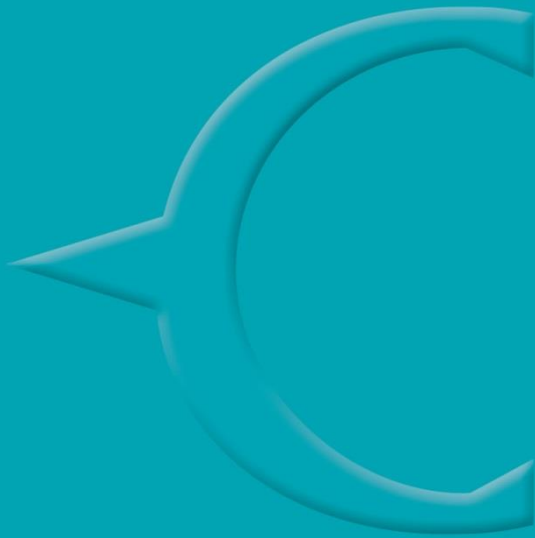


**ATTACHMENT A:
PFRS ACTUARY VALUATION
AS OF JULY 01, 2023**



Oakland Police and Fire Retirement System

Actuarial Valuation Report as of July 1, 2023

Produced by Cheiron

March 2024

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March 15, 2024

City of Oakland Police and Fire
Retirement System Board
150 Frank H. Ogawa Plaza
Oakland, CA 94612

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of the Oakland Police and Fire Retirement System (PFRS, the Plan) as of July 1, 2023. This report contains information on the Plan's assets and liabilities. This report also discloses the employer contributions in accordance with the funding agreement between the City of Oakland and PFRS, based on the current financial status of the Plan. Your attention is called to the Foreword in which we refer to the general approach employed in the preparation of this report.

The purpose of this report is to present the results of the annual actuarial valuation of the Plan. This report is for the use of the Retirement Board and the auditors in preparing financial reports in accordance with applicable law and accounting requirements. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

The demographic and economic assumptions proposed for use in this report were reviewed at the December 6, 2023 and February 28, 2024 Board meetings based on recommendations from our experience study covering plan experience for the period from July 1, 2011 through June 30, 2023. We believe these assumptions are reasonable for the purpose of the valuation.

The funding ratios in this report are for the purpose of establishing contribution rates. These measures are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

Cheiron utilizes ProVal actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have a basic understanding of ProVal and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this valuation.

Deterministic and stochastic projections in this valuation report were developed using R-scan, a proprietary tool used to illustrate the impact of changes in assumptions, methods, plan provisions, or actual experience (particularly investment experience) on the future financial status of the Plan and assessing the probability of different outcomes based on a range of potential investment returns. R-scan uses standard roll-forward techniques. Because R-scan does not automatically capture how changes in one variable affect all other variables, some scenarios may not be consistent.

We relied on Cheiron colleagues for the development of the model. The stochastic projections of investment returns assume that each future year's investment return is independent from all other years and is identically distributed according to a lognormal distribution. The standard deviation used in the stochastic projection of investment returns was provided by the Plan's investment consultant.

Future actuarial measurements may differ significantly from the current measurements 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; and, changes in plan provisions or applicable law.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

Sincerely,
Cheiron



Graham A. Schmidt, FSA, EA, FCA, MAAA
Principal Consulting Actuary



Anne D. Harper, FSA, EA, MAAA
Principal Consulting Actuary

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

FOREWORD

Cheiron has performed the actuarial valuation of the Oakland Police and Fire Retirement System (PFRS, the Plan) as of July 1, 2023. The valuation is organized as follows:

- In Section I, the **Executive Summary**, we describe the purpose of an actuarial valuation, summarize the key results found in this valuation, and disclose important trends.
- The **Main Body** of the report presents details on the Plan's
 - Section II – Identification and Assessment of Risks
 - Section III – Assets
 - Section IV – Liabilities
 - Section V – Contributions
 - Section VI – Head Count and Benefit Payment Projections
- In the **Appendices**, we conclude our report with detailed information describing plan membership (Appendix A), actuarial assumptions and methods employed in the valuation (Appendix B), a summary of pertinent plan provisions (Appendix C), and a glossary of key actuarial terms (Appendix D).

The results of this report rely on future experience conforming to the underlying assumptions. To the extent that actual plan experience deviates from the underlying assumptions, the results would vary accordingly.

In preparing our report, we relied on information (some oral and some written) supplied by the Plan's staff. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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SECTION I – EXECUTIVE SUMMARY

The primary purpose of the actuarial valuation and this report is to measure, describe, and identify the following as of the valuation date:

- The financial condition of the Plan,
- Past and expected trends in the financial progress of the Plan,
- Calculation of the actuarially determined contributions for years beginning in Fiscal Year 2024-2025, and
- An assessment and disclosure of key risks.

In the balance of this Executive Summary, we present (A) the basis upon which this year's valuation was completed, (B) the key findings of this valuation including a summary of all key financial results, (C) an examination of the historical trends, and (D) the projected financial outlook for the Plan.

A. Valuation Basis

This valuation estimates the projected employer contributions in accordance with the funding agreement dated July 1, 2012 between the City of Oakland and the PFRS. Based on that agreement, employer contributions were suspended until fiscal year 2017-2018, at which time they resumed at a level based upon the recommendation of the actuary. Section V of this report shows the development of the employer contribution for fiscal year 2024-2025.

The Plan's funding policy is to contribute an amount equal to the sum of:

- The normal cost under the Entry Age Normal Cost Method (which is zero, as there are no active members),
- Amortization of the Unfunded Actuarial Liability, and
- The Plan's expected administrative expenses.

This valuation was prepared based on the plan provisions shown in Appendix C. There have been no changes in plan provisions since the prior valuation.

A summary of the assumptions and methods used in the current valuation is shown in Appendix B. The assumed rates of mortality, the mortality improvement scale, and the expected annual rate of return have been changed since the prior valuation following an experience study covering plan experience for the period from July 1, 2011 through June 30, 2023.

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ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION I – EXECUTIVE SUMMARY

B. Key Findings of this Valuation

The key results of the July 1, 2023 actuarial valuation are as follows:

- The actuarially determined employer contribution amount for Fiscal Year 2024-2025 is \$34.8 million, based on projecting the Actuarial Liabilities and the Actuarial Value of Assets to the end of the 2023-2024 Fiscal Year. This represents a decrease of \$9.2 million from the estimated amount in the prior valuation for the same Fiscal Year. The contribution is assumed to be paid in equal installments throughout the year, or on average at approximately January 1, 2025.
- During the year ended June 30, 2023, the return on Plan assets was 8.79% on a market value basis net of investment expenses, as compared to the 6.00% assumption for the 2022-2023 Plan year. This resulted in a market value gain on investments of \$10.9 million. The Actuarial Value of Assets (AVA) is calculated as the expected AVA plus 20% of the difference between the market value and the expected AVA, which is restricted to be between 90% and 110% of the MVA. This smoothed value of assets returned 5.44%, for an actuarial asset loss of \$2.3 million.
- The Plan experienced a gain on the Actuarial Liability of \$1.6 million, the net result of changes in the population and changes in benefits. The primary factor was an excess of deaths above the number expected. Combining the liability gain and asset loss, the Plan experienced a total loss of \$0.8 million.
- Assumption changes proposed as part of the experience study reduced the Actuarial Liability by \$9.8 million. The changes to the base mortality rates and the mortality improvement assumptions reduced the liability by \$14.5 million. This was partially offset by a \$4.7 million increase in the liability resulting from the change in the discount rate from a selected and ultimate assumption (equivalent to a 5.09% single rate) to a flat rate of 5.00%.
- The Plan's smoothed funded ratio, the ratio of Actuarial Value of Assets over Actuarial Liability, increased from 76.5% last year to 81.4% as of June 30, 2023. The Plan's funded ratio increased from 72.6% to 79.6% on a Market Value of Assets (MVA) basis.
- The Unfunded Actuarial Liability (UAL) is the excess of the Plan's Actuarial Liability over the Actuarial Value of Assets. The Plan experienced a decrease in the UAL from \$130.2 million to \$97.0 million as of July 1, 2023.
- Overall participant membership decreased compared to last year, as is expected for a closed plan. 25 members died, 10 of whom had their benefits continue to a surviving spouse. In addition, 18 surviving beneficiaries died. There are no active members of the Plan.

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SECTION I – EXECUTIVE SUMMARY

- If the contribution were determined using a projected asset value based on the current market (i.e., non-smoothed) value of assets, the contribution for FY 2024-2025 would be \$38.9 million. The contribution is larger than that determined using the projected AVA, because the current market value reflects the full amount of prior net investment losses, while under the AVA projection, a portion of those losses are deferred until years after FY 2024-2025.

Below we present Table I-1 that summarizes all the key results of the valuation with respect to membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior plan year.

TABLE I-1			
Summary of Principal Plan Results			
(\$ in thousands)			
	July 1, 2022	July 1, 2023	% Change
<u>Participant Counts</u>			
Active Participants	0	0	
Participants Receiving a Benefit	686	653	-4.8%
Total	686	653	-4.8%
Total Annual Benefits	\$ 52,076	\$ 51,217	
<u>Assets and Liabilities</u>			
Actuarial Liability (AL)	\$ 552,966	\$ 522,457	-5.5%
Actuarial Value of Assets (AVA)	422,762	425,449	0.6%
Unfunded Actuarial Liability (UAL)	\$ 130,204	\$ 97,008	-25.5%
Funded Ratio (AVA)	76.5%	81.4%	5.0%
Market Value of Assets (MVA)	\$ 401,487	\$ 416,130	
Funded Ratio (MVA)	72.6%	79.6%	7.0%
<u>Contributions</u>			
Employer Contribution (FY2023-24)	\$ 40,763	N/A	
Employer Contribution (FY2024-25)	\$ 44,025	\$ 34,845	-20.9%

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION I – EXECUTIVE SUMMARY

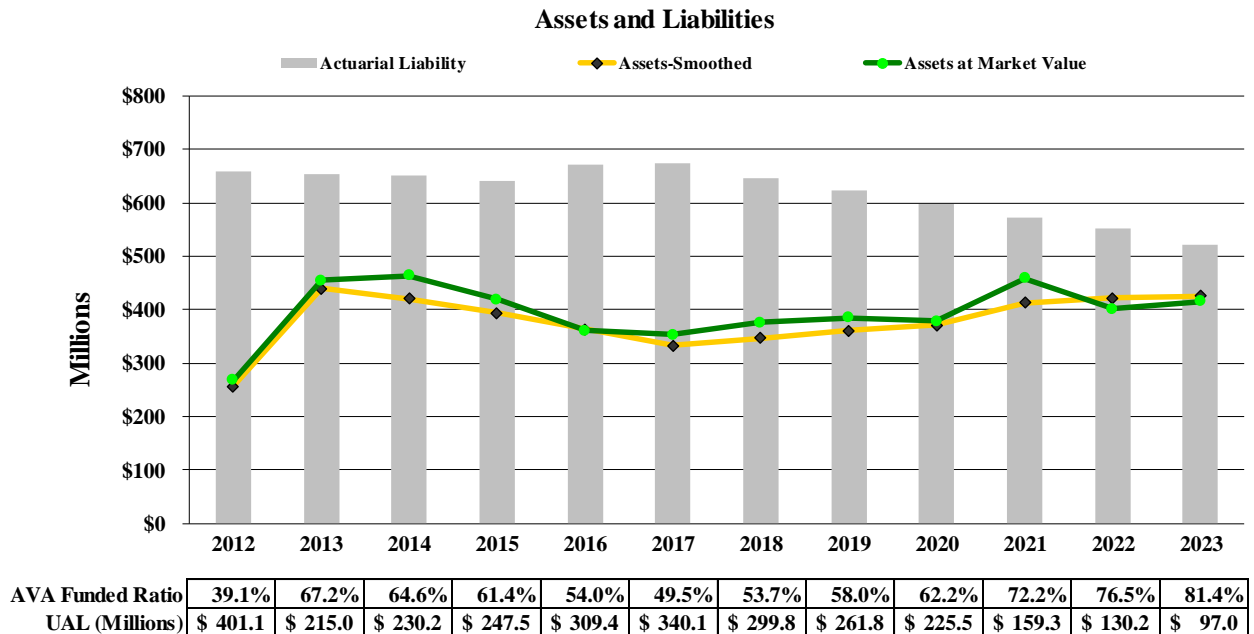
C. Historical Trends

Despite the fact that for most retirement plans the greatest attention is given to the current valuation results and in particular, the size of the current Unfunded Actuarial Liability and the employer contribution, it is important to remember that each valuation is merely a snapshot in the long-term progress of a pension fund. It is more important to judge a current year’s valuation results relative to historical trends, as well as trends expected into the future.

Assets and Liabilities

The chart below compares the Market Value of Assets (MVA) and Actuarial Value of Assets (AVA) to the Actuarial Liabilities. The percentages shown in the table below the chart are the ratios of the Actuarial Value of Assets to the Actuarial Liability (the funded ratio). We note that for the GASB disclosure report, this ratio is disclosed using the MVA.

The funded ratio increased between 2012 and 2013 due to a \$210 million contribution in July 2012. The funded ratio decreased from 67.2% to 49.5% between 2013 and 2017 due to assumption changes, liability losses, new Police MOUs, and the lack of contributions since the July 2012 payment. The funded ratio has increased from 49.5% to 81.4% over the past six years due to recommencement of contributions, the FYE 2021 asset gain, and to a lesser extent other asset and liability gains and assumption changes.

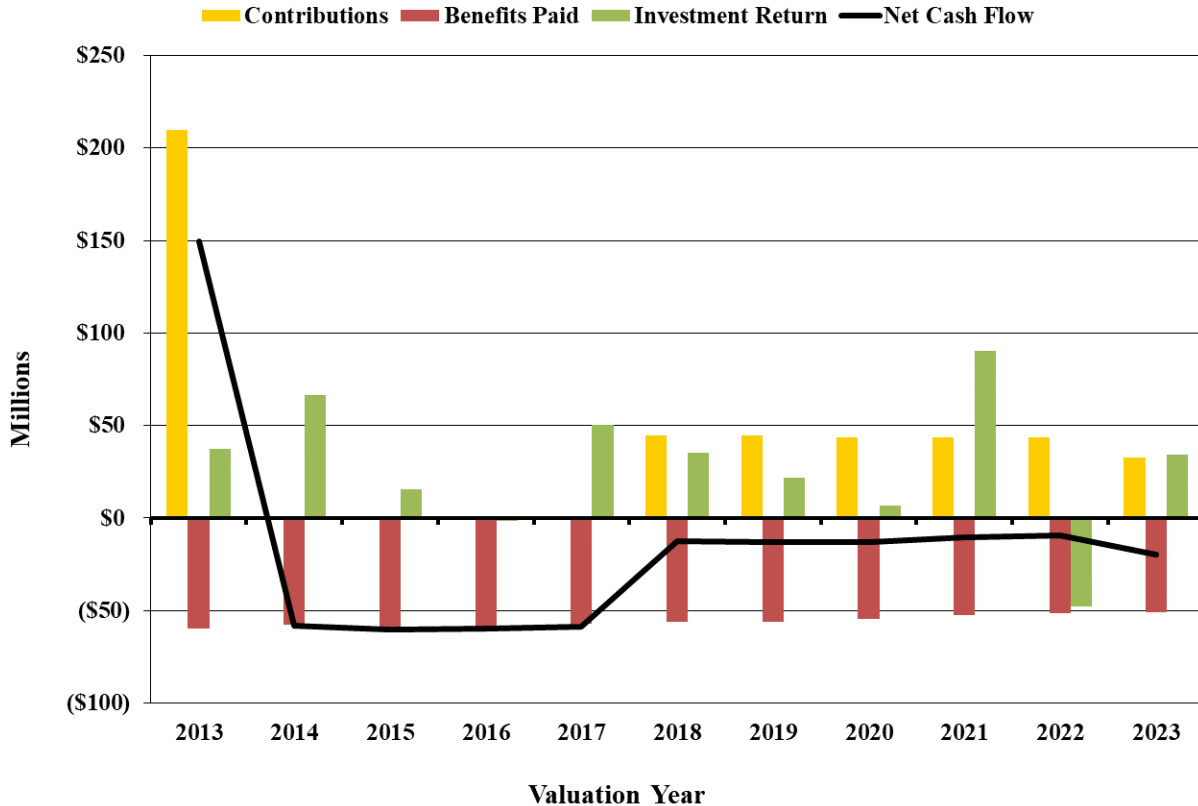


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SECTION I – EXECUTIVE SUMMARY

Cash Flows

The chart below shows the Plan’s net cash flow, excluding investment returns (i.e., contributions less benefit payments and expenses). This is a critical measure, as it reflects the ability to have funds available to meet benefit payments without having to make difficult investment decisions, especially during volatile markets.



The contributions, benefit payments, investment returns, and Net Cash Flow (NCF) excluding investment returns and related investment expenses are represented by the scale on the left. The Plan’s net cash flow has been negative 10 of the last 11 fiscal years, most notably during 2014-2017 when contributions were not made to the Plan following the Pension Obligation Bond in 2013. Even with the recommencing of contributions in 2018 under the Plan’s funding policy, benefit payments exceeded contributions for the prior six years, with a negative cash flow rate of around 2-3% of plan assets per year for 2018 through 2022 and around 5% for 2023.

A negative cash flow magnifies the losses during a market decline, hindering the Plan in its ability to absorb market fluctuations. The implications of a plan in negative cash flow are that the impact of market fluctuations can be more severe: as assets are being depleted to pay benefits in down markets, there is less principal available to be reinvested during favorable return periods. The Plan is expected to have a growing negative cash flow position going forward, since the Plan is closed and the assets are expected to decline as the remaining benefits are paid out.

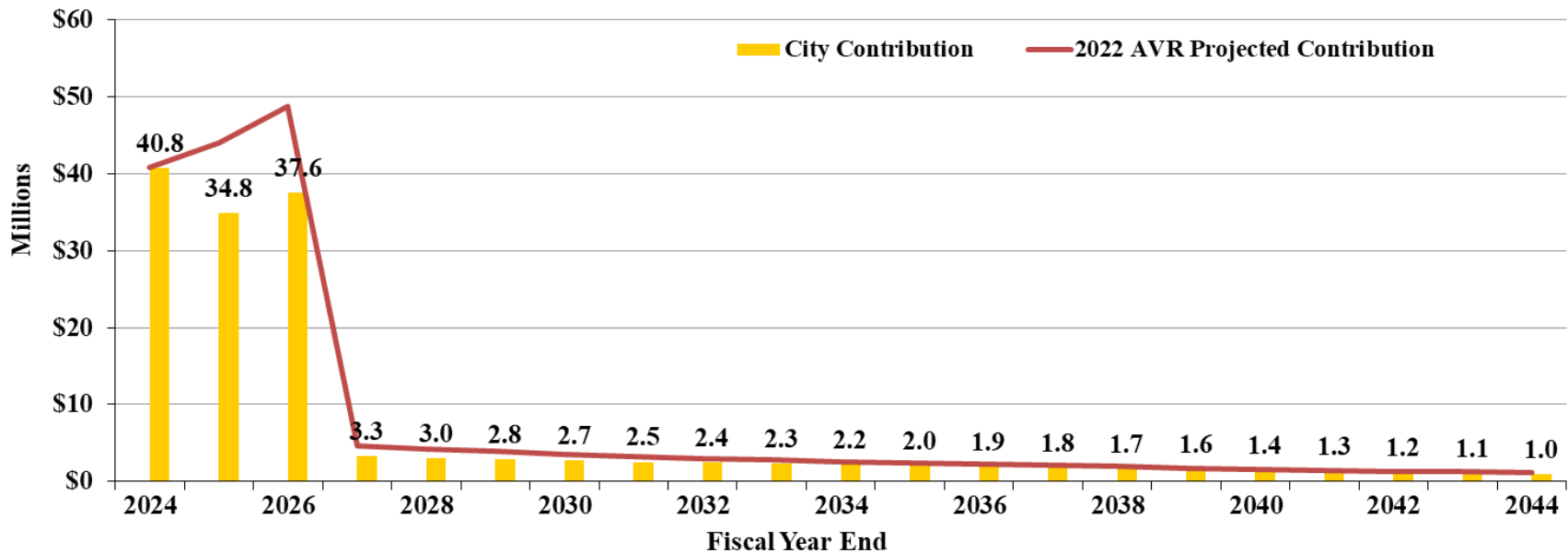
**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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SECTION I – EXECUTIVE SUMMARY

D. Future Expected Financial Trends

The analysis of projected financial trends is perhaps the most important component of this valuation. In this section, we present our assessment of the implications of the July 1, 2023 valuation results in terms of benefit security (assets over liabilities) and contribution levels. All the projections in this section are based on the assumption that the Plan will exactly achieve the assumed rate of return each year of 5.0%.

Projection of Employer Contributions



The above graph shows a projection of the City’s required contributions compared to the same projections from last year’s report. The City’s required contribution decreased from \$40.8 million in fiscal year 2024 to \$34.8 million in fiscal year 2025, and then is expected to increase by about \$2.8 million the following year after as the current unfunded liability is fully amortized and recent net asset losses are recognized. This assumes that the annual payments by the City will equal the administrative expenses, plus an amount needed to amortize the remaining unfunded liability as a level percentage of overall Safety payroll by July 1, 2026, as is required under the City’s charter.

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SECTION I – EXECUTIVE SUMMARY

After July 1, 2026, the UAL is expected to be fully amortized, and the contribution would generally be equal to the administrative expense, beginning in 2026-2027. However, under the current asset smoothing method there are still expected to be some deferred asset losses, which will not be recognized until after 2026; the deferred recognition of these losses is expected to result in a low level of additional contributions in addition to the administrative expenses in the years after FYE 2026 in the graph on the previous page.

Note that the graph on the previous page does not forecast any future actuarial gains or losses or changes to the amortization policy. Even relatively modest losses could push the employer contribution over \$40 million in the next year. We also note that the occurrence of any future gains or losses in the years leading up to or following the required full amortization date (July 1, 2026) may require a reconsideration of the funding policy for those gains or losses, as otherwise these changes would need to be recognized over an extremely short period.

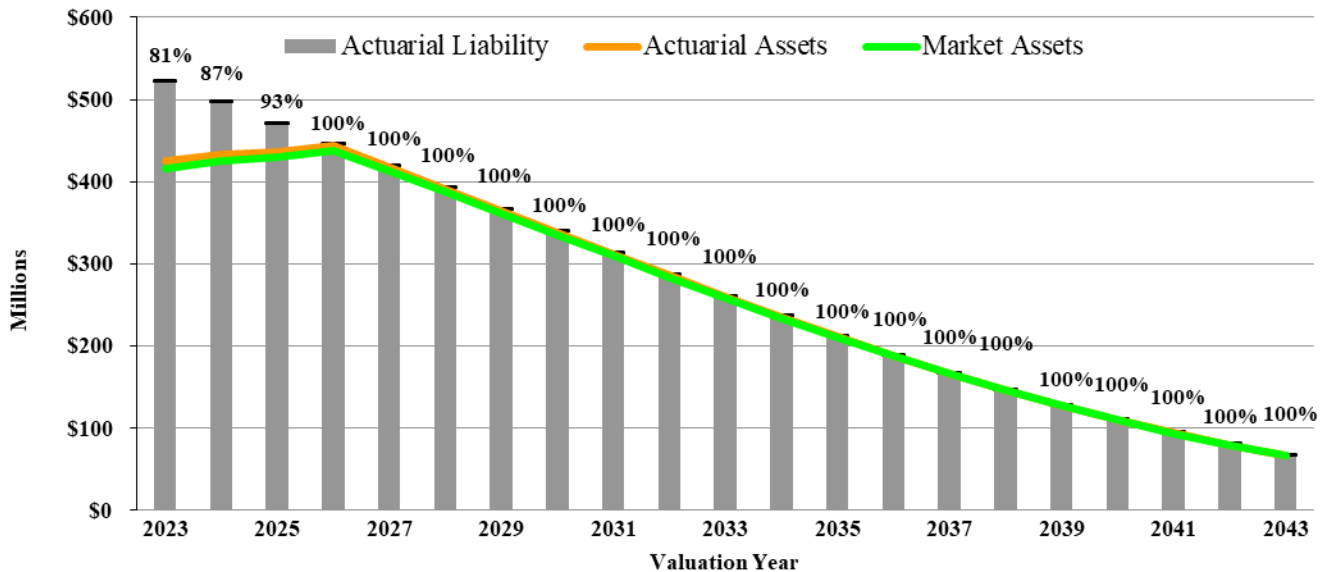
**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION I – EXECUTIVE SUMMARY

Asset and Liability Projections:

The following graph shows the projection of assets and liabilities, assuming that assets will earn the assumed rate of return each year during the projection period.

Projection of Assets and Liabilities



The graph shows that the projected funded status increases as the current unfunded liability is fully amortized, assuming all actuarial assumptions are met. Once the Plan is projected to reach 100% funding, both the assets and liabilities are expected to decline as the Plan continues to pay out benefits to the remaining members.

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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may be significantly different. This section of the report is intended to identify the primary risks to the plan, provide some background information about those risks, and provide an assessment of those risks.

Identification of Risks

The fundamental risk to a pension plan is that the contributions needed to pay the benefits become unaffordable. While the Plan cannot determine on its own what contribution level is unaffordable, we can project expected contributions and illustrate the potential impact of key sources of risk on those contribution rates so the City can assess affordability. While there are a number of factors that could lead to contribution amounts becoming unaffordable, we believe the primary sources are:

- Investment risk,
- COLA risk,
- Longevity risk, and
- Contribution risk.

Other risks that we have not identified may also turn out to be important.

Investment Risk is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the Unfunded Actuarial Liability, necessitating higher contributions in the future unless there are other gains that offset these investment losses. In contrast, higher investment returns than anticipated may create a potentially significant surplus that could be difficult to use until all benefits have been paid. Expected future investment returns and their potential volatility are determined by the Plan’s asset allocation.

COLA Risk is the potential for future COLAs to increase contributions. Retirement allowances are based on the pensionable compensation attached to the average rank held during the three years immediately preceding retirement. Cost-of-living adjustments are therefore based on salary increases for current employees with the retiree’s same rank at retirement. Salary increases less than or greater than those assumed cause gains or losses, respectively. COLA increases different from those expected over the last 10 years are reflected in the “MOU Changes” column in the chart on the next page.

Longevity risk is the potential for mortality experience to be different than expected. Generally, longevity risk emerges slowly over time and is often exceeded by other changes, particularly those due to investment returns. However, for a closed plan such as PFRS, the mortality experience will have a significant impact on future cash flows. The chart on the next page shows the liability gains and losses over the last 11 years compared to the total change in the UAL for each year, a portion of which is associated with mortality experience.

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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Contribution risk is the potential for actual future actuarially determined contributions to deviate from expected future contributions. The City Charter sets the Plan’s contribution policy. It requires the unfunded liability of the plan to be fully amortized by June 30, 2026. The Actuarially Determined Contribution (ADC) is based on a short remaining amortization period. As a result, a significant loss or change in assumptions may cause a large increase in the ADC.

The table below shows an 11-year history of changes in the UAL by source.

Table II-1 UAL Change by Source (\$ in Thousands)						
FYE	MOU Changes	Assumption Changes	Contributions vs. Tread		Liability Experience	Total UAL Change
			Water	Investments		
2013	4,091	0	(188,922)	(3,803)	2,592	(186,042)
2014	0	30,598	15,146	(10,729)	(19,869)	15,147
2015	0	0	17,023	(6,171)	6,522	17,374
2016	43,480	0	15,033	486	2,830	61,829
2017	0	22,730	22,888	(4,958)	(9,959)	30,702
2018	(1,475)	0	(24,214)	(7,128)	(7,467)	(40,284)
2019	(7,173)	0	(26,691)	(5,919)	1,797	(37,986)
2020	(6,541)	0	(27,417)	(1,877)	(417)	(36,252)
2021	0	0	(29,775)	(29,872)	(6,637)	(66,284)
2022	5,389	(3,926)	(34,056)	5,319	(1,784)	(29,059)
2023	0	(9,758)	(24,191)	2,330	(1,576)	(33,195)
Total	\$ 37,771	\$ 39,643	\$ (285,174)	\$ (62,322)	\$ (33,968)	\$ (304,050)

The UAL was reduced by approximately \$304.1 million over the last 11 years. Contributions in excess of the “tread water” level (i.e., interest on the UAL plus administrative expenses) reduced the UAL by \$285.2 million, liability experience reduced the UAL by \$34.0 million, and investment returns decreased the UAL by \$62.3 million. Meanwhile changes to MOUs increased the UAL by \$37.8 million and assumption changes increased the UAL by \$39.6 million.

Plan Maturity Measures

The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of the plan.

Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic – the larger the plan is compared to the contribution or revenue base that supports it; the more sensitive the plan will be to risk. Given that the Plan has been closed to new entrants since 1976 with no remaining active members, the Plan considered as a standalone entity is very mature,

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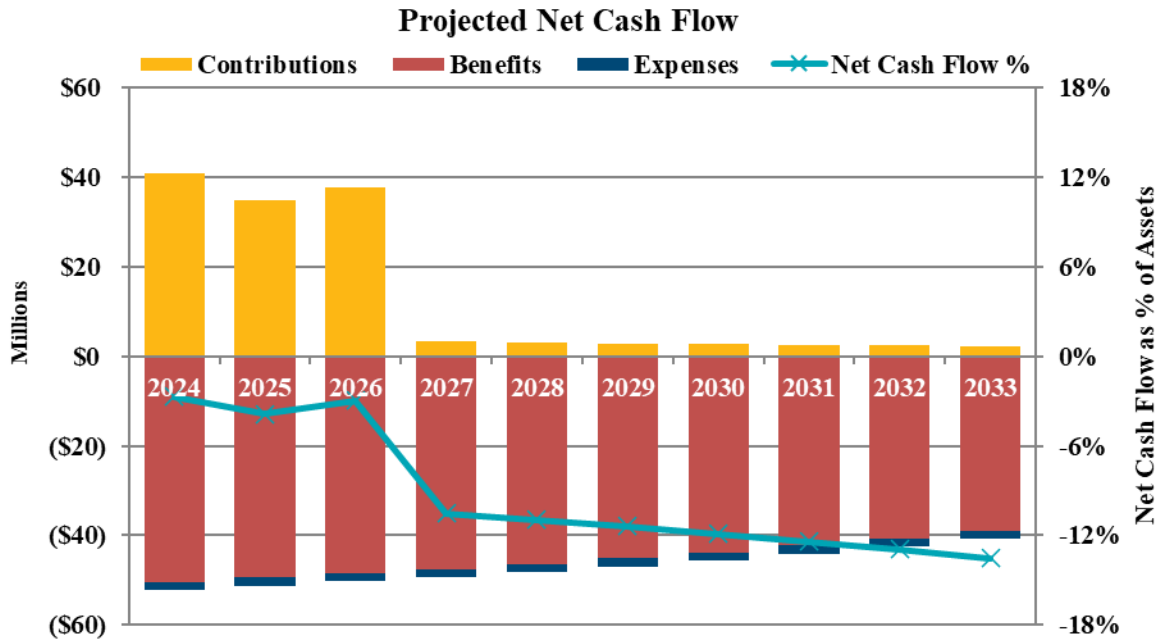
SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

though because of the diminishing benefit cash flows it is expected to have a declining impact on overall City finances.

Net Cash Flow

The net cash flow of the plan as a percentage of the beginning of year assets indicates the sensitivity of the plan to short-term investment returns. Net cash flow is equal to contributions less benefit payments and administrative expenses. Mature plans can have large amounts of benefit payments compared to contributions, particularly if they are well funded.

The chart below shows the projected net cash flow for the next 10 fiscal years. The bars represent the dollar amounts of the different components of the projected net cash flow, and the line represents the net cash flow as a percentage of the assets as of the beginning of the fiscal year.



The Plan’s contributions are expected to drop significantly following the 2025-2026 Fiscal Year once the unfunded liability has been paid off, with the exception of some residual losses resulting from the current asset smoothing policy. Beyond that point, the negative net cash flows are expected to continue until all benefits are paid.

The first issue this change presents to the Plan is a need for liquidity in the investments so that benefits can be paid. When the cash flow was positive or close to neutral, benefits could be paid out of contributions without liquidating investments. As net cash flow becomes increasingly negative, the benefit payments will require liquidation of some investments.

The other change of note is the sensitivity to short-term investment returns. Investment losses in the short term are compounded by the net withdrawal from the plan leaving a smaller asset base to try to recover from the investment losses. On the other hand, large investment gains in the

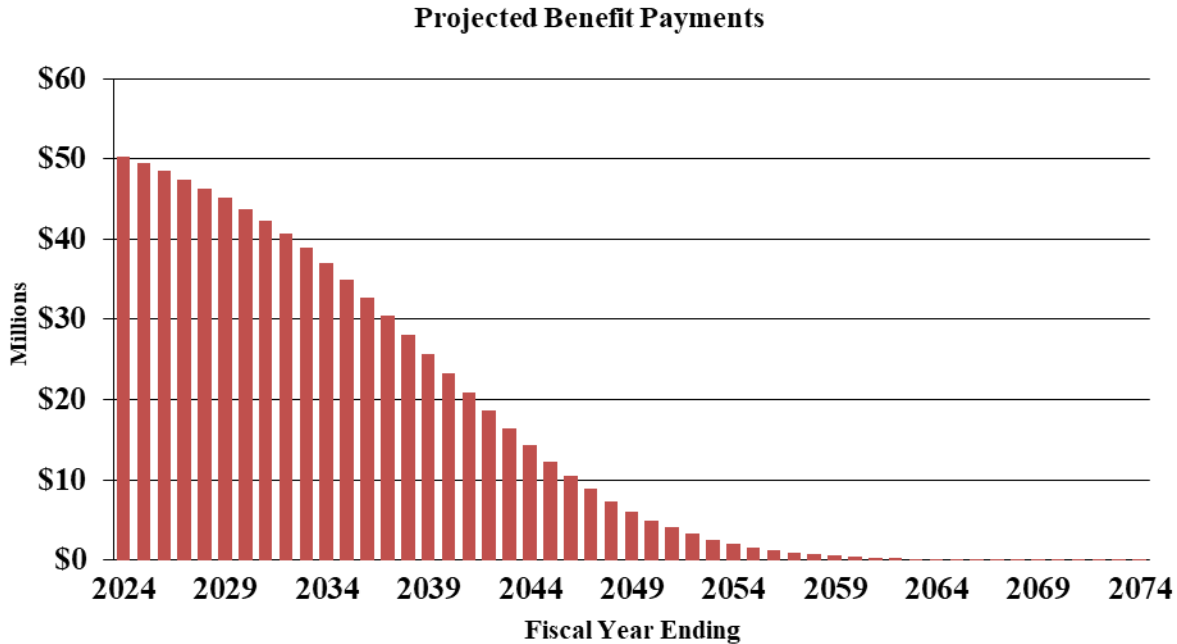
SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

short term also tend to have a longer beneficial effect as any future losses are relative to a smaller liability base due to the negative cash flow.

Assessing Costs and Risks

A closed pension plan will ultimately either end up with excess assets after all benefits have been paid or run out of assets before all benefits have been paid. The Board adopted a change in the strategic asset allocation at their February 28, 2024 meeting to reduce the risk in their portfolio by lowering their exposure to return-seeking equities and increasing their holdings in bonds. This allocation adopted by the Board pursues a strategy of de-risking the Plan to minimize the likelihood of a significant surplus or deficit occurring.

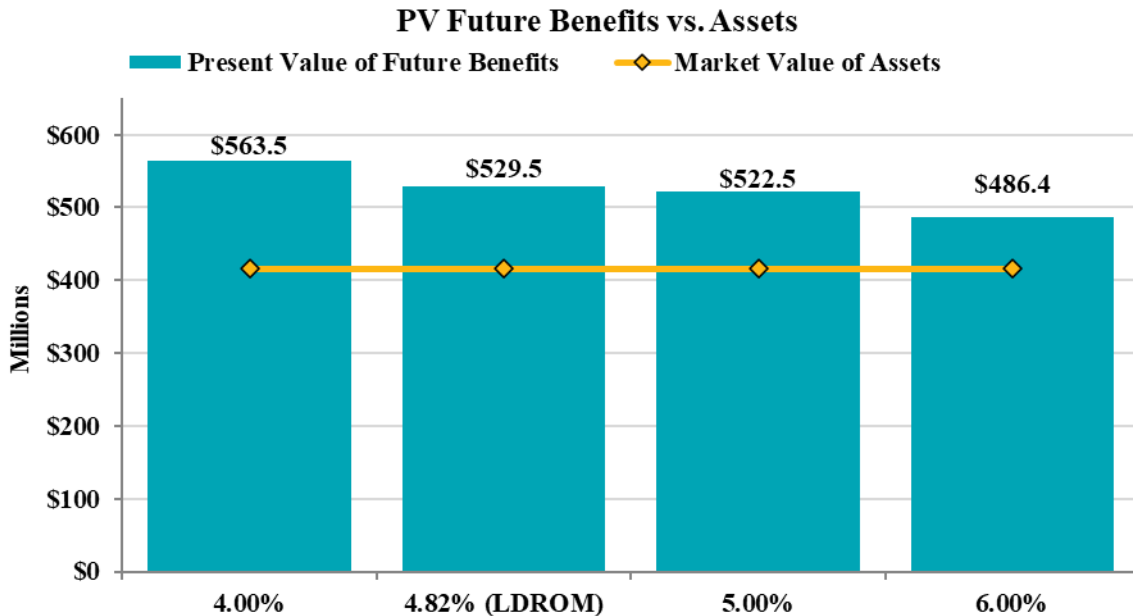
However, even if the Plan were to run out of assets, PFRS would be forced to pay benefits directly on a pay-as-you-go basis. As long as PFRS (and the City) can afford the pay-as-you-go costs, benefits would remain secure. The chart below shows a projection of expected benefit payments for the closed plan.



Sensitivity to Investment Returns

The chart on the next page compares assets to the present value of all projected future benefits discounted at the current expected rates of return of 5.0% and at investment returns 100 basis points above and below the expected rates of return for all years. We have added another measurement this year, the Low Default Risk Obligation Measure (LDROM), which is the Actuarial Liability (equal to the total present value of future benefits, for a plan with no active members) using a discount rate derived from low-default-risk fixed income securities that approximately match the benefit payments of the plan. The present value of future benefits is shown as a teal bar and the Market Value of Assets is shown by the gold line.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS



If actual investment returns meet the expected returns annually, the Plan would need approximately \$523 million in assets today to pay all projected benefits compared to current assets of \$416 million. If investment returns are 100 basis points lower each year, the Plan would need approximately \$564 million in assets today, and if investment returns are 100 basis points higher, the Plan would need approximately \$486 million in assets today.

A low-risk portfolio for a pension plan would be composed entirely of low-default-risk fixed income securities whose cash flows approximately match the benefit cash flows of the plan. Based on the FTSE Pension Liability discount curve as of June 30, 2023, the single equivalent rate for such a portfolio would be approximately 4.82%. The Low-Default-Risk Obligation Measure (LDROM) represents what the liability would be if the Plan’s assets were invested in such a portfolio. As of June 30, 2023, the LDROM is \$529.5 million compared to the liability of \$522.5 million calculated at the 5.00% assumed rate of return. The measures are close to each other, as can be expected since the PFRS Board has taken significant steps to de-risk the plan.

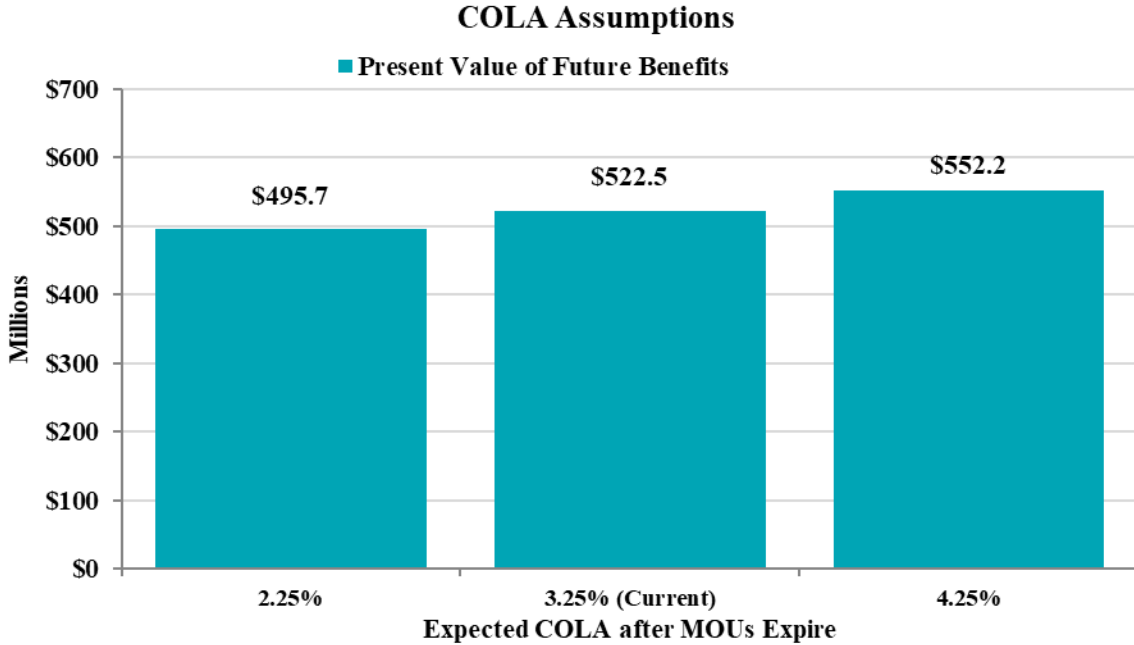
Sensitivity to COLA Changes

The present value of future benefits shown above assumes annual COLA increases of 3.25% per year once the current MOUs have expired. If COLA inflation is higher (because of higher-than-expected increases in the salaries of active employees); more assets would be needed to pay the benefits, and if COLA inflation is lower; fewer assets would be needed to pay benefits.

The chart on the next page shows the present value of all projected future benefits (discounted using the current expected rates of return) based on annual COLA increases of 3.25% per year once the current MOUs have expired – and at COLA increases 100 basis points above and below the current COLA assumptions.

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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS



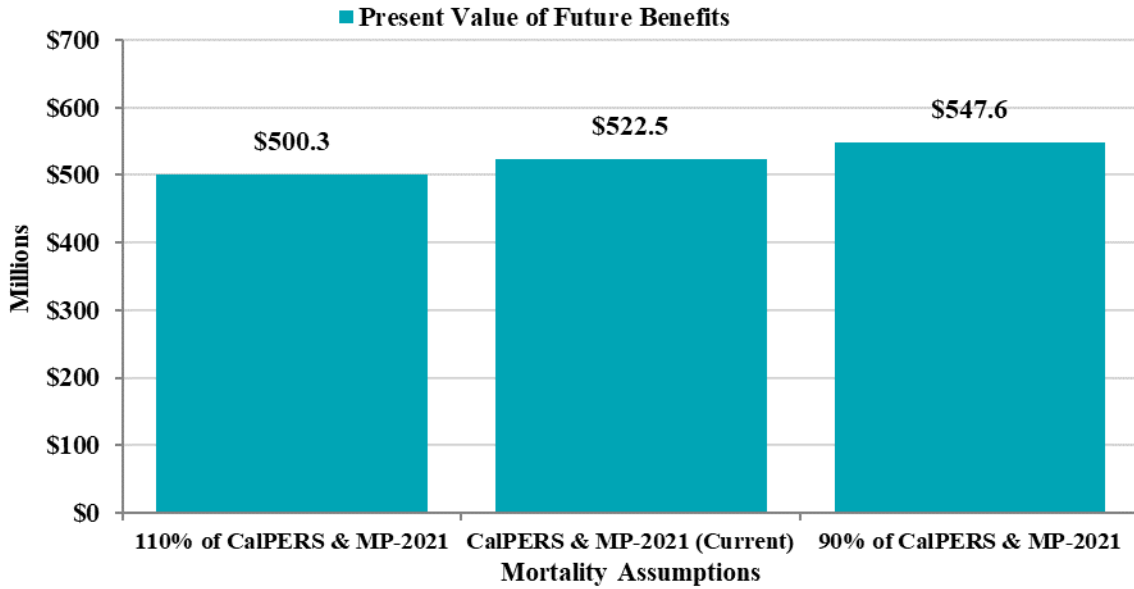
Sensitivity to Mortality Assumption Changes

The chart on the next page shows the sensitivity of the Plan to longevity / mortality experience. In the second bar, we have shown the present value of benefits using the Plan’s current mortality assumptions (i.e., using the CalPERS mortality assumptions from their 2021 experience study, with projections for generational improvements using the Society of Actuary’s MP-2021 improvement scales). In the first and third bars, we have shown results reflecting the newly elected mortality assumption base rates multiplied by 110% and 90%, respectively. As always, actual experience will drive costs, but this exhibit provides an example of the level of sensitivity of the Plan’s liabilities to possible changes in mortality.

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Mortality and Mortality Improvement Assumptions



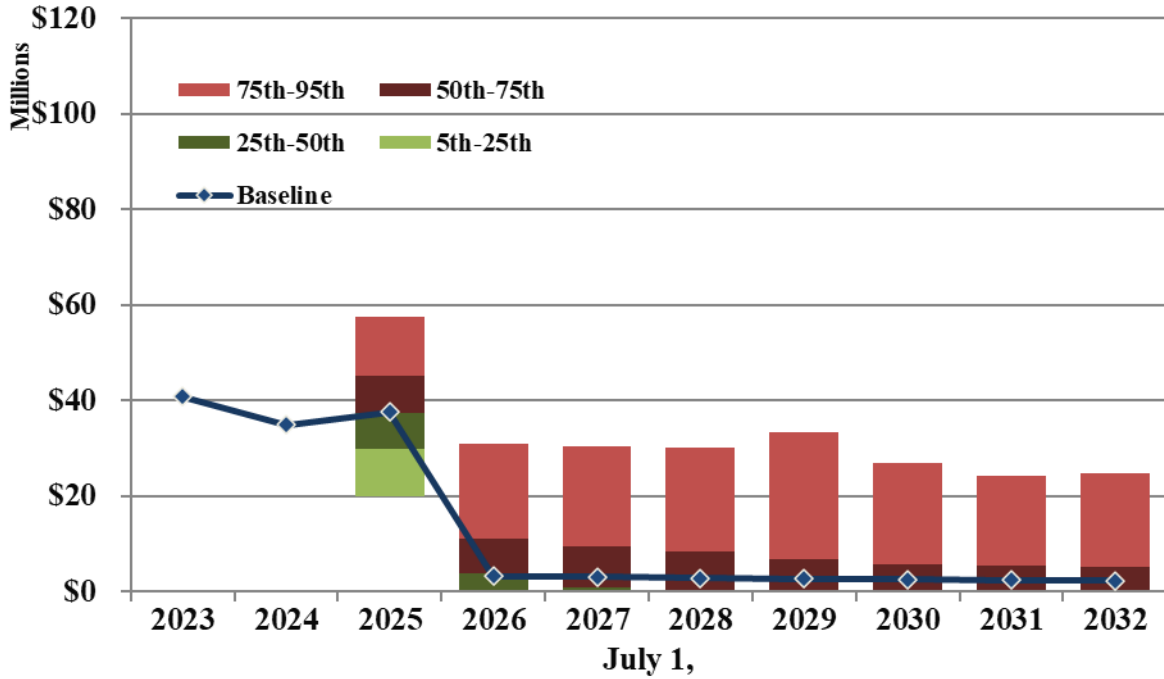
Stochastic Projections

The stochastic projections of contributions in the chart on the following page show 10 years of contribution amounts. The projections beyond June 30, 2026 are based on the current funding method – a one-year amortization period with a 12-month period between the end of the fiscal year and when the payment is made. The 2025 result shows a narrower range in future ADC's than in last year's projections. This range is driven by the volatility (or standard deviation) of investment returns, which is assumed to be 6.8% in these projections based on the asset allocation chosen and information provided by Meketa at the February 28, 2024 Board meeting, and which is considerably lower than the 10.2% standard deviation used in the prior valuation under the previous strategic investment allocation.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

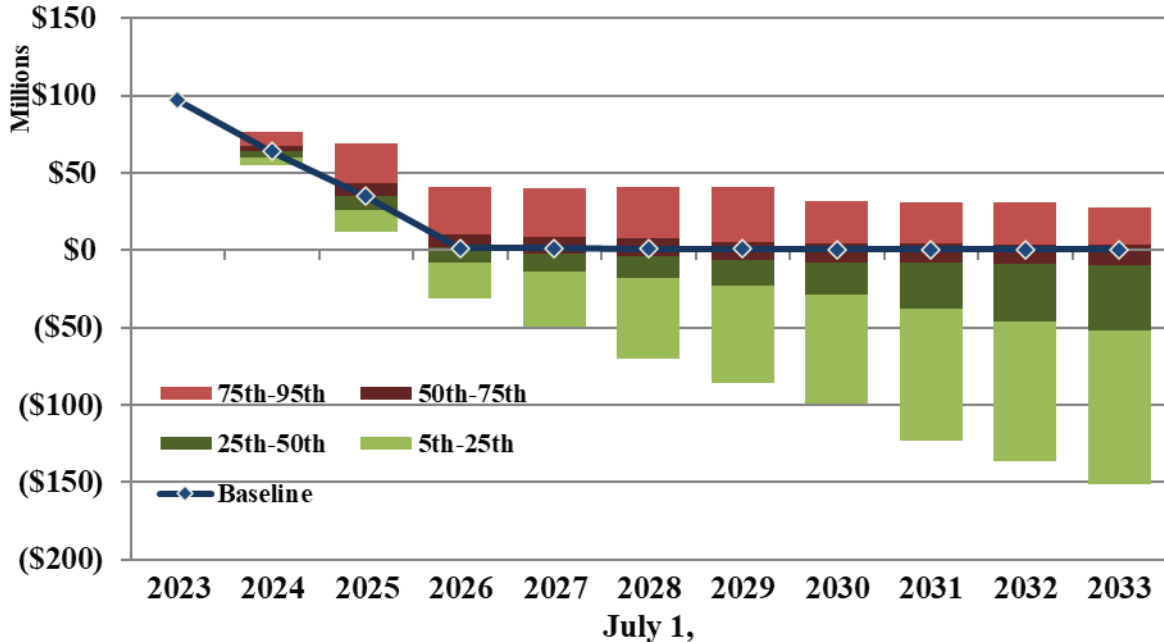
SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Stochastic Projection of Actuarially Determined Contribution (ADC)



The chart below shows the projection of the UAL for the next 10 years. While the UAL is projected in the baseline to be essentially eliminated by 2026, because of the statutory requirement to fully fund the Plan by that time, there is still a wide range of potential outcomes, though, again, narrower than in the previous year’s projections.

Stochastic Projection of UAL/(Surplus)



**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

More Detailed Assessment

A detailed assessment of risk would be valuable in understanding the risks identified above, especially given the closed nature of the plan. We encourage the Board to consider a more detailed analysis of some of the risks identified above, particularly for developing a funding strategy to deal with changes in the UAL after the required full funding date.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION III – ASSETS

Pension Plan assets play a key role in the financial operation of the Plan and in the decisions the Board may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, employer contributions, and the ultimate security of participants’ benefits.

In this section, we present detailed information on Plan assets including:

- **Disclosure** of Plan assets as of June 30, 2022 and June 30, 2023,
- Statement of the **changes** in market values during the year, and
- Development of the **Actuarial Value of Assets**.

Disclosure

There are two types of asset values disclosed in the valuation, the Market Value of Assets and the Actuarial Value of Assets. The market value represents “snapshot” or “cash out” values, which provide the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are sometimes not as suitable for long-range planning as the Actuarial Value of Assets, which reflects smoothing of annual investment returns.

Table III-1 discloses and compares each component of the market asset value as of June 30, 2022 and June 30, 2023.

TABLE III-1 Statement of Assets at Market Value June 30, (in thousands)				
		2022		2023
Cash and Cash Equivalents	\$	7,495	\$	9,567
Receivables		6,219		15,147
Investments, at Fair Value		448,338		458,166
Total Assets	\$	462,051	\$	482,881
Liabilities		60,564		66,750
Market Value of Assets	\$	401,487	\$	416,130

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION III – ASSETS

TABLE III-1			
Statement of Assets at Market Value			
June 30,			
(in thousands)			
	2022		2023
Cash and Cash Equivalents:	\$ 7,495	\$	9,567
Receivables:			
Interest Receivable	\$ 813	\$	851
Dividends Receivable	280		185
Investments Receivable	4,912		13,862
Retired Members and Beneficiaries	103		102
Miscellaneous	111		147
Total Receivables	<u>6,219</u>		<u>15,147</u>
Investments, at Fair Value:			
Short-term Investments	7,474		10,744
Bonds	130,127		132,354
Domestic Equities and Mutual Funds	158,145		169,857
International Equities and Mutual Funds	47,911		55,731
Alternative Investments	56,335		48,464
Securities Lending Collateral	48,346		41,016
Total Investments	<u>448,338</u>		<u>458,166</u>
Total Assets	462,051		482,881
Liabilities:			
Accounts Payable	3		43
Benefits Payable	4,184		4,132
Investments Payable	7,701		21,517
Accrued Investment Management Fees	301		364
Securities Lending Liabilities	48,376		40,693
Total Liabilities	<u>60,564</u>		<u>66,750</u>
Market Value of Assets	\$ 401,487	\$	416,130

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION III – ASSETS

Changes in Market Value

The components of asset change are:

- Contributions (employer and employee),
- Benefit payments,
- Administrative Expenses, and
- Investment income (realized and unrealized, net of investment expenses).

Table III-2 below shows the components of a change in the Market Value of Assets during 2022 and 2023.

TABLE III-2 Changes in Market Values June 30, (in thousands)		
	<u>2022</u>	<u>2023</u>
Contributions		
Contributions of Plan Members	\$ 0	\$ 0
Contributions from the City	<u>43,820</u>	<u>32,712</u>
Total Contributions	<u>43,820</u>	<u>32,712</u>
Investment Income		
Miscellaneous Income	0	0
Investment Income	<u>(47,955)</u>	<u>34,408</u>
Total Investment Income	<u>(47,955)</u>	<u>34,408</u>
Disbursements		
Benefit Payments	(51,450)	(50,850)
Administrative Expenses	<u>(1,461)</u>	<u>(1,626)</u>
Total Disbursements	<u>(52,911)</u>	<u>(52,477)</u>
Net increase (Decrease)	(57,045)	14,643
Net Assets Held in Trust for Benefits:		
Beginning of Year	<u>458,533</u>	<u>401,487</u>
End of Year	\$ <u>401,487</u>	\$ <u>416,130</u>
Approximate Return	-10.56%	8.79%

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION III – ASSETS

Actuarial Value of Assets (AVA)

The Actuarial Value of Assets represents a “smoothed” value developed by the actuary to reduce the volatile results, which could develop due to short-term fluctuations in the Market Value of Assets. For this Plan, the Actuarial Value of Assets is calculated on a modified market-related value. The Actuarial Value of Assets recognizes one-fifth of the difference between the expected asset value (based on the 6.00% return assumption from 2022-2023) and the actual market value each year. The actuarial value is restricted to fall between 90% and 110% of the market value.

TABLE III-3 Development of Actuarial Value of Assets (in thousands)	
1. Calculate Expected Actuarial Value of Assets	
a. Value of Actuarial Value of Assets - July 1, 2022	\$ 422,762
b. Total Contributions and Misc Income	32,712
c. Administrative Expense	(1,626)
d. Benefit Payments	(50,850)
e. Expected Investment Earnings	<u>24,781</u>
f. Expected Actuarial Value of Assets - July 1, 2023 [1a + 1b + 1c + 1d + 1e]	\$ 427,779
2. Calculate Final Actuarial Value of Assets	
a. Value of Market Value of Assets - July 1, 2023	\$ 416,130
b. Excess of MVA over Expected AVA [2a - 1f]	(11,648)
c. Preliminary AVA [1f + 0.2 * 2b]	425,449
d. 90% of MVA [90% * 2a]	374,517
e. 110% of MVA [110% * 2a]	457,743
3. Final Actuarial Value of Assets [2c, not less than 2d or greater than 2e]	\$ 425,449

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION III – ASSETS

Investment Performance

The following table calculates the investment related gain/loss for the plan year on both a market value and an actuarial value basis. The market value gain/loss is an appropriate measure for comparing the actual asset performance to the previous valuation’s 6.00% assumption.

TABLE III-4 Asset Gain/(Loss) (in thousands)			
	Market Value	Actuarial Value	
July 1, 2022 value	\$ 401,487	\$	422,762
Contributions of Plan Members	0		0
Contributions from the City	32,712		32,712
Benefit Payments	(50,850)		(50,850)
Administrative Expenses	(1,626)		(1,626)
Expected Investment Earnings (6.00%)	23,505		24,781
Expected Value June 30, 2023	\$ 405,228	\$	427,779
Investment Gain / (Loss)	10,903		(2,330)
July 1, 2023 value	416,130	\$	425,449
Return	8.79%		5.44%

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION IV – LIABILITIES

In this section, we present detailed information on Plan liabilities including:

- **Disclosure** of Plan liabilities on July 1, 2022 and July 1, 2023
- Statement of **changes** in these liabilities during the year

Disclosure

Several types of liabilities are typically shown in an actuarial valuation report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them. Note that these liabilities are not applicable for settlement purposes, including the purchase of annuities and the payment of lump sums.

- **Present Value of Future Benefits:** Used for measuring all future Plan obligations, the obligations of the Plan earned as of the valuation date and those to be earned in the future by current plan participants under the current Plan provisions, if all assumptions are met.
- **Actuarial Liability:** Used for funding calculations, this liability is calculated taking the present value of future benefits and subtracting the present value of future normal costs under an acceptable actuarial funding method. Because the Plan has no active members, the Actuarial Liability is equal to the present value of future benefits (i.e., all benefits are fully accrued).
- **Unfunded Actuarial Liability:** The excess of the Actuarial Liability over the Actuarial Value of Assets.

Table IV-1 on the next page discloses each of these liabilities for the current and prior valuations.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION IV – LIABILITIES

TABLE IV-1		
Liabilities/Net (Surplus)/Unfunded		
(in thousands)		
	July 1, 2022	July 1, 2023
<u>Present Value of Future Benefits</u>		
Active Participant Benefits	\$ 0	\$ 0
Retiree and Inactive Benefits	552,966	522,457
Present Value of Future Benefits (PVB)	\$ 552,966	\$ 522,457
<u>Actuarial Liability</u>		
Present Value of Future Benefits (PVB)	\$ 552,966	\$ 522,457
Present Value of Future Normal Costs (PVFNC)	0	0
Actuarial Liability (AL = PVB – PVFNC)	\$ 552,966	\$ 522,457
Actuarial Value of Assets (AVA)	422,762	425,449
Net (Surplus)/Unfunded (AL – AVA)	\$ 130,204	\$ 97,008

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION IV – LIABILITIES

Changes in Liabilities

Each of the liabilities disclosed in the prior table is expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation (not applicable for this Plan)
- Benefits accrued since the last valuation (not applicable for this Plan)
- Plan amendments
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, dying, or receiving COLA adjustments at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method or software

Unfunded liabilities will change because of all of the above and also due to changes in Plan assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure plan assets

TABLE IV-2 Changes in Actuarial Liability (in thousands)	
Actuarial Liability at July 1, 2022	\$ 552,966
Actuarial Liability at July 1, 2023	\$ 522,457
Liability Increase (Decrease)	\$ (30,509)
Change due to:	
Plan Design Changes (MOU)	\$ 0
Assumption Change	(9,758)
Accrual of Benefits	0
Actual Benefit Payments	(50,850)
Interest	31,675
Data Corrections	0
Actuarial Liability (Gain)/Loss	\$ (1,576)

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION IV – LIABILITIES

TABLE IV-3			
Liabilities by Group as of July 1, 2023			
(in thousands)			
	Police	Fire	Total
Actuarial Accrued Liability			
Active	\$ 0	\$ 0	\$ 0
Service Retirees	192,803	64,026	256,829
Disabled Retirees	70,741	70,852	141,594
Beneficiaries	<u>74,134</u>	<u>49,901</u>	<u>124,035</u>
Total Accrued Liability	\$ 337,678	\$ 184,779	\$ 522,457

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION IV – LIABILITIES

**TABLE IV-4
Development of Actuarial Gain / (Loss)
(in thousands)**

1. Unfunded Actuarial Liability at Start of Year (not less than zero)	\$	130,204
2. Employer Normal Cost at Start of Year		0
3. Interest on 1. and 2. to End of Year		7,812
4. Contributions and Miscellaneous Income for Prior Year		32,712
5. Administrative Expenses		(1,626)
6. Interest on 4. and 5. to End of Year		919
7. Change in Unfunded Actuarial Liability Due to Changes in Assumptions		(9,758)
8. Change in Unfunded Actuarial Liability Due to Changes in Actuarial Methods		0
9. Change in Unfunded Actuarial Liability Due to Changes in Plan Design		0
10. Change in Unfunded Actuarial Liability Due to Data Corrections		0
11. Expected Unfunded Actuarial Liability at End of Year [1. + 2. + 3. - 4. - 5. - 6. + 7. + 8. + 9. + 10.]	\$	96,253
12. Actual Unfunded Actuarial Liability at End of Year (not less than zero)		97,008
13. Unfunded Actuarial Liability Gain / (Loss) [11. – 12.]	\$	(755)

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION V – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the Plan. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that is both stable and predictable.

For this Plan, the actuarial funding method used to determine the normal cost and the Unfunded Actuarial Liability is the **Entry Age Normal Cost Method**.

The normal cost rate is determined with the normal cost percentage equal to the total projected value of benefits at entry age, divided by present value of future salary at entry age. Since there are no longer any active employees, the normal cost for this plan is \$0.

The Unfunded Actuarial Liability is the difference between the EAN Actuarial Liability and the Actuarial Value of Assets. For the contribution projections, the UAL payment is based on the unfunded liability of the Plan being fully amortized by June 30, 2026, in accordance with the City Charter. Amortization payments are determined based on an assumption that payments will increase by 3.25% each year, reflecting the assumed ultimate rate of increase in overall City Safety member salaries.

An amount equal to the expected administrative expenses for the Plan is added directly to the actuarial cost calculation.

Table V-1 on the next page shows the employer contribution amount for the 2024-2025 Fiscal Year. The projected assets and liabilities assume that all actuarial assumptions are met and that contributions are made as expected between now and June 30, 2024.

For this calculation, we have shown the contribution amount using both the projected actuarial and Market Value of Assets. The current funding policy uses the AVA to determine the UAL and the associated amortization payment. We have included the contribution amount as determined using the current Market Value of Assets to demonstrate what the actuarial cost would be if all deferred asset losses were fully recognized at the time the contributions commence. In both cases, the contribution is based on an assumption that the investment returns will exactly equal the assumed rate of return during the 2023-2024 Fiscal Year.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION V – CONTRIBUTIONS

**TABLE V-I
Development of Projected 2024-2025 Employer Contribution Amount
(in thousands)**

	Actuarial Value of Assets	Market Value of Assets
1. Value of Assets at June 30, 2023:	\$ 425,449	\$ 416,130
a. Expected Contributions and Misc Income	\$ 40,763	\$ 40,763
b. Expected Administrative Expense	\$ (1,790)	\$ (1,790)
c. Expected Benefit Payments	\$ (50,155)	\$ (50,155)
d. Expected Investment Earnings	<u>\$ 20,996</u>	<u>\$ 20,530</u>
2. Expected Value of Assets at June 30, 2024:	\$ 435,263	\$ 425,478
a. Excess of Expected MVA over Expected AVA	\$ (9,785)	
b. Preliminary AVA [Expected AVA + 20% * 2a]	\$ 433,306	
c. 90% of Expected MVA	\$ 382,930	
d. 110% of Expected MVA	\$ 468,026	
3. Final Expected AVA [2b, not less than 2c or greater than 2d]	\$ 433,306	\$ 425,478
4. Entry Age Liability at June 30, 2023	\$ 522,457	\$ 522,457
5. Expected Benefit Payments	\$ (50,155)	\$ (50,155)
6. Expected Interest	<u>\$ 24,884</u>	<u>\$ 24,884</u>
7. Expected Entry Age Liability at June 30, 2024	\$ 497,186	\$ 497,186
8. Projected Unfunded Actuarial Liability: (7) - (3)	\$ 63,881	\$ 71,708
9. Funded Ratio: (3) / (7)	87.2%	85.6%
10. Unfunded Actuarial Liability Amortization at Middle of Year as a Level Percentage of Payroll (2 Years Remaining) as of June 30, 2024	\$ 33,004	\$ 37,048
11. Expected Administrative Expenses for Fiscal 2024-2025	<u>\$ 1,841</u>	<u>\$ 1,841</u>
12. Total Contribution: (10) + (11)	\$ 34,845	\$ 38,890

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION VI – HEADCOUNT AND BENEFIT PAYMENT PROJECTIONS

**TABLE VI-1
Benefit Payment and Headcount Projection**

Fiscal Year Ending June 30,	Police		Fire		Total	
	Count	Benefits (in thousands)	Count	Benefits (in thousands)	Count	Benefits (in thousands)
2024	403.0	\$ 30,884	250.0	\$ 19,271	653.0	\$ 50,155
2025	389.1	\$ 30,539	237.7	\$ 18,735	626.7	\$ 49,274
2026	375.1	\$ 30,137	225.2	\$ 18,154	600.3	\$ 48,291
2027	361.0	\$ 29,738	212.9	\$ 17,576	573.8	\$ 47,314
2028	346.5	\$ 29,260	200.6	\$ 16,958	547.1	\$ 46,218
2029	331.8	\$ 28,693	188.4	\$ 16,302	520.1	\$ 44,995
2030	316.5	\$ 28,030	176.3	\$ 15,610	492.9	\$ 43,641
2031	300.9	\$ 27,265	164.5	\$ 14,886	465.4	\$ 42,151
2032	284.7	\$ 26,392	152.8	\$ 14,131	437.6	\$ 40,524
2033	268.1	\$ 25,409	141.4	\$ 13,346	409.5	\$ 38,755
2034	251.0	\$ 24,312	130.1	\$ 12,532	381.1	\$ 36,844
2035	233.5	\$ 23,106	119.0	\$ 11,692	352.5	\$ 34,798
2036	215.7	\$ 21,801	108.2	\$ 10,830	323.9	\$ 32,631
2037	197.7	\$ 20,409	97.7	\$ 9,957	295.4	\$ 30,366
2038	179.8	\$ 18,947	87.5	\$ 9,080	267.3	\$ 28,028
2039	162.1	\$ 17,434	77.7	\$ 8,211	239.8	\$ 25,645
2040	144.8	\$ 15,891	68.4	\$ 7,359	213.2	\$ 23,251
2041	128.1	\$ 14,344	59.7	\$ 6,536	187.8	\$ 20,879
2042	112.2	\$ 12,813	51.6	\$ 5,750	163.7	\$ 18,563
2043	97.2	\$ 11,325	44.1	\$ 5,010	141.3	\$ 16,335
2044	83.3	\$ 9,900	37.4	\$ 4,324	120.7	\$ 14,225
2045	70.6	\$ 8,559	31.4	\$ 3,698	102.0	\$ 12,256
2046	59.2	\$ 7,315	26.1	\$ 3,133	85.2	\$ 10,448
2047	49.0	\$ 6,180	21.5	\$ 2,632	70.4	\$ 8,812
2048	40.1	\$ 5,161	17.5	\$ 2,191	57.6	\$ 7,353
2049	32.4	\$ 4,262	14.1	\$ 1,810	46.6	\$ 6,071
2050	26.0	\$ 3,480	11.3	\$ 1,483	37.3	\$ 4,963
2051	20.5	\$ 2,813	9.0	\$ 1,207	29.5	\$ 4,020
2052	16.1	\$ 2,252	7.1	\$ 977	23.2	\$ 3,228
2053	12.5	\$ 1,787	5.6	\$ 786	18.1	\$ 2,573

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

SECTION VI – HEADCOUNT AND BENEFIT PAYMENT PROJECTIONS

TABLE VI-1 Benefit Payment and Headcount Projection (Continued)							
Fiscal Year Ending June 30,	Police		Fire		Total		
	Count	Benefits (in thousands)	Count	Benefits (in thousands)	Count	Benefits (in thousands)	
2054	9.6	\$ 1,407	4.3	\$ 629	14.0	\$ 2,036	
2055	7.4	\$ 1,099	3.4	\$ 501	10.7	\$ 1,600	
2056	5.6	\$ 853	2.6	\$ 397	8.1	\$ 1,250	
2057	4.2	\$ 658	2.0	\$ 312	6.2	\$ 970	
2058	3.1	\$ 504	1.5	\$ 244	4.6	\$ 748	
2059	2.3	\$ 383	1.1	\$ 190	3.5	\$ 573	
2060	1.7	\$ 289	0.8	\$ 146	2.6	\$ 436	
2061	1.3	\$ 216	0.6	\$ 112	1.9	\$ 328	
2062	0.9	\$ 160	0.5	\$ 84	1.4	\$ 244	
2063	0.6	\$ 116	0.3	\$ 62	1.0	\$ 179	
2064	0.5	\$ 84	0.2	\$ 46	0.7	\$ 129	
2065	0.3	\$ 59	0.2	\$ 33	0.5	\$ 92	
2066	0.2	\$ 41	0.1	\$ 23	0.3	\$ 64	
2067	0.1	\$ 28	0.1	\$ 16	0.2	\$ 43	
2068	0.1	\$ 18	0.1	\$ 11	0.1	\$ 29	
2069	0.1	\$ 12	0.0	\$ 7	0.1	\$ 18	
2070	0.0	\$ 7	0.0	\$ 4	0.1	\$ 11	
2071	0.0	\$ 4	0.0	\$ 3	0.0	\$ 7	
2072	0.0	\$ 2	0.0	\$ 1	0.0	\$ 4	
2073	0.0	\$ 1	0.0	\$ 1	0.0	\$ 2	
2074	0.0	\$ 0	0.0	\$ 0	0.0	\$ 1	
2075	0.0	\$ 0	0.0	\$ 0	0.0	\$ 0	
2076	0.0	\$ 0	0.0	\$ 0	0.0	\$ 0	
2077	0.0	\$ 0	0.0	\$ 0	0.0	\$ 0	
2078	0.0	\$ 0	0.0	\$ 0	0.0	\$ 0	
2079	0.0	\$ 0	0.0	\$ 0	0.0	\$ 0	
2080	0.0	\$ 0	0.0	\$ 0	0.0	\$ 0	
2081	0.0	\$ 0	0.0	\$ 0	0.0	\$ 0	
2082	0.0	\$ 0	0.0	\$ 0	0.0	\$ 0	

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of

Active Participants	July 1, 2022			July 1, 2023		
	Police	Fire	Total	Police	Fire	Total
Number	0	0	0	0	0	0
Number Vested	0	0	0	0	0	0
Average Age	0.0	0.0	0.0	0.0	0.0	0.0
Average Service	0.0	0.0	0.0	0.0	0.0	0.0
Average Pay	\$0	\$0	\$0	\$0	\$0	\$0
Service Retirees						
Number	209	81	290	196	75	271
Average Age	78.2	82.0	79.2	78.9	82.2	79.8
Average Annual Benefit	\$83,999	\$87,236	\$84,903	\$86,776	\$90,603	\$87,835
Disabled Retirees						
Number	85	86	171	81	84	165
Average Age	77.6	78.5	78.1	78.4	79.3	78.9
Average Annual Benefit	\$80,234	\$82,135	\$81,190	\$83,502	\$84,933	\$84,231
Beneficiaries						
Number	128	97	225	126	91	217
Average Age	80.8	82.9	81.7	80.8	83.5	81.9
Average Annual Benefit	\$58,518	\$62,679	\$60,312	\$60,935	\$64,148	\$62,283
All Inactives						
Number	422	264	686	403	250	653
Average Age	78.8	81.2	79.8	79.4	81.7	80.3
Average Annual Benefit	\$75,512	\$76,552	\$75,912	\$78,039	\$79,068	\$78,433

Data pertaining to active and inactive Members and their beneficiaries as of the valuation date was supplied by the Plan Administrator.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

APPENDIX A – MEMBERSHIP INFORMATION

Changes in Plan Membership: Police

	Actives	Service Retirees	Disabled Retirees	Beneficiaries	Total
July 1, 2022	0	209	85	128	422
Retired	0	0	0	0	0
Disabled	0	(1)	1	0	0
Deceased	0	(12)	(5)	(7)	(24)
New Beneficiary	0	0	0	5	5
July 1, 2023	0	196	81	126	403

Changes in Plan Membership: Fire

	Actives	Service Retirees	Disabled Retirees	Beneficiaries	Total
July 1, 2022	0	81	86	97	264
Retired	0	0	0	0	0
Disabled	0	0	0	0	0
Deceased	0	(6)	(2)	(11)	(19)
New Beneficiary	0	0	0	5	5
July 1, 2023	0	75	84	91	250

Changes in Plan Membership: All

	Actives	Service Retirees	Disabled Retirees	Beneficiaries	Total
July 1, 2022	0	290	171	225	686
Retired	0	0	0	0	0
Disabled	0	(1)	1	0	0
Deceased	0	(18)	(7)	(18)	(43)
New Beneficiary	0	0	0	10	10
July 1, 2023	0	271	165	217	653

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

APPENDIX A – MEMBERSHIP INFORMATION

Service Retired Participants

Age	Police		Fire		Total	
	Number	Total Annual Benefit	Number	Total Annual Benefit	Number	Total Annual Benefit
< 50	0	\$0	0	\$0	0	\$0
50-54	0	\$0	0	\$0	0	\$0
55-59	0	\$0	0	\$0	0	\$0
60-64	0	\$0	0	\$0	0	\$0
65-69	2	\$201,908	0	\$0	2	\$201,908
70-74	39	\$3,574,157	5	\$350,678	44	\$3,924,834
75-79	82	\$6,802,822	28	\$2,467,004	110	\$9,269,826
80-84	55	\$4,593,520	22	\$2,048,336	77	\$6,641,856
85-89	11	\$1,207,043	11	\$1,105,956	22	\$2,312,999
90-94	6	\$522,056	6	\$542,092	12	\$1,064,148
95-99	0	\$0	3	\$281,125	3	\$281,125
100+	1	\$106,641	0	\$0	1	\$106,641
Total	196	\$17,008,147	75	\$6,795,190	271	\$23,803,337

Disability Retired Participants

Age	Police		Fire		Total	
	Number	Total Annual Benefit	Number	Total Annual Benefit	Number	Total Annual Benefit
< 50	0	\$0	0	\$0	0	\$0
50-54	0	\$0	0	\$0	0	\$0
55-59	0	\$0	0	\$0	0	\$0
60-64	0	\$0	0	\$0	0	\$0
65-69	0	\$0	0	\$0	0	\$0
70-74	15	\$1,324,027	17	\$1,321,454	32	\$2,645,480
75-79	41	\$3,325,838	36	\$3,012,872	77	\$6,338,710
80-84	17	\$1,416,677	21	\$1,835,982	38	\$3,252,660
85-89	7	\$570,862	7	\$717,580	14	\$1,288,441
90-94	1	\$126,275	3	\$246,469	4	\$372,743
95-99	0	\$0	0	\$0	0	\$0
100+	0	\$0	0	\$0	0	\$0
Total	81	\$6,763,678	84	\$7,134,357	165	\$13,898,034

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

APPENDIX A – MEMBERSHIP INFORMATION

Beneficiaries

Age	Police		Fire		Total	
	Number	Total Annual Benefit	Number	Total Annual Benefit	Number	Total Annual Benefit
< 50	0	\$0	0	\$0	0	\$0
50-54	0	\$0	0	\$0	0	\$0
55-59	0	\$0	0	\$0	0	\$0
60-64	4	\$257,282	1	\$96,102	5	\$353,384
65-69	5	\$365,083	5	\$302,120	10	\$667,203
70-74	21	\$1,190,804	13	\$869,455	34	\$2,060,259
75-79	36	\$2,124,226	13	\$890,187	49	\$3,014,412
80-84	26	\$1,508,179	17	\$1,028,555	43	\$2,536,734
85-89	13	\$827,922	18	\$1,119,931	31	\$1,947,853
90-94	11	\$841,133	17	\$1,059,910	28	\$1,901,043
95-99	7	\$401,482	6	\$408,257	13	\$809,739
100+	3	\$161,739	1	\$62,971	4	\$224,710
Total	126	\$7,677,852	91	\$5,837,487	217	\$13,515,339

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the actuarial valuation as of June 30, 2023 are based on an experience study covering the period through June 30, 2023 as presented to the Board at their meetings on December 6, 2023 and February 28, 2024. Please refer to materials presented at those meetings for the rationale for each assumption.

Contribution Allocation Procedure

The contribution allocation procedure primarily consists of an actuarial cost method, an asset valuation method, and an amortization method as described below. This contribution allocation procedure, combined with reasonable assumptions, produces a Reasonable Actuarially Determined Contribution as defined in Actuarial Standard of Practice No. 4. The contribution allocation procedure was selected to balance benefit security, intergenerational equity, and the stability of actuarially determined contributions. The selection also considered the demographics of plan members, the funding goals and objectives of the Board, and the need to accumulate assets to make benefit payments when due. There were no changes to the contribution allocation procedures from the prior valuation.

Actuarial Cost and Amortization Method

The Entry Age Normal Actuarial Cost Method is used. Under this method, the Plan's Actuarial Liability (AL) is determined as the Present Value of Future Benefits (PVFB) less the Present Value of Future Normal Costs (PVFNC). Since all of the Plan's members are retired, the AL and the PVFB are the same.

The excess of the AL over the Actuarial Value of Assets (AVA) is the Unfunded Actuarial Liability (UAL). In accordance with the Plan's funding agreement with the City of Oakland, the UAL must be amortized by July 1, 2026, with contributions resuming in the 2017-2018 fiscal year. The projected fiscal year 2024-2025 contribution has been calculated using level percent of pay amortization, based on total projected City payroll for all Safety employees.

Actuarial Value of Plan Assets

In determining the recommended employer contribution to the PFRS, we use a smoothed Actuarial Value of Assets. The asset smoothing method dampens the volatility in asset values that could occur because of the fluctuations in market conditions. Use of an asset smoothing method is consistent with the long-term nature of the actuarial valuation process. Assets are assumed to be used exclusively for the provision of retirement benefits and expenses.

The Actuarial Value of Assets is equal to 100% of the *expected Actuarial Value of Assets* plus 20% of the difference between the current Market Value of Assets and the expected Actuarial Value of Assets. In no event will the Actuarial Value of Assets ever be less than 90% of the Market Value of Assets or greater than 110% of the Market Value of Assets. The expected Actuarial Value of Assets is equal to the prior year's Actuarial Value of Assets increased with actual contributions made, decreased with actual disbursements made, all items (prior assets, contributions, and disbursements) further adjusted with expected investment returns for the year.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions

1. Rate of Return

The expected annual rate of return, net of investment expenses, on all Plan assets is 5.0%.

2. Inflation

The assumed rate of general inflation is 2.75% (entire US) and local inflation is 2.85% (Bay Area). The general inflation rate is used in the determination of the investment return assumptions. The local inflation rate is used in the determination of the growth in expenses and salaries (which determine the COLA increases).

3. Administrative Expenses

Administrative expenses for the Fiscal Year Ending June 30, 2024 are assumed to be \$1,790,347, growing at 2.85% per year.

4. Cost-of-Living Adjustments and Long-Term Salary Increases

Cost-of-living adjustments are based on salary increases for a retiree’s rank at retirement.

The long-term rate of salary increase is assumed to be 3.25% (2.85% inflation plus 0.4% productivity). This rate is used to project cost-of-living increases after the expiration of the current contracts, as well as representing the expected level of overall Safety payroll growth used to calculate the unfunded liability amortization payment. The following schedule shows salary increases based on the current Police and Fire contracts that expire on June 30, 2026. All increases shown after that date are assumptions.

Post-Retirement Benefit Increases (Based on Salary Increases for Rank at Retirement)		
Date of Increase	Police	Fire
July 1, 2023	3.50%	3.50%
July 1, 2024	3.00%	3.00%
July 1, 2025	3.00%	3.00%
Annual Increases		
Starting	3.25%	3.25%
July 1, 2026		

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

5. Rates of Termination

None.

6. Rates of Disability

None.

7. Rates of Retirement

None.

8. Rates of Mortality for Healthy Lives

Mortality rates for healthy annuitants are based on the sex distinct 2021 CalPERS Healthy Annuitant Mortality Table, with generational mortality improvements projected from 2017 using Projection Scale MP-2021.

9. Rates of Mortality for Disabled Retirees

Mortality rates for Safety disabled annuitants are based on the sex distinct 2021 CalPERS Industrially Disabled Mortality Table, with generational mortality improvements projected from 2017 using Projection of Scale MP-2021.

10. Mortality Improvement

The mortality tables are projected to improve with MP-2021 generational mortality improvement tables, projected from a base year of 2017 (the mid-point of the CalPERS mortality tables from their 2021 study).

11. Survivor Continuance

All retirees with a Benefit Form of “J&S” in the raw data are assumed to receive a 66-2/3% continuance.

12. Changes in Assumptions Since the Last Valuation

The expected annual rate of return was updated from a select and ultimate discount rate (6.0% per year until 2027, then trending down to an annual return of 3.25% over 10 years) to a single discount rate of 5.0%.

The mortality tables were updated from CalPERS tables from the 2012-2015 experience study, to CalPERS tables from the 2021 experience study and the mortality improvement scale was updated from MP-2017 to MP-2021 due to an experience study.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

1. Plan Year

July 1 to June 30.

2. Membership

The Plan has been closed to new members since June 30, 1976.

3. Salary

Retirement allowances are based on the pensionable compensation attached to the average rank held during the three years immediately preceding retirement.

4. Employee Contributions

There are no active employees in the Plan, and thus no employee contributions.

5. Service Retirement

Eligibility

25 years of service, or 20 years of service and age 55, or age 65. A reduced early retirement is available with 20 years of service.

Benefit Amount

50% of Salary plus 1.67% for each additional year of service beyond that required for service retirement eligibility, to a maximum of 10 years. For retirements with less than 20 years of service, benefits are pro-rated.

6. Duty-Related Disability Retirement

Equivalent to service retirement benefit if 25 or more years of service.

7. Non-Duty Related Disability Retirement

Equivalent to service retirement benefit if age 55 is attained.

8. Post-Retirement Death Benefit

For retirees without a spouse at death, a \$1,000 lump sum is paid to designated beneficiary.

9. Cost-of-Living Adjustments

Benefit increases are based on increases in salary for rank at retirement (see above definition of Salary).

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2023**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

10. Benefit Forms

Benefit is paid for the lifetime of the member. For deaths following a service retirement or non-duty disability, a 66-2/3% continuance is paid for the lifetime of the spouse. If the member retired under a duty-related disability, a continuance of 100% is paid.

11. Changes in Plan Provisions Since the Last Valuation

None.

APPENDIX D – GLOSSARY

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs such as mortality, withdrawal, disability, retirement, changes in compensation, and rates of investment return.

2. Actuarial Cost Method

A procedure for determining the actuarial present value of pension plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a normal cost and an Actuarial Liability.

3. Actuarial Gain (Loss)

The difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

4. Actuarial Liability

The portion of the actuarial present value of projected benefits that will not be paid by future normal costs. It represents the value of the past normal costs with interest to the valuation date.

5. Actuarial Present Value (Present Value)

The value as of a given date of a future amount or series of payments. The actuarial present value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made.

6. Actuarial Valuation

The determination, as of a specified date, of the normal cost, Actuarial Liability, Actuarial Value of Assets, and related actuarial present values for a pension plan.

7. Actuarial Value of Assets

The value of cash, investments, and other property belonging to a pension plan as used by the actuary for the purpose of an actuarial valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values.

8. Actuarially Equivalent

Of equal actuarial present value, determined as of a given date, with each value based on the same set of actuarial assumptions.

APPENDIX D – GLOSSARY

9. Amortization Payment

The portion of the pension plan contribution that is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Entry Age Normal Actuarial Cost Method

A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages.

11. Funded Ratio

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities.

12. Normal Cost

That portion of the actuarial present value of pension plan benefits and expenses that is allocated to a valuation year by the actuarial cost method.

13. Projected Benefits

Those pension plan benefit amounts which are expected to be paid in the future under a particular set of actuarial assumptions, taking into account such items as increases in future compensation and service credits.

14. Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Actuarial Value of Assets.



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