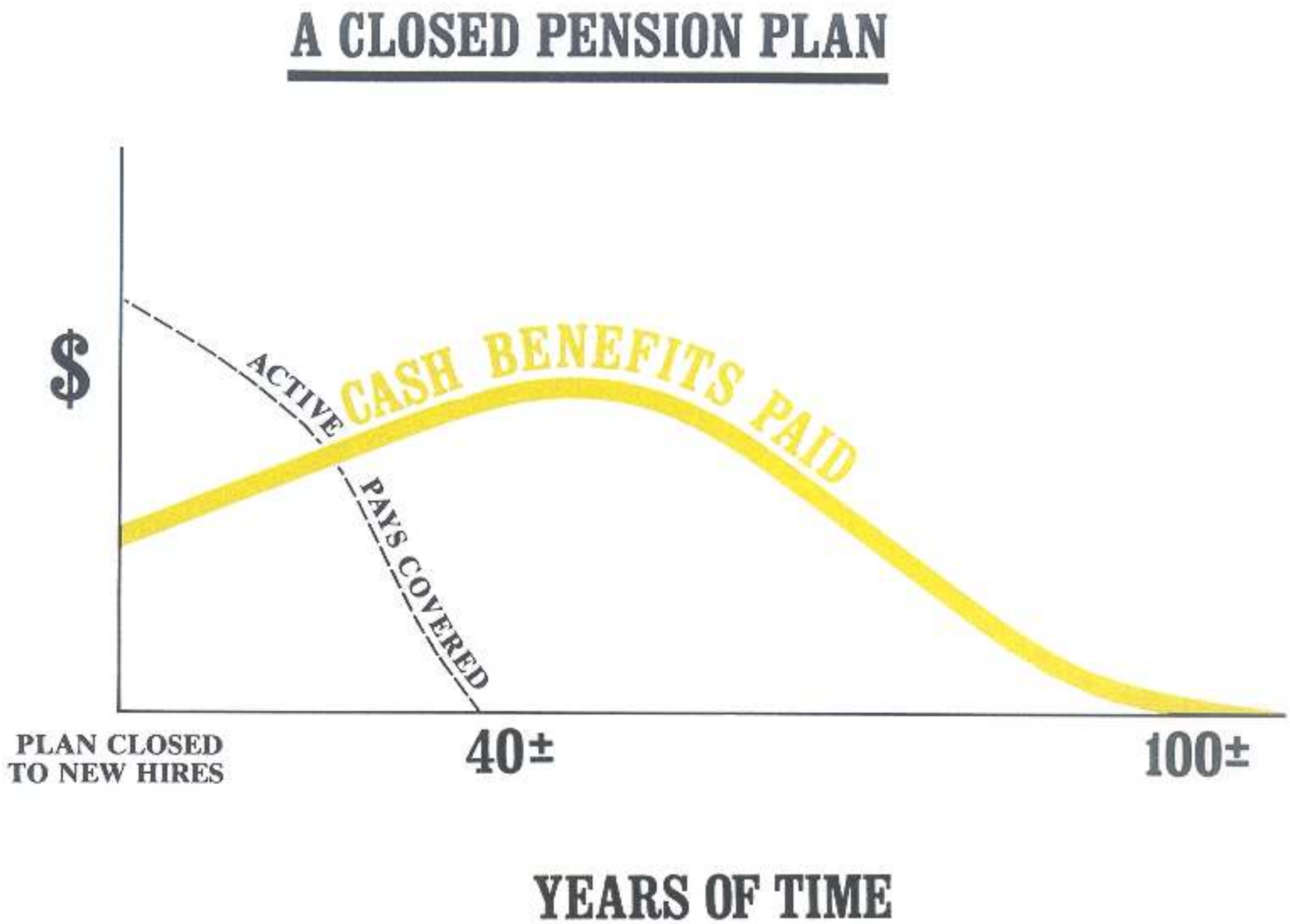
The total System funding percent based on the actuarial value of assets (funding value) is 96.9% as of September 30, 2023. Last year, the funding percent measured on the same basis was 99.3%. If the market value of assets were used to determine the System's funding percent as of September 30, 2023, the result would be a funded percent of 90.2%.

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

In the absence of significant favorable System experience during the 2023-2024 plan year, it is likely that there will be a large increase in County contributions for the 2026 fiscal year. Retirement plans that are coming out of overfunding can experience contribution volatility, especially when combined with a relatively short amortization period.

The current System funding policy should be updated to reflect the new actuarial assumptions adopted by the Retirement Board in connection with the recent experience study dated December 22, 2022. In addition, as of September 30, 2022, the System no longer has a funding surplus and the amortization policy should be reviewed and updated. We recommend a review and update of the current amortization policy.



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, 2024

	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	10.00 %	17.11 %	16.53 %	15.19 %	
	Disability	0.43	0.76	0.83	0.89	
	Death before retirement	0.25	0.21	0.20	0.21	
	Refunds of member contributions	0.00	0.30	0.16	0.20	
	Totals	10.68	18.38	17.72	16.49	11.28 %
B	Member contributions @	0.62	5.00	5.00	5.00	1.00
C	Employer Normal Cost %	10.06 %	13.38 %	12.72 %	11.49 %	10.28 %
D	Employer Normal Cost $	$ 297,346	$ 0	$ 13,333	$ 4,841	$ 315,520
E	UAL payment / (credit)*	2,257,554	250,077	523,120	296,109	
	Total Employer Contribution $ (D+E)	$ 2,554,900	$ 250,077	$ 536,453	$300,950	$ 3,642,380

* *Unfunded Accrued Liabilities were amortized over a period of 9 years using level dollar financing*

@ *Reflects a weighted average*

\# *Normal cost contributions for the remaining plan member are expected to be $0 in fiscal year 2025 based on his projected retirement date.*

Determination of Unfunded Actuarial Accrued Liability as of September 30, 2023

	General County	Command Officers	Road Deputies	Corrections Deputies	Total
A. Accrued Liability					
1. For retirees and beneficiaries	$487,043,568	$51,743,581	$69,618,185	$62,259,137	$670,664,471
2. For vested and other terminated members	3,880,866	0	712,785	313,466	4,907,117
3. For present active members					
a. Value of expected future benefit payments	27,028,650	1,187,414	2,418,234	648,654	31,282,952
b. Value of future normal costs	1,556,869	10,546	65,046	24,165	1,656,626
c. Active member accrued liability: (a) - (b)	25,471,781	1,176,868	2,353,188	624,489	29,626,326
4. Total accrued liability	516,396,215	52,920,449	72,684,158	63,197,092	705,197,914
B. Valuation Assets (Funding Value)	501,694,597	51,257,388	69,179,741	61,345,624	683,477,350
C. Unfunded Accrued Liability: (A.4) - (B)	14,701,618	1,663,061	3,504,417	1,851,468	21,720,564
D. Funding Ratio: (B) / (A.4)					96.9%

Development of Experience Gain/(Loss)
Period Ended September 30, 2023

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	$ 5,352,030
(2)	Normal cost for period	468,507
(3)	Actual contributions	51,052
(4)	Interest accrual on (1), (2) and (3) at 7.00%	389,253
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	6,158,738
(6)	Change from plan provisions	0
(7)	Change in actuarial assumptions/methods	0
(8)	Expected UAAL after changes: (5) + (6) + (7)	6,158,738
(9)	Actual UAAL at end of period	21,720,564
(10)	Gain/(loss): (8) - (9)	(15,561,826)
(11)	Gain/(loss) as percent of actuarial accrued liabilities at start of period	(2.16%)

* *Unfunded Actuarial Accrued Liabilities (UAAL)*

The investment loss during the 2022-2023 plan year was $18,192,589 and the liability gain was $2,630,763.

SECTION C

SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA

Brief Summary of Benefit Provisions
September 30, 2023

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, 2023

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. The increase payment date is described in Section 34 of the plan document. 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, 2023

Income and Disbursements

Market Value of Assets Beginning of Year:		$648,806,363
Revenues:		
a. Member contributions	$ 51,052	
b. Employer contributions	-	
c. Investment income	52,522,931	
d. Total		52,573,983
Disbursements:		
a. Retirement incentive payments	-	
b. Pension benefits paid	63,029,191	
c. Administrative expenses	276,158	
d. Investment expenses	1,614,549	
e. Total		64,919,898
Market Value of Assets End of Year:		$636,460,448

Assets and Reserves as of September 30, 2023

Assets:	
a. Cash and Other	$ 14,413,371
b. Interest and Dividends	(1,487,601)
c. Fixed Income	159,863,559
d. Equities	283,348,613
e. Real Estate	70,605,878
f. Other	110,140,151
g. Accounts Payable	(423,523)
Total	$ 636,460,448

Reserve Accounts:	
a. Member contributions	$ (1,471,399)
b. Reserve for benefits now being paid	558,753,904
c. Reserve for future benefits	79,177,943
Total	$636,460,448

Determination of Valuation Assets
as of September 30, 2023

		2022	2023	2024	2025	2026	2027
A.	Funding Value Beginning of Year	$747,520,187	$716,684,405				
B.	Market Value End of Year	648,806,363	636,460,448				
C.	Market Value Beginning of Year	790,825,096	648,806,363				
D.	Non-Investment Net Cash Flow	(63,041,296)	(62,978,139)				
E.	Investment Income						
	E1. Market Total: B - C - D	(78,977,437)	50,632,224				
	E2. Assumed Rate (I)	7.25%	7.00%				
	E3. Amount for Immediate Recognition: 7.25% x (A + D/2)	51,909,967	47,963,673				
	E4. Amount for Phased-In Recognition: E1-E3	(130,887,404)	2,668,551				
F.	Phased-In Recognition of Investment Income						
	F1. Current Year: E4/5	(26,177,481)	533,710				
	F2. First Prior Year	16,647,371	(26,177,481)	533,710			
	F3. Second Prior Year	(3,914,041)	16,647,371	(26,177,481)	533,710		
	F4. Third Prior Year	(5,282,148)	(3,914,041)	16,647,371	(26,177,481)	533,710	
	F5. Fourth Prior Year	(978,154)	(5,282,148)	(3,914,041)	16,647,371	(26,177,481)	533,710
	F6. Total Recognized Investment Gain/(Loss)	(19,704,453)	(18,192,589)	(12,910,441)	(8,996,400)	(25,643,771)	533,710
G.	**Funding Value End of Year**						
	G1. Preliminary Funding Value End of Year: A + D + E3 + F6	$716,684,405	$683,477,350				
	G2. Corridor Percent		20%				
	G3. Upper Corridor Limit: (100% + G2) x B		763,752,538				
	G4. Lower Corridor Limit: (100% - G2) x B		509,168,358				
	G5. Funding Value End of Year	**$716,684,405**	**$683,477,350**				
H.	Difference Between Market & Funding Value	(67,878,042)	(47,016,902)				
I.	**Recognized Rate of Return**	**4.50%**	**4.34%**				
J.	**Market Value Rate of Return**	**(10.40)%**	**8.20%**				
K.	**Ratio of Funding Value to Market Value**	**1.105**	**1.074**				

Retirees and Beneficiaries, September 30, 2023
Tabulated by Type of Benefit and Option Elected

Benefit Option Elected	Type of Benefit			
	Age & Service*	Disability		Total
		Non-Duty	Duty	
Regular	649	1		650
A-100% J & S	376	6	1	383
B-50% J & S	110			110
C-10 Year Certain	85	3		88
D(1)-100% J & S with pop-up	248	1		249
D(2)-50% J & S with pop-up	154			154
E-Social Security Equated				
Survivor	250			250
Total	**1,872**	**11**	**1**	**1,884**

* *Includes alternate payees receiving EDRO benefits, beneficiaries of deceased members, and 28 individuals reported with $0 pension benefits as of September 30, 2023, receiving retiree health benefits only.*

Annual benefits for the individuals shown above total $62,931,556 as of September 30, 2023.

Inactive Members as of September 30, 2023
Tabulated by Attained Age

There were 36 inactive members reported as of September 30, 2023 involving estimated deferred annual retirement allowances totaling $458,591. An inactive member is a person who has left County employment with entitlement to retirement benefits upon attaining their deferred retirement age. The schedule below shows the inactive members by age.

Attained Age	No.	Estimated Deferred Allowance
45 - 49	2	$ 16,471
50 - 54	8	152,299
55 - 59	23	257,775
60 - 64	2	20,807
65 - 69	1	11,239
Totals	**36**	$ 458,591

Active Members as of September 30, 2023
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						1		1	79,334
50-54						4	11	15	1,245,225
55-59						2	17	19	1,589,107
60							2	2	238,904
61							3	3	191,689
62						1	2	3	260,870
63							2	2	179,696
64							1	1	46,385
67							1	1	71,958
70+							3	3	170,809
Totals						**8**	**42**	**50**	**$4,073,977**

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 45 General County division employees, 1 Command Officer, 3 Road Patrol Deputies, and 1 Corrections Officer.

Group Averages:

Age: 58.1 years
Service: 33.4 years
Annual Pay: $ 81,480

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 actuarial value of assets is not permitted to deviate from the market value of assets by more than 20%.

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

The actuarial assumptions are based upon the results of an experience study covering the period October 1, 2016 through September 30, 2021. A report dated December 22, 2022 presented the results of the study. Actuarial assumptions represent estimates of future experience.

Investment Return (net of expenses): 7.00% per year compounded annually. The assumed real rate of investment return is the rate of return in excess of either wage or price inflation. Considering a wage inflation assumption of 3.00% per year, the 7.00% 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, 2022 valuation.

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

	For the Year Ending September 30th				
	2023	**2022**	**2021**	**2020**	**2019**
Rate of Investment Return	8.20%	(10.40)%	19.66%	4.62%	3.65%

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, 2022 valuation.

	Annual Rate of Pay Increase for Sample Ages						
	General County Members				Sheriff's Department		
Sample Ages	**Base (Economic)**	**Merit & Longevity**	**Total**	**Years of Service**	**Base (Economic)**	**Merit & Longevity**	**Total**
20	3.00%	4.00%	7.00%	1 to 7	3.00%	6.00%	9.00%
25	3.00	3.00	6.00	8 to 15	3.00	3.00	6.00
30	3.00	2.00	5.00	thereafter	3.00	0.00	3.00
35	3.00	2.00	5.00				
40	3.00	1.00	4.00				
45	3.00	1.00	4.00				
50	3.00	0.50	3.50				
55	3.00	0.50	3.50				
60	3.00	0.25	3.25				

Price Inflation: 2.50% per year.

Actuarial Assumptions Used for the Valuation

The rates of mortality used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement are based upon the sex distinct Pub-2010 tables, as published by the Society of Actuaries, and include a margin for future mortality improvement. These tables were first used for the September 30, 2022 valuation of the System and are described below.

General

- **Pre-Retirement:** The Pub-2010, Amount-Weighted, General Employee, Male and Female tables, with future mortality improvements projected generationally to 2030 using scale MP-2021.

- **Healthy Post-Retirement:** The Pub-2010, Amount-Weighted, General, Healthy Retiree, Male and Female tables, with future mortality improvements projected generationally to 2030 using scale MP-2021.

- **Disability Retirement:** The Pub-2010, Amount-Weighted, General, Disabled Retiree, Male and Female tables, with future mortality improvements projected generationally to 2030 using scale MP-2021.

General

Sample Ages	Healthy Pre-Retirement Future Life Expectancy* (Years)		Healthy Post-Retirement Future Life Expectancy* (Years)		Disabled Retirement Future Life Expectancy* (Years)	
	Men	Women	Men	Women	Men	Women
50	37.85	40.01	34.02	36.96	24.93	27.76
55	33.12	35.17	29.50	32.32	21.83	24.56
60	28.47	30.38	25.11	27.76	18.97	21.56
65	23.94	25.67	20.90	23.31	16.28	18.54
70	19.48	21.04	16.86	19.00	13.65	15.38
75	15.10	16.49	13.08	14.91	11.00	12.23
80	10.80	12.05	9.69	11.19	8.49	9.37

** As of calendar year 2023*

Actuarial Assumptions Used for the Valuation

Sheriff's Department

- **Pre-Retirement:** The Pub-2010, Headcount-Weighted, Safety Employee, Male and Female tables, with future mortality improvements projected generationally to 2030 using scale MP-2021.

- **Healthy Post-Retirement:** The Pub-2010, Headcount-Weighted, Safety, Healthy Retiree, Male and Female tables, with future mortality improvements projected generationally to 2030 using scale MP-2021.

- **Disability Retirement:** The Pub-2010, Headcount-Weighted, Safety, Disabled Retiree, Male and Female tables, with future mortality improvements projected generationally to 2030 using scale MP-2021.

Sheriff's Department

Sample Ages	Healthy Pre-Retirement Future Life Expectancy* (Years)		Healthy Post-Retirement Future Life Expectancy* (Years)		Disabled Retirement Future Life Expectancy* (Years)	
	Men	Women	Men	Women	Men	Women
50	36.43	39.20	32.98	35.56	31.31	33.04
55	31.66	34.38	28.40	30.88	26.98	28.55
60	26.96	29.62	23.93	26.38	22.82	24.37
65	22.39	24.91	19.73	22.10	18.92	20.43
70	17.95	20.25	15.76	18.03	15.26	16.60
75	13.70	15.75	12.07	14.19	11.83	13.01
80	9.70	11.50	8.83	10.74	8.78	9.92

** As of calendar year 2023*

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	100%	25	40%
56	15	61	100	26	35
57	15	62	100	27	35
58	15	63	100	28	35
59	15	64	100	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.

Miscellaneous and Technical Assumptions

Benefit Service	Exact fractional service is used to determine the amount of benefit.
Decrement Operation	Disability and withdrawal decrements do not operate during retirement eligibility.
Death in Service	It was assumed that death during active employment was not duty related.
Disability	It was assumed that disability during active employment was not duty related.
Decrement Timing	Decrements of all types are assumed to occur mid-year.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Employee Contributions	Employee contributions were credited with interest at 3.0% per year.
Forfeitures	For vested separations from service, it is assumed that 0% of members separating will withdraw their contributions and forfeit an employer financed benefit. It was further assumed that the liability at termination is the greater of the vested deferred benefit (if any) or the member's accumulated contributions.
Form of Payment	The form of payment used for terminated vested members was straight life.
Incidence of Contributions	Contributions are assumed to be received continuously throughout the year.
Marriage Assumption	100% of males and females were assumed to be married for purposes of death in service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Normal Form of Benefit	A straight life benefit is the normal form of benefit.
Pay Increase Timing	Pay increases were assumed to be at the beginning of the fiscal year.
Service Credit Accruals	Members were assumed to accrue 1 year of service credit per year.

Additional Information

In cases where a contingent form of benefit was reported for a retiree (for example a joint and survivor annuity) and no beneficiary date of birth and/or gender was reported, we assumed that the beneficiary was the opposite gender and male retirees were assumed to have a spouse 3 years younger. Female retirees were assumed to have a spouse 3 years older.

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.

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)
9/30/2014#	$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	- -
9/30/2021	747,520,187	729,870,776	(17,649,411)	102.4	5,829,226	- -
9/30/2022#	716,684,405	722,036,435	5,352,030	99.3	4,994,282	107.16
9/30/2023	683,477,350	705,197,914	21,720,564	96.9	4,073,977	533.15

Assumption/method changes

Schedule of Employer Contributions

Actuarial Valuation Date	Fiscal Year Beginning	Annual Employer Contribution	Percentage Contributed
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	100.00
9/30/2021	10/1/2022	0	100.00
9/30/2022	10/1/2023	1,193,986	
9/30/2023	10/1/2024	3,642,380	

APPENDIX

RISK MEASURES

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.

Low-Default-Risk Obligation Measure

Introduction

In December 2021, the Actuarial Standards Board (ASB) adopted a revision to Actuarial Standard of Practice (ASOP) No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*. The revised ASOP No. 4 requires the calculation and disclosure of a liability referred to by the ASOP as the "Low-Default-Risk Obligation Measure" (LDROM). The rationale that the ASB cited for the calculation and disclosure of the LDROM was included in the Transmittal Memorandum of ASOP No. 4 and is presented below (emphasis added):

> "The ASB believes that the calculation and disclosure of this measure provides **appropriate, useful information for the intended user regarding the funded status of a pension plan**. The calculation and disclosure of this additional measure is **not intended to suggest that this is the "right" liability measure** for a pension plan. However, the ASB does believe that **this additional disclosure provides a more complete assessment of a plan's funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date.**"

Comparing the Accrued Liabilities and the LDROM

One of the fundamental financial objectives of the Oakland County Employees' Retirement System (System) is to finance each member's retirement benefits over the period from the member's date of hire until the member's projected date of retirement (entry age actuarial cost method) as a level percentage of payroll. To fulfill this objective, the discount rate that is used to value the accrued liabilities of the System is set equal to the **expected return** on the System's diversified portfolio of assets (referred to sometimes as the investment return assumption). For the System, the investment return assumption is 7.00%.

The LDROM is meant to approximately represent the lump sum cost to a plan to purchase low-default-risk fixed income securities whose resulting cash flows essentially replicate in timing and amount the benefits earned (or the costs accrued) as of the measurement date. The LDROM is very dependent upon market interest rates at the time of the LDROM measurement. The lower the market interest rates, the higher the LDROM, and vice versa. The LDROM results presented in this report are based on the entry age actuarial cost method and discount rates based upon the September 2023 Treasury Yield Curve Spot Rates (end of month). The 1-, 5-, 10- and 30-year rates follow: 5.46%, 4.53%, 4.28% and 4.42%. This measure may not be appropriate for assessing the need for or amount of future contributions. This measure may not be appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation.

The difference between the two measures (Valuation and LDROM) is one illustration of the savings the sponsor anticipates by taking on risk in a diversified portfolio.

Accrued Liabilities as of September 30, 2023
Using Alternate Discount Rates

Valuation Rate (7.0%)	LDROM (Spot Rates)
$705,197,914	$880,661,503

800.521.0498 | P: 248.799.9000 | www.grsconsulting.com

February 22, 2024

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

Dear Carly:

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,
Gabriel, Roeder, Smith & Company

Louise Gates

Louise M. Gates

Enclosure

One Towne Square | Suite 800 | Southfield, Michigan 48076-3723