

ATTACHMENT B:

**Oakland Police and Fire System Actuarial
Valuation Report**



Oakland Police and Fire Retirement System

Actuarial Valuation Report as of July 1, 2022

Produced by Cheiron

December 2022

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December 6, 2022

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, 2022. 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 assumptions used in this report were adopted by the Board of Administration with our input at the February 28, 2018 Board meeting based on recommendations from our experience study covering plan experience for the period from July 1, 2014 through June 30, 2017. 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 projections in this valuation report were developed using P-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. P-scan uses standard roll-forward techniques. Because P-scan does not automatically capture how changes in one variable affect all other variables, some scenarios may not be consistent.

Stochastic projections in this valuation report were developed using R-scan, our proprietary tool for assessing the probability of different outcomes based on a range of potential investment

returns. 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.

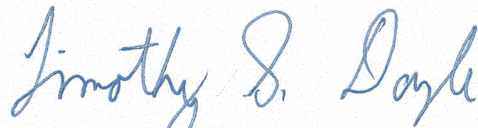
Future actuarial measurements may differ significantly from the current measurements due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable 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, ASA, EA, FCA, MAAA
Consulting Actuary



Timothy S. Doyle, ASA, EA, MAAA
Associate Actuary

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2022**

FOREWORD

Cheiron has performed the actuarial valuation of the Oakland Police and Fire Retirement System (PFRS, the Plan) as of July 1, 2022. 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.

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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 2023-2024, 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 2023-2024.

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. There have been no changes to the actuarial assumptions or methods since the prior valuation, with the exception that we have modified the percentage of disabled deaths assumed to be duty related and the associated survivor benefit percentage.

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SECTION I – EXECUTIVE SUMMARY

B. Key Findings of this Valuation

The key results of the July 1, 2022 actuarial valuation are as follows:

- The actuarially determined employer contribution amount for Fiscal Year 2023-2024 is \$40.8 million, based on projecting the Actuarial Liabilities and the Actuarial Value of Assets to the end of the 2022-2023 Fiscal Year. This represents an increase of \$10.0 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, 2024.
- During the year ended June 30, 2022, the return on Plan assets was -10.56% on a market value basis net of investment expenses, as compared to the 6.00% assumption for the 2021-2022 Plan year. This resulted in a market value loss on investments of \$75.2 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 4.70%, for an actuarial asset loss of \$5.3 million.
- The Plan experienced a gain on the Actuarial Liability of \$1.8 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 \$3.5 million.
- New Memorandums of Understanding (MOUs) went into effect for both Fire and Police members since the previous valuation, changing the retirees' Cost-of-Living Adjustments (COLAs). This change in COLAs increased the Fire Actuarial Liability by \$6.8 million since the scheduled increases under the new MOUs were higher than the amounts originally assumed, in aggregate, while the Police Actuarial Liability decreased by \$1.4 million due to the new MOUs increasing benefits less than originally assumed.
- The assumption that 30% of all disabled retiree deaths were duty-related was removed. This change decreased the Actuarial Liability by \$3.9 million.
- The Plan's smoothed funded ratio, the ratio of Actuarial Value of Assets over Actuarial Liability, increased from 72.2% last year to 76.5% as of June 30, 2022.
- The Plan's funded ratio decreased from 80.2% to 72.6% 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 \$159.3 million to \$130.2 million as of July 1, 2022.

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- Overall participant membership decreased compared to last year. 29 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.
- 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 2023-2024 would be \$47.1 million. The contribution is larger than that determined using the projected AVA, because the current market value reflects the full amount of prior investment losses, while under the AVA projection, a portion of those losses are deferred until years after FY 2023-2024.

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, 2021	July 1, 2022	% Change
<u>Participant Counts</u>			
Active Participants	0	0	
Participants Receiving a Benefit	723	686	-5.1%
Total	723	686	-5.1%
Total Annual Benefits	\$ 78,806	\$ 81,463	3.4%
<u>Assets and Liabilities</u>			
Actuarial Liability (AL)	\$ 571,942	\$ 552,966	-3.3%
Actuarial Value of Assets (AVA)	412,680	422,762	2.4%
Unfunded Actuarial Liability (UAL)	\$ 159,262	\$ 130,204	-18.2%
Funded Ratio (AVA)	72.2%	76.5%	4.3%
Funded Ratio (MVA)	80.2%	72.6%	-7.6%
<u>Contributions</u>			
Employer Contribution (FY2022-23)	\$ 32,712	N/A	
Employer Contribution (FY2023-24)	\$ 30,803	\$ 40,763	32.3%

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SECTION I – EXECUTIVE SUMMARY

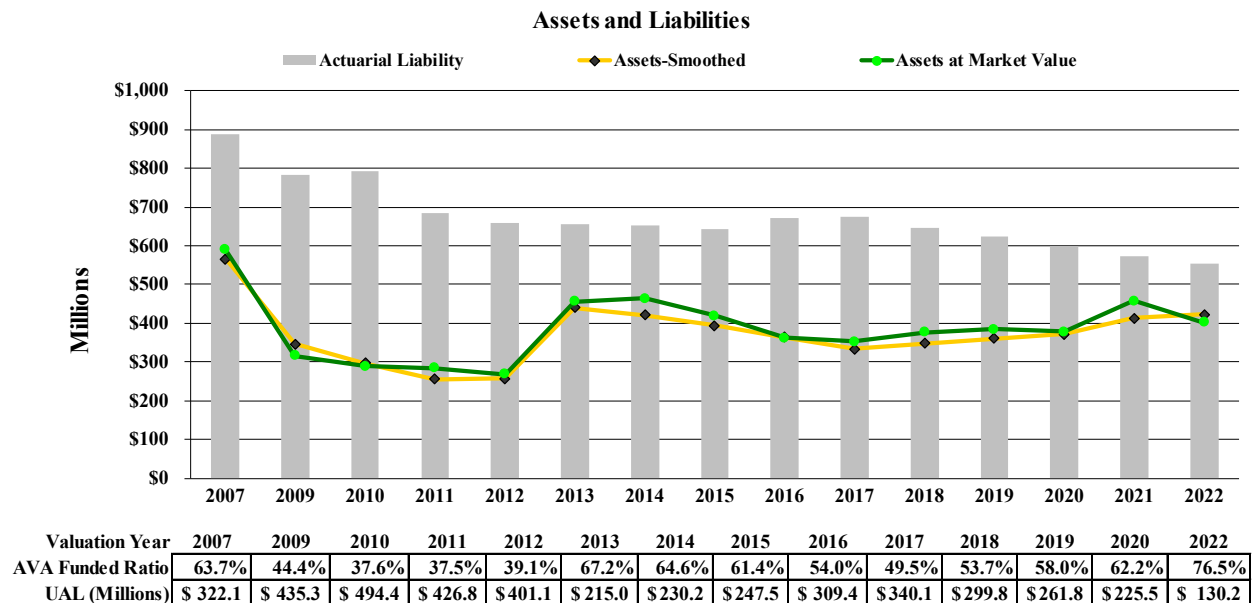
C. Historical Trends

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 declined from 63.7% in 2007 to 37.5% in 2011 due to negative market returns and no contributions being made in that period (\$417 million in proceeds from a POB were deposited in 1997 that acted as prepayments for 15 years of contributions). 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 76.5% over the past five years due to recommencement of contributions, the FYE 2021 asset gain, and to a lesser extent other asset and liability gains and assumption changes.

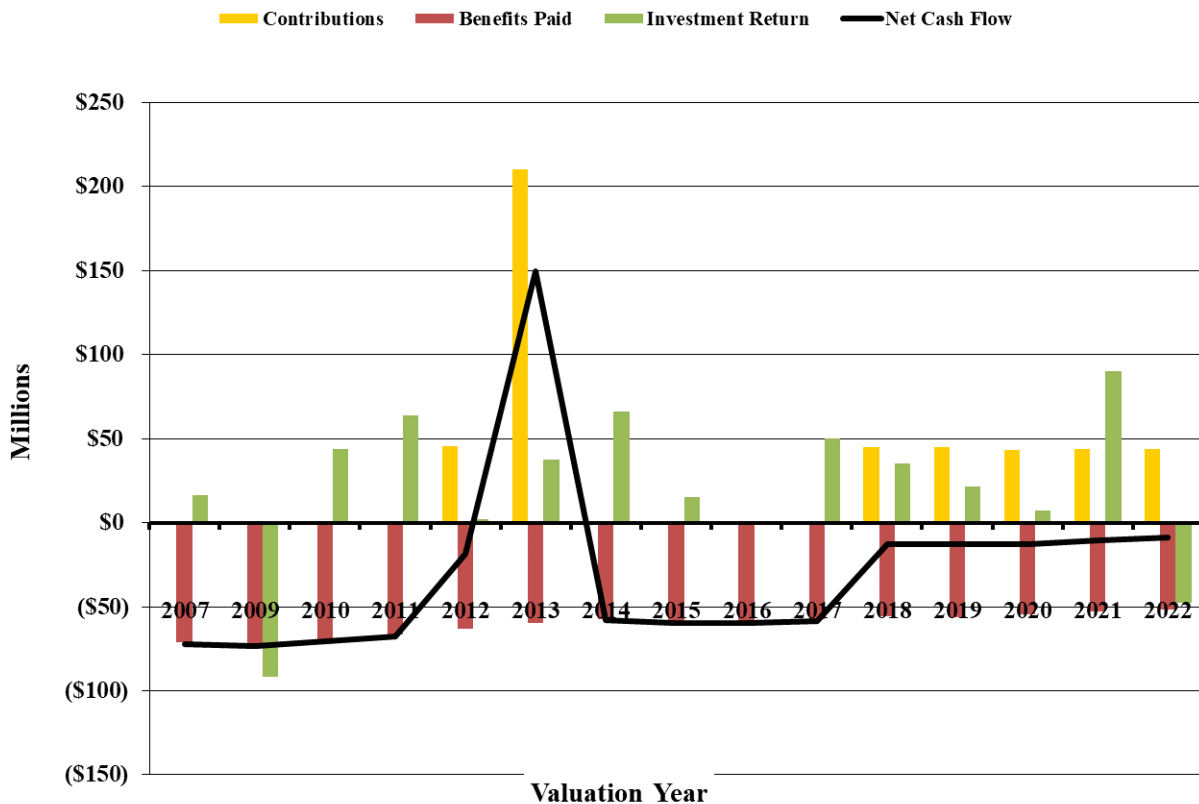


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SECTION I – EXECUTIVE SUMMARY

Cash Flows

The chart below shows the Plan’s 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 14 of the last 15 fiscal years, primarily due to the lack of contributions except in 2013 and in the most recent four years. Even with the recommencing of contributions under the Plan’s funding policy, benefit payments exceeded contributions for the prior four years, with a negative cash flow rate of around 2-3% of plan assets per year.

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.

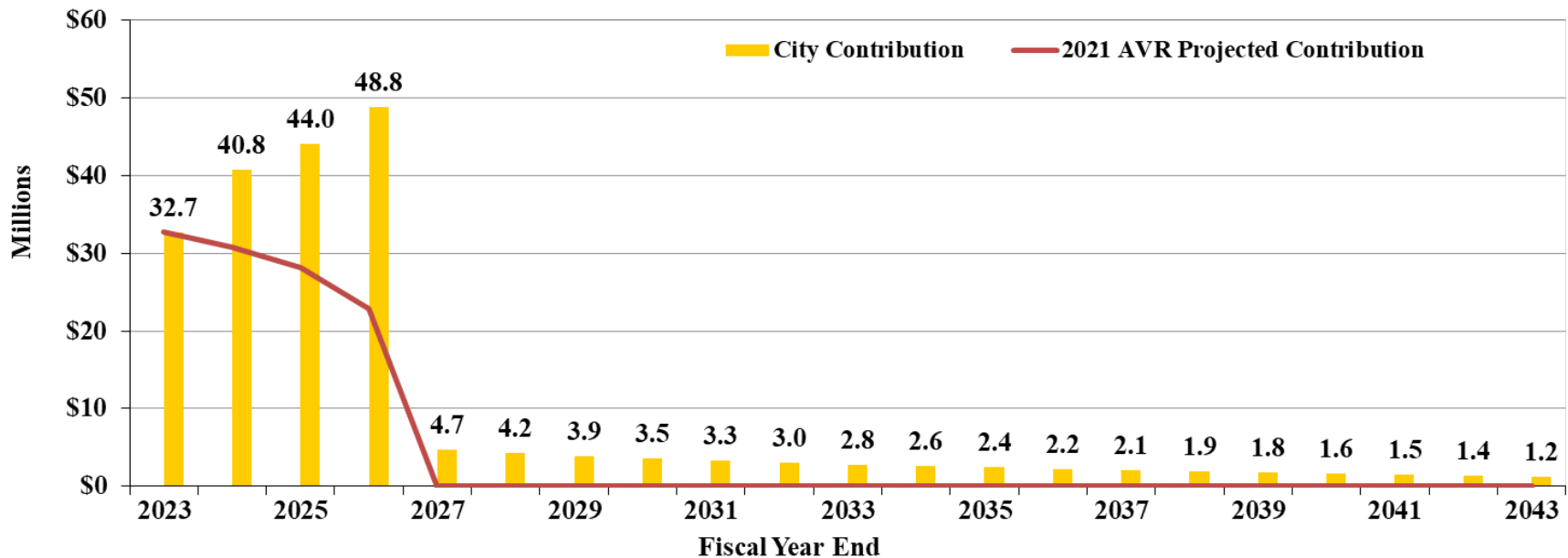
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D. Future Expected Financial Trends

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, 2022 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 (6.0% per year until 2027, then trending down to an annual return of 3.25% over 10 years).

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 increased from \$32.7 million in fiscal year 2023 to \$40.8 million in fiscal year 2024, and then is expected to increase by about \$3 million next year and by almost \$5 million the year after as the current unfunded liability is fully amortized and recent asset losses are recognized. This assumes that the annual payments by the City will equal the administrative expenses, plus

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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.

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 final years of 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 \$50 million in the next few years. 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.

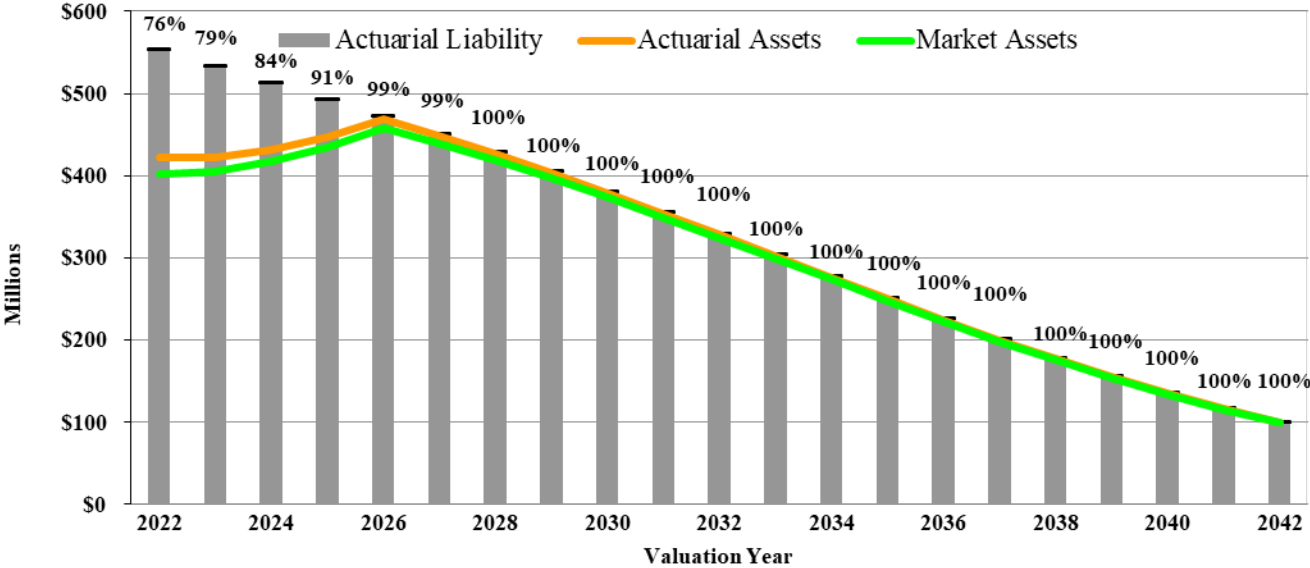
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SECTION I – EXECUTIVE SUMMARY

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.



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 10 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 a 10-year history of changes in the UAL by source.

Table II-1 UAL Change by Source (\$ in Thousands) Contributions						
FYE	MOU Changes	Assumption Changes	vs. Tread Water	Investments	Liability Experience	Total UAL Change
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)
Total	\$ 37,771	\$ 49,402	\$ (260,983)	\$ (64,652)	\$ (32,392)	\$ (270,854)

The UAL was reduced by approximately \$270.9 million over the last ten years. Contributions in excess of the “tread water” level (i.e., interest on the UAL plus administrative expenses) reduced the UAL by \$261.0 million, liability experience reduced the UAL by \$32.4 million, and investment returns decreased the UAL by \$64.7 million. Meanwhile changes to MOUs increased the UAL by \$37.8 million and assumption changes increased the UAL by \$49.4 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.

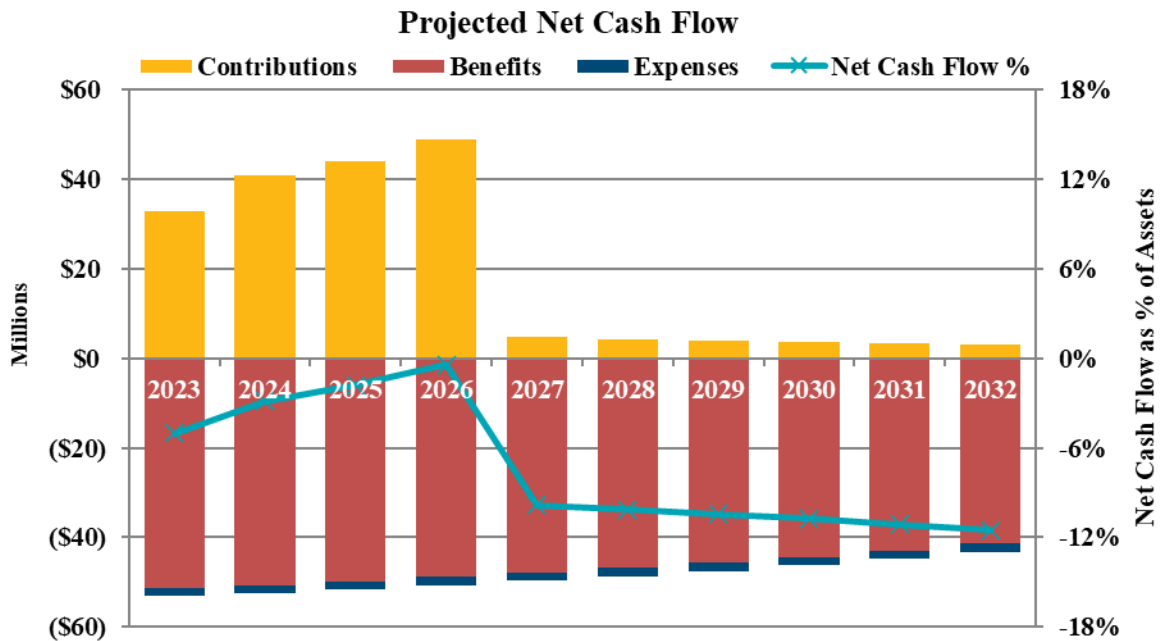
Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic – the larger the plan is compared to the contribution or revenue base that supports it; the more sensitive the plan will be to risk. Given that the Plan has been closed to new entrants since 1976 with no remaining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

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

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.

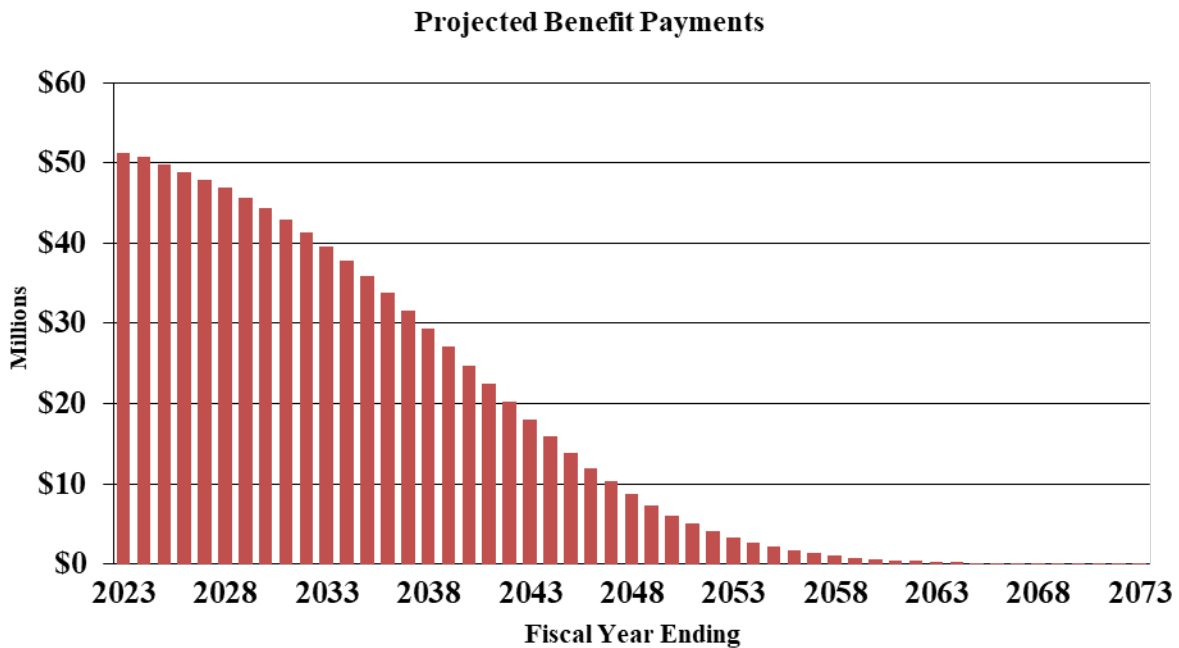
The other change of note is the sensitivity to short-term investment returns. Investment losses in the short term are compounded by the net withdrawal from the plan leaving a smaller asset base to try to recover from the investment losses. On the other hand, large investment gains in the short term also tend to have a longer beneficial effect as any future losses are relative to a smaller liability base due to the negative cash flow.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

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 declining investment return assumption adopted by the Board implies an expectation the Plan will pursue a strategy of de-risking the Plan to minimize the impact of these scenarios, potentially by reducing the risk in its investment portfolio, immunizing investments, and/or purchasing annuities to settle the remaining obligation.

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.

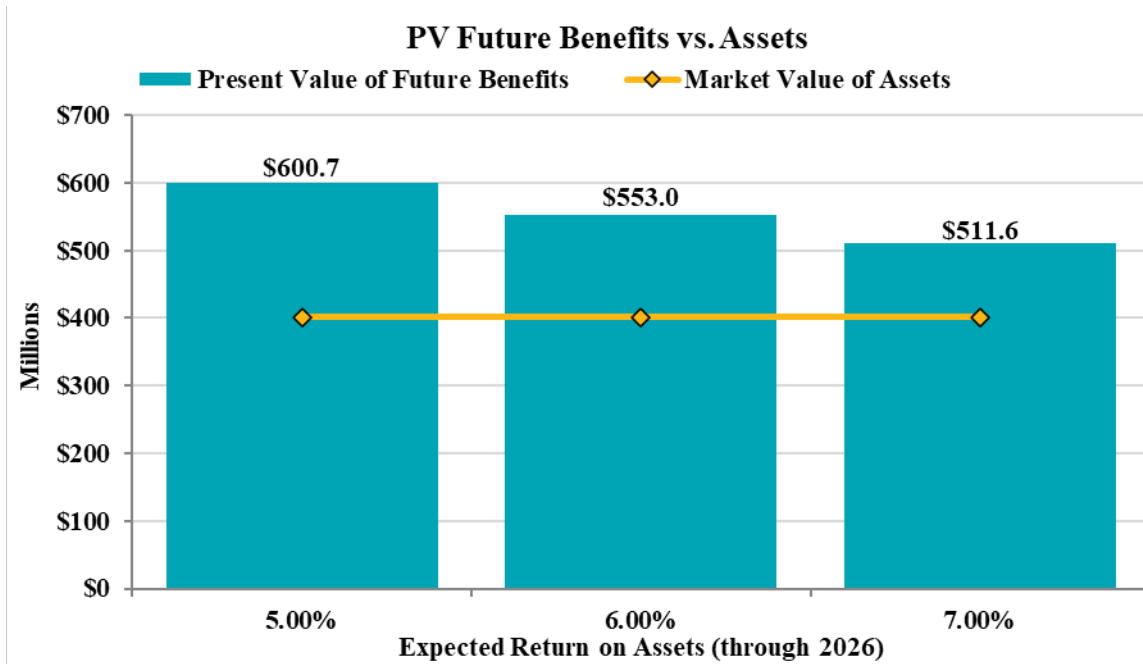


Sensitivity to Investment Returns

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 – starting at 6.00% through 2026 and trending down to 3.25% over the following 10 years – and at investment returns 100 basis points above and below the expected rates of return for all years. The present value of future benefits is shown as a teal bar and the Market Value of Assets is shown by the gold line.

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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS



If actual investment returns meet the expected returns annually, the Plan would need approximately \$553 million in assets today to pay all projected benefits compared to current assets of \$401 million. If investment returns are 100 basis points lower each year, the Plan would need approximately \$601 million in assets today, and if investment returns are 100 basis points higher, the Plan would need approximately \$512 million in assets today.

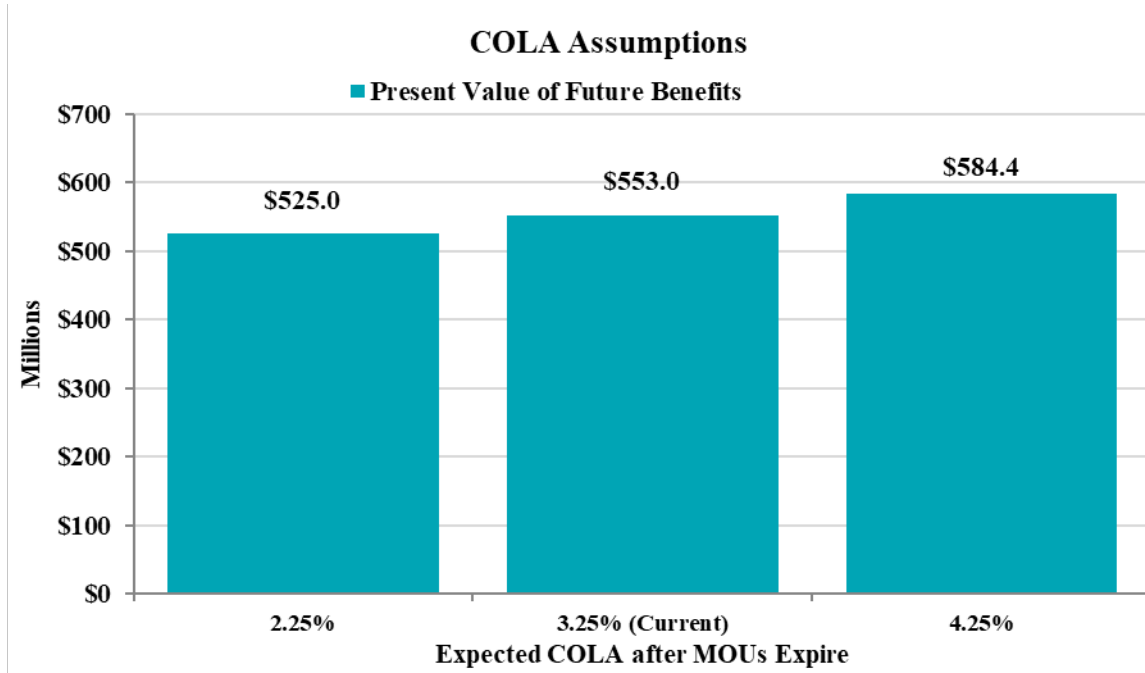
Sensitivity to COLA Changes

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



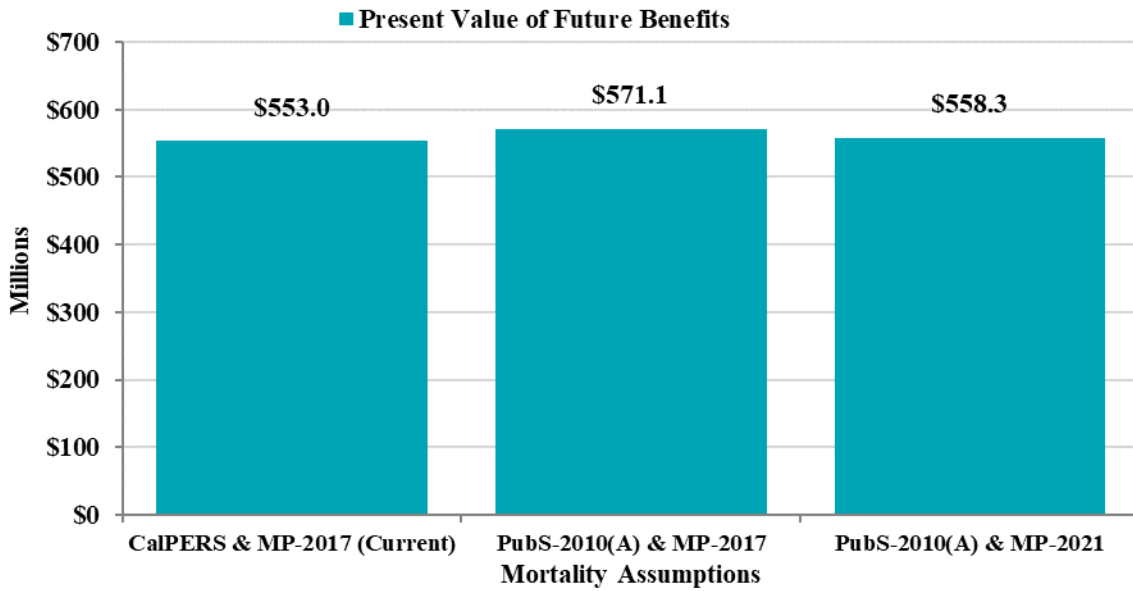
Sensitivity to Mortality Assumption Changes

The following chart on the next page shows the sensitivity of the Plan to longevity / mortality experience. In the first bar, we have shown the present value of benefits using the Plan’s current mortality assumptions (i.e., using the 2017 CalPERS mortality assumptions, with projections for generational improvements using the Society of Actuary’s MP-2017 improvement scales). In the second bar, we have shown the impact on the present value of benefits if actual longevity experience follows an alternative set of assumptions, reflecting more recent tables that have been developed using the experience of Public Safety employees of U.S. public employers. In the third bar, we have shown an additional alternative, using the Public Sector table described above, but also reflecting a slower rate of future improvements in longevity, as reflected by the Society of Actuary’s latest improvement scale (MP-2021). As always, actual experience will drive costs, but this exhibit provides an example of the level of sensitivity of the Plan’s liabilities to recent changes in outlooks on mortality.

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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Mortality and Mortality Improvement Assumptions



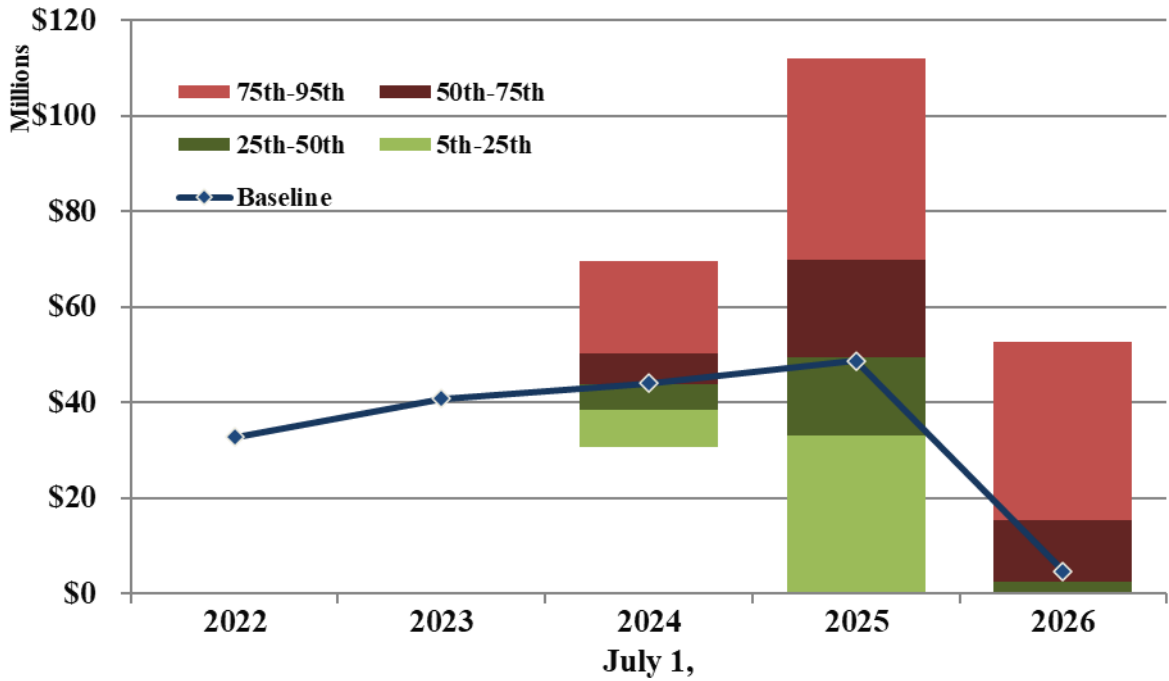
Stochastic Projections

The stochastic projections of contributions through the full funded date (June 30, 2026) in the chart on the following page shows a very wide range in future ADC's. This range is driven both by the volatility of investment returns (assumed to be 10.2% in these projections, based on previous information provided by Meketa) and by the short amortization period used to calculate the ADC. We note that if the Plan is required to remain fully funded after 2026, the contributions required will also vary widely.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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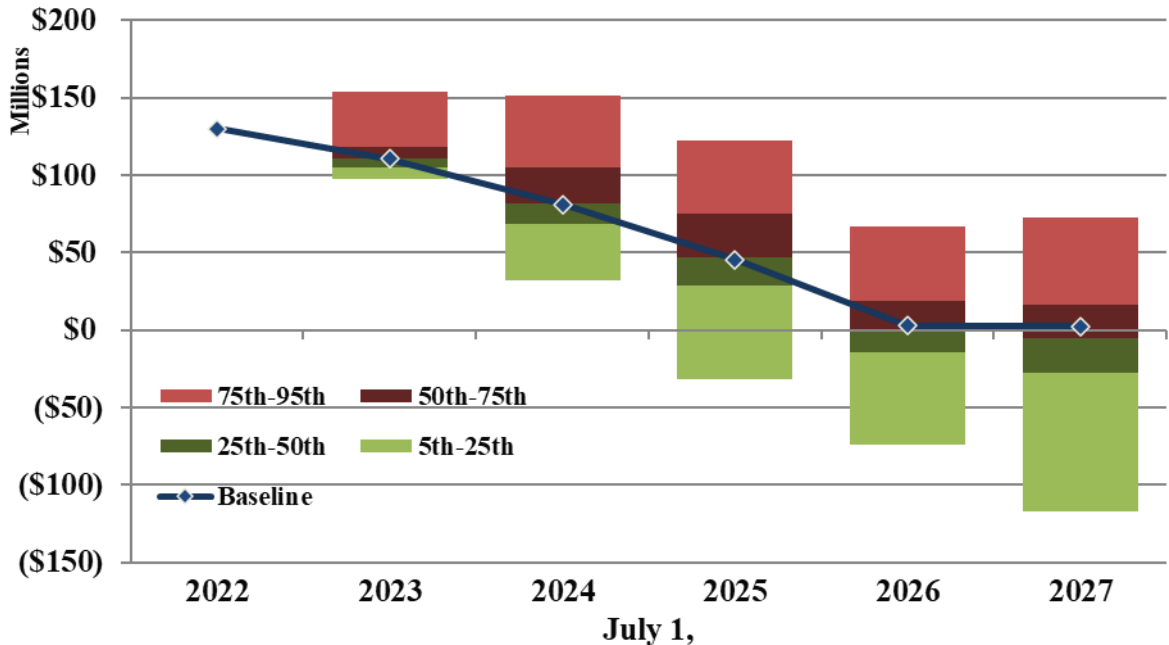
SECTION II – IDENTIFICATION AND ASSESSMENT OF RISKS

Stochastic Projection of Actuarially Determined Contribution (ADC)



The chart below shows the projection of the UAL through the full funding date. 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.

Stochastic Projection of UAL/(Surplus)



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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.

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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, 2021 and June 30, 2022,
- 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, 2021 and June 30, 2022.

Table III-1 Statement of Assets at Market Value June 30, (in thousands)			
	2021	2022	
Cash and Cash Equivalents	\$ 6,324	\$ 7,495	
Receivables	2,462	6,219	
Investments, at Fair Value	503,781	448,338	
Total Assets	\$ 512,567	\$ 462,051	
Liabilities	54,034	60,564	
Market Value of Assets	\$ 458,533	\$ 401,487	

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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SECTION III – ASSETS

Table III-1 Statement of Assets at Market Value June 30, (in thousands)			
	2021		2022
Cash and Cash Equivalents:	\$ 6,324	\$	7,495
Receivables:			
Interest Receivable	\$ 759	\$	813
Dividends Receivable	272		280
Investments Receivable	1,221		4,912
Retired Members and Beneficiaries	104		103
Miscellaneous	107		111
Total Receivables	<u>2,462</u>		<u>6,219</u>
Investments, at Fair Value:			
Short-term Investments	7,787		7,474
Bonds	134,381		130,127
Domestic Equities and Mutual Funds	210,506		158,145
International Equities and Mutual Funds	58,540		47,911
Alternative Investments	44,016		56,335
Securities Lending Collateral	48,551		48,346
Total Investments	<u>503,781</u>		<u>448,338</u>
Total Assets	512,567		462,051
Liabilities:			
Accounts Payable	1		3
Benefits Payable	4,295		4,184
Investments Payable	423		7,701
Accrued Investment Management Fees	361		301
Securities Lending Liabilities	48,954		48,376
Total Liabilities	<u>54,034</u>		<u>60,564</u>
Market Value of Assets	\$ 458,533	\$	401,487

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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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 2021 and 2022.

Table III-2 Changes in Market Values June 30, (in thousands)		
	<u>2021</u>	<u>2022</u>
Contributions		
Contributions of Plan Members	\$ 0	\$ 0
Contributions from the City	<u>43,648</u>	<u>43,820</u>
Total Contributions	<u>43,648</u>	<u>43,820</u>
Investment Income		
Miscellaneous Income	1	0
Investment Income	<u>90,191</u>	<u>(47,955)</u>
Total Investment Income	<u>90,192</u>	<u>(47,955)</u>
Disbursements		
Benefit Payments	(52,697)	(51,450)
Administrative Expenses	<u>(1,585)</u>	<u>(1,461)</u>
Total Disbursements	<u>(54,282)</u>	<u>(52,911)</u>
Net increase (Decrease)	79,558	(57,045)
Net Assets Held in Trust for Benefits:		
Beginning of Year	<u>378,975</u>	<u>458,533</u>
End of Year	\$ <u><u>458,533</u></u>	\$ <u><u>401,487</u></u>
Approximate Return	24.14%	-10.56%

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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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 2021-2022) 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, 2021	\$ 412,680
b. Total Contributions and Misc Income	43,820
c. Administrative Expense	(1,461)
d. Benefit Payments	(51,450)
e. Expected Investment Earnings	<u>24,492</u>
f. Expected Actuarial Value of Assets - July 1, 2022 [1a + 1b + 1c + 1d + 1e]	\$ 428,081
2. Calculate Final Actuarial Value of Assets	
a. Value of Market Value of Assets - July 1, 2022	\$ 401,487
b. Excess of MVA over Expected AVA [2a - 1f]	(26,594)
c. Preliminary AVA [1f + 0.2 * 2b]	422,762
d. 90% of MVA [90% * 2a]	361,339
e. 110% of MVA [110% * 2a]	441,636
3. Final Actuarial Value of Assets [2c, not less than 2d or greater than 2e]	\$ 422,762

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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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, 2021 value	\$ 458,533	\$ 412,680
Contributions of Plan Members	0	0
Contributions from the City	43,820	43,820
Benefit Payments	(51,450)	(51,450)
Administrative Expenses	(1,461)	(1,461)
Expected Investment Earnings (6.00%)	27,243	24,492
Expected Value June 30, 2022	\$ 476,685	\$ 428,081
Investment Gain / (Loss)	(75,198)	(5,319)
July 1, 2022 value	401,487	422,762
Return	-10.56%	4.70%

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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SECTION IV – LIABILITIES

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

- **Disclosure** of Plan liabilities on July 1, 2021 and July 1, 2022
- 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, 2022**

SECTION IV – LIABILITIES

Table IV-1		
Liabilities/Net (Surplus)/Unfunded		
(in thousands)		
	July 1, 2021	July 1, 2022
<u>Present Value of Future Benefits</u>		
Active Participant Benefits	\$ 0	\$ 0
Retiree and Inactive Benefits	<u>571,942</u>	<u>552,966</u>
Present Value of Future Benefits (PVB)	\$ 571,942	\$ 552,966
<u>Actuarial Liability</u>		
Present Value of Future Benefits (PVB)	\$ 571,942	\$ 552,966
Present Value of Future Normal Costs (PVFNC)	<u>0</u>	<u>0</u>
Actuarial Liability (AL = PVB – PVFNC)	\$ 571,942	\$ 552,966
Actuarial Value of Assets (AVA)	<u>412,680</u>	<u>422,762</u>
Net (Surplus)/Unfunded (AL – AVA)	\$ 159,262	\$ 130,204

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2022**

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, 2021	\$ 571,942
Actuarial Liability at July 1, 2022	\$ 552,966
Liability Increase (Decrease)	\$ (18,976)
Change due to:	
Plan Design Changes (MOU)	\$ 5,389
Assumption Change	(3,926)
Accrual of Benefits	0
Actual Benefit Payments	(51,450)
Interest	32,796
Data Corrections	0
Actuarial Liability (Gain)/Loss	\$ (1,785)

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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SECTION IV – LIABILITIES

Table IV-3			
Liabilities by Group as of July 1, 2022			
(in thousands)			
	Police	Fire	Total
Actuarial Accrued Liability			
Active	\$ 0	\$ 0	\$ 0
Service Retirees	207,816	68,097	275,913
Disabled Retirees	75,297	74,886	150,183
Beneficiaries	<u>72,859</u>	<u>54,011</u>	<u>126,870</u>
Total Accrued Liability	\$ 355,972	\$ 196,994	\$ 552,966

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2022**

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)	\$	159,262
2. Employer Normal Cost at Start of Year		0
3. Interest on 1. and 2. to End of Year		9,556
4. Contributions and Miscellaneous Income for Prior Year		43,820
5. Administrative Expenses		(1,461)
6. Interest on 4. and 5. to End of Year		1,252
7. Change in Unfunded Actuarial Liability Due to Changes in Assumptions		(3,926)
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		5,389
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.]	\$	126,669
12. Actual Unfunded Actuarial Liability at End of Year (not less than zero)		130,204
13. Unfunded Actuarial Liability Gain / (Loss) [11. – 12.]	\$	(3,535)

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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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 are 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 2023-2024 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, 2023.

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 gains 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 2022-2023 Fiscal Year.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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SECTION V – CONTRIBUTIONS

**Table V-1
Development of Projected 2023-2024 Employer Contribution Amount
(in thousands)**

	Actuarial Value of Assets	Market Value of Assets
1. Value of Assets at June 30, 2022:	\$ 422,762	\$ 401,487
a. Expected Contributions and Misc Income	\$ 32,712	\$ 32,712
b. Expected Administrative Expense	\$ (1,741)	\$ (1,741)
c. Expected Benefit Payments	\$ (51,056)	\$ (51,056)
d. Expected Investment Earnings	<u>\$ 24,772</u>	<u>\$ 23,495</u>
2. Expected Value of Assets at June 30, 2023:	\$ 427,450	\$ 404,898
a. Excess of Expected MVA over Expected AVA	\$ (22,551)	
b. Preliminary AVA [Expected AVA + 20% * 2a]	\$ 422,939	
c. 90% of Expected MVA	\$ 364,409	
d. 110% of Expected MVA	\$ 445,388	
3. Final Expected AVA [2b, not less than 2c or greater than 2d]	\$ 422,939	
4. Entry Age Liability at June 30, 2022	\$ 552,966	\$ 552,966
5. Expected Benefit Payments	\$ (51,056)	\$ (51,056)
6. Expected Interest	<u>\$ 31,669</u>	<u>\$ 31,669</u>
7. Expected Entry Age Liability at June 30, 2023	\$ 533,579	\$ 533,579
8. Projected Unfunded Actuarial Liability: (7) - (3)	\$ 110,639	\$ 128,680
9. Funded Ratio: (3) / (7)	79.3%	75.9%
10. Unfunded Actuarial Liability Amortization at Middle of Year as a Level Percentage of Payroll (3 Years Remaining) as of June 30, 2023	\$ 38,972	\$ 45,327
11. Expected Administrative Expenses for Fiscal 2023-2024	<u>\$ 1,790</u>	<u>\$ 1,790</u>
12. Total Contribution: (10) + (11)	\$ 40,763	\$ 47,118

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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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)	
2023	422.0	\$ 31,316	264.0	\$ 19,740	686.0	\$ 51,056	
2024	407.8	\$ 31,170	251.9	\$ 19,367	659.8	\$ 50,537	
2025	393.7	\$ 30,824	239.6	\$ 18,851	633.3	\$ 49,675	
2026	379.5	\$ 30,421	227.2	\$ 18,293	606.7	\$ 48,714	
2027	365.1	\$ 30,027	214.9	\$ 17,740	580.0	\$ 47,766	
2028	350.5	\$ 29,557	202.7	\$ 17,148	553.1	\$ 46,705	
2029	335.6	\$ 29,005	190.6	\$ 16,522	526.2	\$ 45,527	
2030	320.3	\$ 28,363	178.7	\$ 15,862	499.0	\$ 44,225	
2031	304.7	\$ 27,625	167.0	\$ 15,170	471.7	\$ 42,795	
2032	288.6	\$ 26,785	155.5	\$ 14,446	444.1	\$ 41,231	
2033	272.1	\$ 25,842	144.2	\$ 13,692	416.4	\$ 39,534	
2034	255.3	\$ 24,795	133.1	\$ 12,911	388.4	\$ 37,706	
2035	238.1	\$ 23,649	122.3	\$ 12,105	360.4	\$ 35,754	
2036	220.8	\$ 22,411	111.7	\$ 11,279	332.4	\$ 33,690	
2037	203.3	\$ 21,089	101.4	\$ 10,440	304.7	\$ 31,530	
2038	185.9	\$ 19,699	91.4	\$ 9,595	277.2	\$ 29,295	
2039	168.6	\$ 18,256	81.8	\$ 8,753	250.4	\$ 27,008	
2040	151.8	\$ 16,778	72.6	\$ 7,921	224.4	\$ 24,699	
2041	135.4	\$ 15,285	63.9	\$ 7,110	199.4	\$ 22,395	
2042	119.7	\$ 13,801	55.8	\$ 6,328	175.6	\$ 20,128	
2043	104.9	\$ 12,344	48.3	\$ 5,583	153.2	\$ 17,927	
2044	91.0	\$ 10,935	41.5	\$ 4,884	132.5	\$ 15,819	
2045	78.2	\$ 9,591	35.3	\$ 4,234	113.5	\$ 13,825	
2046	66.5	\$ 8,326	29.7	\$ 3,639	96.2	\$ 11,966	
2047	56.0	\$ 7,153	24.8	\$ 3,101	80.8	\$ 10,254	
2048	46.6	\$ 6,081	20.5	\$ 2,620	67.2	\$ 8,701	
2049	38.4	\$ 5,115	16.8	\$ 2,195	55.2	\$ 7,310	
2050	31.3	\$ 4,259	13.7	\$ 1,823	45.0	\$ 6,082	
2051	25.3	\$ 3,509	11.0	\$ 1,503	36.3	\$ 5,013	
2052	20.2	\$ 2,863	8.8	\$ 1,231	29.0	\$ 4,094	

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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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)	
2053	15.9	\$ 2,313	7.0	\$ 1,001	22.9	\$ 3,314	
2054	12.5	\$ 1,850	5.5	\$ 809	18.0	\$ 2,660	
2055	9.7	\$ 1,467	4.3	\$ 650	14.0	\$ 2,117	
2056	7.4	\$ 1,153	3.4	\$ 520	10.8	\$ 1,673	
2057	5.7	\$ 899	2.6	\$ 413	8.3	\$ 1,312	
2058	4.3	\$ 697	2.0	\$ 326	6.3	\$ 1,023	
2059	3.2	\$ 536	1.5	\$ 257	4.7	\$ 793	
2060	2.4	\$ 410	1.2	\$ 201	3.6	\$ 611	
2061	1.8	\$ 312	0.9	\$ 157	2.7	\$ 468	
2062	1.3	\$ 235	0.7	\$ 121	2.0	\$ 356	
2063	1.0	\$ 176	0.5	\$ 92	1.4	\$ 268	
2064	0.7	\$ 130	0.4	\$ 70	1.1	\$ 200	
2065	0.5	\$ 96	0.3	\$ 52	0.8	\$ 148	
2066	0.4	\$ 69	0.2	\$ 38	0.5	\$ 107	
2067	0.2	\$ 49	0.1	\$ 27	0.4	\$ 77	
2068	0.2	\$ 34	0.1	\$ 19	0.3	\$ 53	
2069	0.1	\$ 23	0.1	\$ 13	0.2	\$ 36	
2070	0.1	\$ 14	0.0	\$ 8	0.1	\$ 23	
2071	0.0	\$ 9	0.0	\$ 5	0.1	\$ 14	
2072	0.0	\$ 5	0.0	\$ 3	0.0	\$ 8	
2073	0.0	\$ 2	0.0	\$ 2	0.0	\$ 4	
2074	0.0	\$ 1	0.0	\$ 1	0.0	\$ 2	
2075	0.0	\$ 0	0.0	\$ 0	0.0	\$ 1	
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	

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of

Active Participants	July 1, 2021			July 1, 2022		
	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	220	90	310	209	81	290
Average Age	77.5	81.8	78.7	78.2	82.0	79.2
Average Annual Benefit	\$81,398	\$84,427	\$82,277	\$83,999	\$87,236	\$84,903
Disabled Retirees						
Number	88	92	180	85	86	171
Average Age	76.7	78.0	77.4	77.6	78.5	78.1
Average Annual Benefit	\$77,184	\$78,644	\$77,931	\$80,234	\$82,135	\$81,190
Beneficiaries						
Number	131	102	233	128	97	225
Average Age	80.2	82.7	81.3	80.8	82.9	81.7
Average Annual Benefit	\$55,989	\$58,723	\$57,186	\$58,518	\$62,679	\$60,312
All Inactives						
Number	439	284	723	422	264	686
Average Age	78.1	80.9	79.2	78.8	81.2	79.8
Average Annual Benefit	\$72,971	\$73,322	\$73,109	\$75,512	\$76,552	\$75,912

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, 2022**

APPENDIX A – MEMBERSHIP INFORMATION

Changes in Plan Membership: Police

	Actives	Service Retirees	Disabled Retirees	Beneficiaries	Total
July 1, 2021	0	220	88	131	439
Retired	0	0	0	0	0
Disabled	0	0	0	0	0
Deceased	0	(11)	(3)	(9)	(23)
New Beneficiary	0	0	0	6	6
July 1, 2022	0	209	85	128	422

Changes in Plan Membership: Fire

	Actives	Service Retirees	Disabled Retirees	Beneficiaries	Total
July 1, 2021	0	90	92	102	284
Retired	0	0	0	0	0
Disabled	0	0	0	0	0
Deceased	0	(9)	(6)	(9)	(24)
New Beneficiary	0	0	0	4	4
July 1, 2022	0	81	86	97	264

Changes in Plan Membership: All

	Actives	Service Retirees	Disabled Retirees	Beneficiaries	Total
July 1, 2021	0	310	180	233	723
Retired	0	0	0	0	0
Disabled	0	0	0	0	0
Deceased	0	(20)	(9)	(18)	(47)
New Beneficiary	0	0	0	10	10
July 1, 2022	0	290	171	225	686

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2022**

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	10	\$828,375	0	\$0	10	\$828,375
70-74	47	\$4,199,209	8	\$607,418	55	\$4,806,627
75-79	91	\$7,142,202	34	\$2,985,590	125	\$10,127,793
80-84	43	\$3,604,990	16	\$1,377,508	59	\$4,982,499
85-89	10	\$1,067,084	11	\$1,079,456	21	\$2,146,539
90-94	7	\$610,810	8	\$700,516	15	\$1,311,326
95-99	0	\$0	3	\$248,231	3	\$248,231
100+	1	\$103,088	1	\$67,402	2	\$170,490
Total	209	\$17,555,759	81	\$7,066,121	290	\$24,621,880

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	25	\$2,098,696	24	\$1,834,759	49	\$3,933,455
75-79	40	\$3,046,081	31	\$2,502,282	71	\$5,548,364
80-84	13	\$1,078,059	22	\$1,928,506	35	\$3,006,565
85-89	5	\$397,807	7	\$614,779	12	\$1,012,587
90-94	2	\$199,239	2	\$183,278	4	\$382,517
95-99	0	\$0	0	\$0	0	\$0
100+	0	\$0	0	\$0	0	\$0
Total	85	\$6,819,882	86	\$7,063,605	171	\$13,883,487

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2022**

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	1	\$54,175	0	\$0	1	\$54,175
60-64	2	\$127,560	2	\$155,679	4	\$283,239
65-69	7	\$463,906	7	\$468,590	14	\$932,496
70-74	25	\$1,334,943	13	\$850,382	38	\$2,185,325
75-79	32	\$1,815,652	14	\$861,685	46	\$2,677,337
80-84	24	\$1,369,104	17	\$1,057,484	41	\$2,426,589
85-89	13	\$822,468	22	\$1,327,729	35	\$2,150,197
90-94	13	\$873,190	16	\$977,380	29	\$1,850,570
95-99	9	\$494,129	4	\$257,715	13	\$751,844
100+	2	\$135,171	2	\$123,255	4	\$258,427
Total	128	\$7,490,299	97	\$6,079,900	225	\$13,570,200

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2022**

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the actuarial valuation as of July 1, 2022 are:

Actuarial 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 2023-2024 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, 2022**

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions

The assumptions used in this report reflect the results of an experience study performed by Cheiron covering the period from July 1, 2014 through June 30, 2017 and adopted by the Board. More details on the rationale for the demographic and economic assumptions can be found in the experience analysis presented to the Board on February 28, 2018.

1. Rate of Return

The expected annual rates of return, net of investment expenses, on all Plan assets are shown in the table below. The equivalent single discount rate for these returns using the Plan’s expected projected benefit payments is 5.19%.

Benefit Payment Year	Expected Return
2022-2026	6.000%
2027	5.725%
2028	5.450%
2029	5.175%
2030	4.900%
2031	4.625%
2032	4.350%
2033	4.075%
2034	3.800%
2035	3.525%
2036+	3.250%

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, 2023 are assumed to be \$1,740,736, 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.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2022**

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

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, 2022	3.50%	3.50%
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		

5. Rates of Termination

None.

6. Rates of Disability

None.

7. Rates of Retirement

None.

8. Rates of Mortality for Healthy Lives

CalPERS Healthy Annuitant Table from the 2012-2015 experience study, excluding the 15-year projection using 90% of Scale MP-2016.

9. Rates of Mortality for Disabled Retirees

CalPERS Industrial Disability Mortality Table from the 2012-2015 experience study, excluding the 15-year projection using 90% of Scale MP-2016.

**OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2022**

APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

10. Mortality Improvement

The mortality tables are projected to improve with MP-2017 generational mortality improvement tables, with improvements projected from a base year of 2014 (the mid-point of the CalPERS base tables).

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 assumption that 30% of all disabled retiree deaths are duty-related and the associated survivors would receive a 100% continuance was removed; all future beneficiaries are now assumed to receive a 66-2/3% continuance.

OAKLAND POLICE AND FIRE RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2022

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, 2022**

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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