

Los Angeles City Employees' Retirement System

Risk Assessment

**Based on the Actuarial Valuation and Review of the
Retirement and Health Plans as of June 30, 2023**



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March 13, 2024

Board of Administration
Los Angeles City Employees' Retirement System
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Dear Board Members:

We are pleased to submit this Risk Assessment based on the Actuarial Valuation and Review of the Retirement and Health Plans for the Los Angeles City Employees' Retirement System ("LACERS" or "the System") as of June 30, 2023.

This risk report has been prepared at the request of the Board of Administration to assist in administering the Plans. It includes discussion of the key risks that may have an ongoing influence on the Plans' financial health, as well as various projections of future results under different investment return scenarios together with the assumptions adopted for the June 30, 2023 valuations.

The actuarial calculations in this report were completed under the supervision of Andy Yeung, ASA, MAAA, FCA, Enrolled Actuary and Mehdi Riazi, FSA, MAAA, FCA, Enrolled Actuary.

The actuarial opinions expressed in this report were prepared by Paul Angelo, FSA, MAAA, FCA, Enrolled Actuary, Andy Yeung, ASA, MAAA, FCA, Enrolled Actuary, and Todd Tauzer, FSA, MAAA, FCA, CERA. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Sincerely,

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Senior Vice President and Actuary

Andy Yeung, ASA, MAAA, FCA, EA
Vice President and Actuary

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Section 1: Introduction and Executive Summary

Introduction

The purpose of this report is to assist the Board of Administration, participating employers and members and other stakeholders to better understand and assess the risk profile of the System, as well as the particular risks inherent in using a fixed set of actuarial assumptions in preparing the results in our June 30, 2023 funding valuations for LACERS.

The results included in our June 30, 2023 funding valuation reports for the Retirement and Health Plans (“the Plans”) were prepared based on a specific set of economic and non-economic actuarial assumptions under the premise that future experience of LACERS would be consistent with those assumptions. While those assumptions are generally reviewed every three years (with the assumptions from the last triennial experience study adopted by the Board of Administration for use starting with the June 30, 2023 valuations), there is a risk that emerging results may differ significantly as actual experience is fluid and will not completely track current assumptions.

It is important to note that this risk assessment is based on plan assets as of June 30, 2023. The System’s funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the Plan Year. Moreover, this risk assessment does not include any possible short-term or long-term impacts on mortality of the covered population that may emerge after June 30, 2023 due to COVID-19. While it is impossible to determine the market conditions and other demographic experience of the plan in future valuations, the single year investment return scenario test included within this report provides an illustration of the impact of short-term market fluctuations on the plan. Besides the stochastic projections included in this report, Segal is available to prepare other projections of selected potential outcome scenarios upon request.

Actuarial standard of practice on risk assessment

The Actuarial Standards Board approved the Actuarial Standard of Practice No. 51 (ASOP 51) regarding risk assessment when performing a funding valuation and it was effective with LACERS’ June 30, 2019 actuarial valuation for benefits provided by the Retirement Plan.¹ ASOP 51 requires actuaries to identify and assess risks that “may reasonably be anticipated to significantly affect the plan’s future financial condition.” Examples of key risks listed that are particularly relevant to LACERS are asset/liability mismatch risk, investment risk, and longevity and other demographic risks. ASOP 51 also requires an actuary to consider if there is any ongoing contribution risk to the plan; however, it does not require the actuary to evaluate the ability or willingness of contributing

¹ ASOP 51 does not apply to actuaries performing services related to other post-employment benefits; however, as the same kind of information is useful for the administration of the Health Plan, after discussions with LACERS the System has requested Segal to include information on the Health Plan in this risk report.

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entities to make contributions when due, nor does it require the actuary to assess the likelihood or consequences of future changes in applicable law.

The actuary's initial assessment can be strictly a qualitative discussion about potential adverse experience and the possible effect on future results, but it may also include quantitative numerical demonstrations where informative. The actuary is also encouraged to consider a recommendation as to whether a more detailed risk assessment would be significantly beneficial for the intended user to examine particular financial risks. When making that recommendation, the actuary will consider such factors as the plan's design, risk profile, maturity, size, funded status, asset allocation, cash flow, possible insolvency and current market conditions. This report incorporates a more detailed risk assessment as agreed upon with LACERS.

Plan risk assessment

In *Section 2*, we start by discussing some of the historical factors that have caused changes in LACERS' funded status and employer contribution rates. It is important to understand how the combination of decisions and experience has led to the current financial status of the plan.

We follow this with a discussion of the most significant risk factors going forward. Based on our discussions with LACERS, we have provided a more detailed risk assessment that illustrates the impact on the funded status and employer contribution rates using relevant economic scenario tests. These tests illustrate the effect of future investment returns on the System's portfolio coming in differently from the current 7.00% annual investment return assumption used in the June 30, 2023 valuations. We have also included a projection of future results based on stochastic modeling of future investment returns for 2023/2024 and thereafter. The stochastic modeling is useful for assessing the distribution of future results based on random variations in actual investment returns each year and introduces a relative likelihood to the range of potential outcomes.

ASOP 51 also requires disclosure of plan maturity measures and other historical information that are significant to understanding the risks associated with the Retirement and Health Plans and this information is included at the end of *Section 2*.

Executive summary

Historical funded status and employer contribution rates

The following table provides a summary of financial changes to the Retirement and Health Plans combined over the last 10 valuations. In the June 30, 2014 through June 30, 2023 valuations, the unfunded actuarial accrued liability (UAAL) increased primarily as a result of the strengthening of the actuarial assumptions used in preparing the valuations (\$2.4 billion net increase),

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partially offset by the favorable non-investment experience (\$0.9 billion net decrease) as well as favorable investment experience (\$0.5 billion net decrease). The contribution rates increased due to similar experience. More details on the impact of actuarial assumption changes on the UAAL and the total aggregate employer contribution rate can be found on pages 14-15 and 22-23, respectively.

Valuation Date	Funded Status Market Value Basis	UAAL Market Value Basis	Funded Status Actuarial Value Basis	UAAL Actuarial Value Basis	Total Aggregate Employer Contribution Rate (% of Payroll) ¹
June 30, 2014	73.4%	\$5.0 billion	68.1%	\$6.0 billion	28.60%
June 30, 2023	74.9%	\$7.2 billion	77.1%	\$6.6 billion	33.29%

Future funded status and employer contribution rates

In this report, we highlight key factors besides assumption changes that may affect the financial profile of the Plans going forward. As investment experience in the past 10 years has had a significant impact on the funded status and employer contribution rates, we have also provided deterministic projections (using select scenarios for illustration) under hypothetical favorable and unfavorable future market experience so that the impact of market performance can be better understood. We have also included stochastic projections to assess the projected distribution of future results along with introducing a relative likelihood to the range of those potential outcomes.

Deterministic projections

The total aggregate employer contribution rate for the Retirement and Health Plans is 33.29% of payroll in the June 30, 2023 valuations. Using a deterministic projection, this report shows the effect of unfavorable (0.00%), baseline (7.00%) or favorable (14.00%) hypothetical market returns for 2023/2024 on key valuation results. In particular, the projected changes in the total aggregate employer contribution rate (relative to the total aggregate employer contribution rate of 33.29% in the June 30, 2023 valuations) in the June 30, 2024 valuations and in the June 30, 2030 valuations (when all the investment gains or losses are fully recognized at the end of the seven-year asset smoothing period) are shown in the following table. These projections assume no further assumption changes or method changes, and no non-investment experience that differs significantly from the assumptions.

¹ Assumes employer contributions received on July 15.

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Total Aggregate Employer Contribution Rate Change

Valuation Date	0.00% Return for 2023/2024	7.00% Return for 2023/2024	14.00% Return for 2023/2024
June 30, 2024	-1.0% of payroll	-1.6% of payroll	-2.3% of payroll
June 30, 2030 ¹	+7.2% of payroll	+1.3% of payroll	-4.5% of payroll

Under the unfavorable (0.00%), baseline (7.00%), and favorable (14.00%) hypothetical market return scenarios for 2023/2024, the Plans would be expected to reach full funding in 2042, 2042, and 2041, respectively.¹ The total aggregate employer contribution rate would be expected to range from 7.9% to 8.3% of payroll at the end of the 23-year projection period under the three scenarios modeled. That employer contribution rate reflects the employer normal cost, offset by the amortization of any surplus pursuant to the Board’s Actuarial Funding Policy when the Plans become fully funded. This shows that the Board’s funding policy is very effective in achieving the general policy goal of achieving the long-term full funding of the costs of the benefits paid by LACERS.

Stochastic projections

The stochastic projection models market returns over the next 20 years by using expected return, standard deviation and other information specific to LACERS’ asset portfolio. For the stochastic modeling, we have used the breakdown of LACERS’ asset portfolio into the different asset classes that we used in developing the 7.00% expected investment return assumption we recommended to the Board for the June 30, 2023 valuations. However, instead of using the expected return from the 2022 capital market assumptions compiled by Horizon Actuarial Services based on their then most recent survey published in August 2022, we have used the 2023 capital market assumptions they published in August 2023. As we pointed out in our triennial experience study recommending the 7.00% investment return assumption, we anticipated increase in the likelihood of achieving the 7.00% investment return assumption when we switch to the 2023 capital market assumptions. (We also noted that the increase in the real rates of return provided by the investment consulting firms for 2023 versus 2022 might be “due to the very low returns earned in the 2021-2022 plan year, as well as the increase in the federal funds rate during 2022, and so should be used with caution in selecting a long-term investment return assumption.”) The stochastic projections in this report show there is a 50% chance that the employer contribution rates would be between 1% and 47% of payroll at the end of 10 years (with a median rate of 27% of payroll) and between 0% and 23% of payroll at the end of 20 years (with a median rate of 0% of payroll). Furthermore, there is a 42% chance LACERS would be fully funded at the end of 10 years and a 67% chance LACERS would be fully funded at the end of 20 years.

¹ The Plans are projected to reach full funding by 2042 when measured using the combined assets and liabilities of the Retirement and Health Plans. When measured separately, the Retirement Plan is projected to reach full funding in the June 30, 2042 valuation under all three scenarios, while the Health Plan has already reached full funding as of June 30 2023.

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Plan maturity measures

During the past 10 valuations, the Plans have become more mature as evidenced by an increase in the ratio of members in pay status (retirees and beneficiaries) to active members (as shown in *Section 2, Chart 12a* and *Chart 12b* on pages 39 and 40) and by an increase in the ratios of plan assets and liabilities to active member payroll (as shown in *Section 2, Chart 13a* and *Chart 13b* on pages 41 and 42). While there were some reversals observed in the June 30, 2023 valuations due to an increase in the number of actives (about a 4% increase between the 2022 and 2023 valuations) and payroll (about an 11% increase between the 2022 and 2023 valuations), we expect these trends to continue going forward. This is significant for understanding the volatility of both historical and future employer contribution rates because any increase in UAAL due to unfavorable investment and non-investment experience for the relatively larger group of non-active members would have to be amortized and funded over the payroll of the relatively smaller group of active members. Put another way, as a plan grows more mature, its contribution rate becomes more sensitive to investment volatility and liability changes. As the Plans continue to mature with time, their risk profile will continue to evolve in this way and contributions will grow more sensitive to plan experience.

Section 2: Key Plan Risks

Evaluation of historical trends

Funded status and change in unfunded actuarial accrued liabilities

One common measure of LACERS' financial status is the funded ratio. This ratio compares the valuation and market value of assets to the actuarial accrued liabilities (AAL) of LACERS. After accounting for contributions made at the Actuarially Determined Contribution (ADC) amount, the overall level of funding of LACERS on a valuation basis has increased for both the Retirement Plan and the Health Plan as a result of favorable investment and non-investment experience, offset to some degree by the strengthening of the actuarial assumptions. The UAAL and funded ratios are provided separately for the Retirement and Health Plans for the past 10 valuations from June 30, 2014 to June 30, 2023 measured using both valuation and market value of assets in *Chart 1a* and *Chart 1b*, respectively.

The factors that caused the changes in the UAAL in the past 10 valuations from June 30, 2014 to June 30, 2023 are specified separately for the Retirement and Health Plans, in *Chart 2a* and *Chart 2b*, respectively. The results in *Chart 2a* and *Chart 2b* show that the reductions in the investment return assumption in the June 30, 2014, 2017¹ and 2020 valuations, together with the changes in the mortality tables and other assumptions from the three triennial experience studies recommending assumptions used in the June 30, 2014, 2018¹ and 2020 valuations, have had the most impact on the UAAL for LACERS. In particular, the assumption changes included in the last ten valuations have had the following impact on the combined UAAL for the Retirement and Health Plans:

¹ The Board has a practice of reviewing the investment return and other actuarial assumptions at the same time in the triennial experience study. However, the full (economic and demographic) 2017 experience study was delayed one year to 2018 to allow more time for Segal to study and the Board to discuss and approve the assumptions, and a 2017 study of only the economic assumptions was completed as part of the June 30, 2017 valuations.

Section 2: Key Plan Risks

UAAL Impact from Assumption Changes *Retirement and Health Plans Combined*

Valuation Date	Total UAAL Change
June 30, 2014	\$920.7 million
June 30, 2017	\$461.9 million
June 30, 2018	\$593.6 million
June 30, 2020	\$626.6 million
June 30, 2023	\$(170.3) million
Net Change	\$2,432.5 million

For the Retirement Plan, *Chart 2a* shows unfavorable non-investment experience, which included higher than expected COLAs granted to retirees and beneficiaries, and higher than expected salary increases for continuing actives. For the Health Plan, *Chart 2b* shows favorable non-investment experience, which included premiums and medical subsidies lower than projected. The non-investment experience for both plans also included the scheduled 12-month delay in implementing the contribution rates determined in the annual valuation.

Finally, *Charts 2a* and *2b* shows some “negative amortization” due to the initial 30-year amortization of the combined base established June 30, 2012. Current assumptions and amortization policy generally will not entail negative amortization in the future. For the Health Plan, there was some additional “negative amortization” in past years through the operation of the amortization policy. Reductions in UAAL from favorable premium renewal and other experience gains were amortized over 15 years while increases in UAAL from assumption changes were amortized over 20 years. However, as part of the June 30, 2022 valuation, LACERS aligned the amortization periods for the recent experience gains and had them amortized over the same 20-year period used to amortize the total pre-June 30, 2021 bases.

Chart 2c and *Chart 2d* display the aggregate change in unfunded liability by source over the last ten years. In particular, they show the continued effort made by LACERS in strengthening the actuarial assumptions. *Chart 2c* also shows the strength of the System’s adopted funding policy working to reduce the unfunded liability consistently each year.

It is important to note that LACERS has taken strides in risk management and resulting long-term plan sustainability. This includes strengthening of assumptions (particularly lowering the expected investment rate of return from 7.75% to 7.00% over the last ten years and adopting amount-weighted generational mortality for the Retirement Plan) and adopting a funding policy that eliminates negative amortization and promotes intergenerational equity. Assumptions will continue to be reviewed in future experience studies

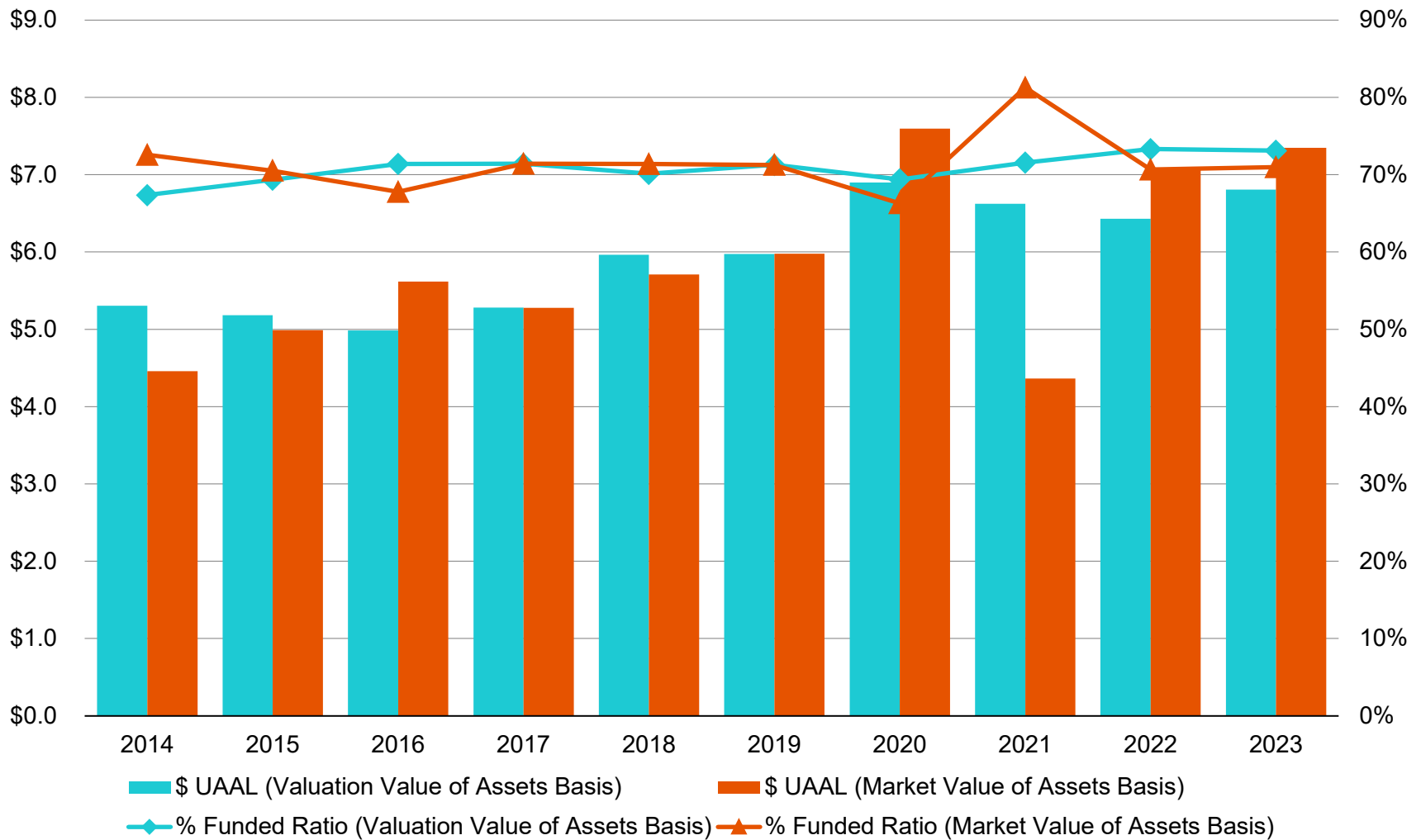
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to reflect the Plans' experience as well as future expectations. Those changes may result in higher contributions in the short term, but in the medium to longer term **avoid** both deferring contributions and allowing unmanaged growth in the UAAL. We believe these actions are essential for LACERS' fiscal health going forward.

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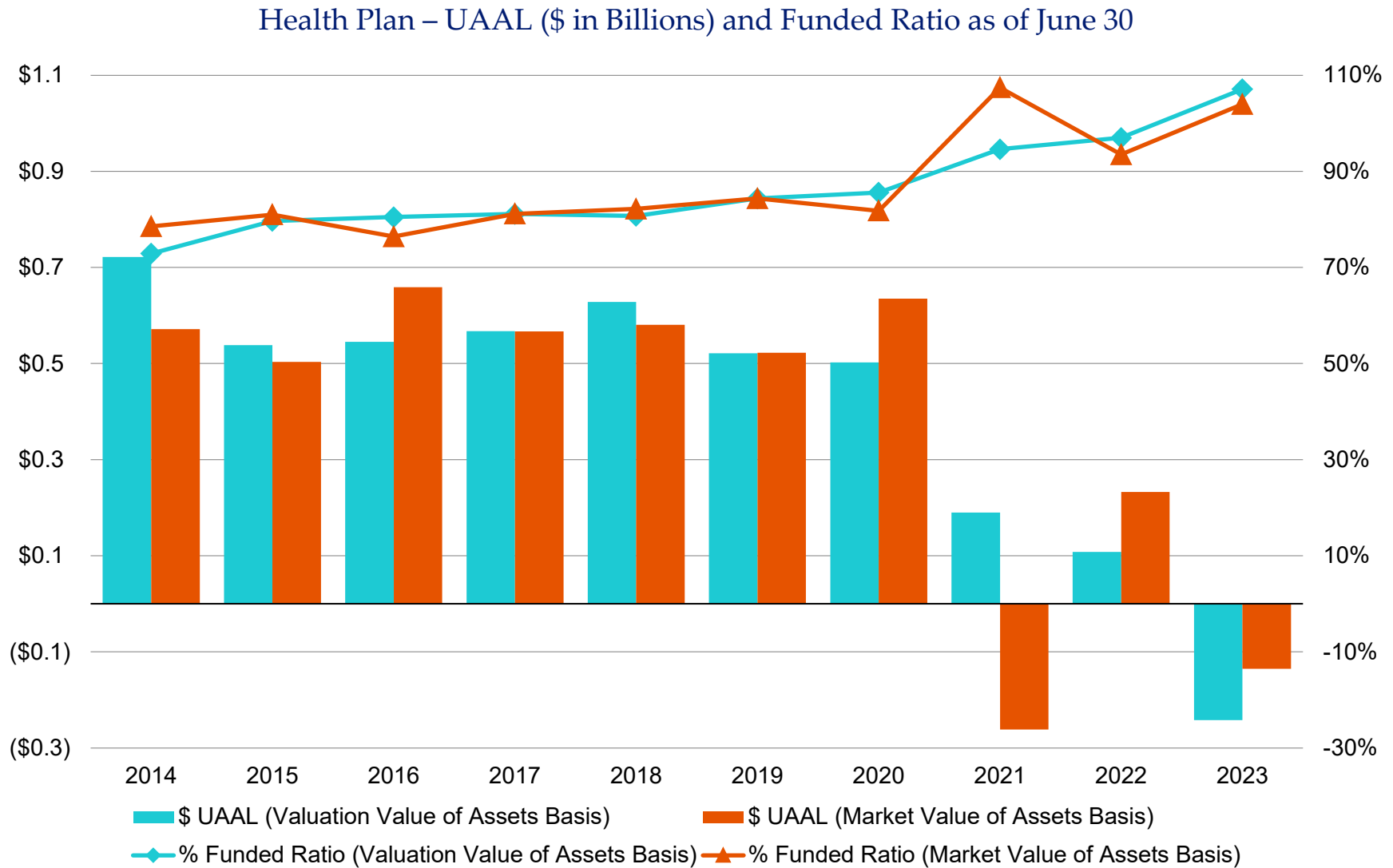
Chart 1a

Retirement Plan – UAAL (\$ in Billions) and Funded Ratio as of June 30



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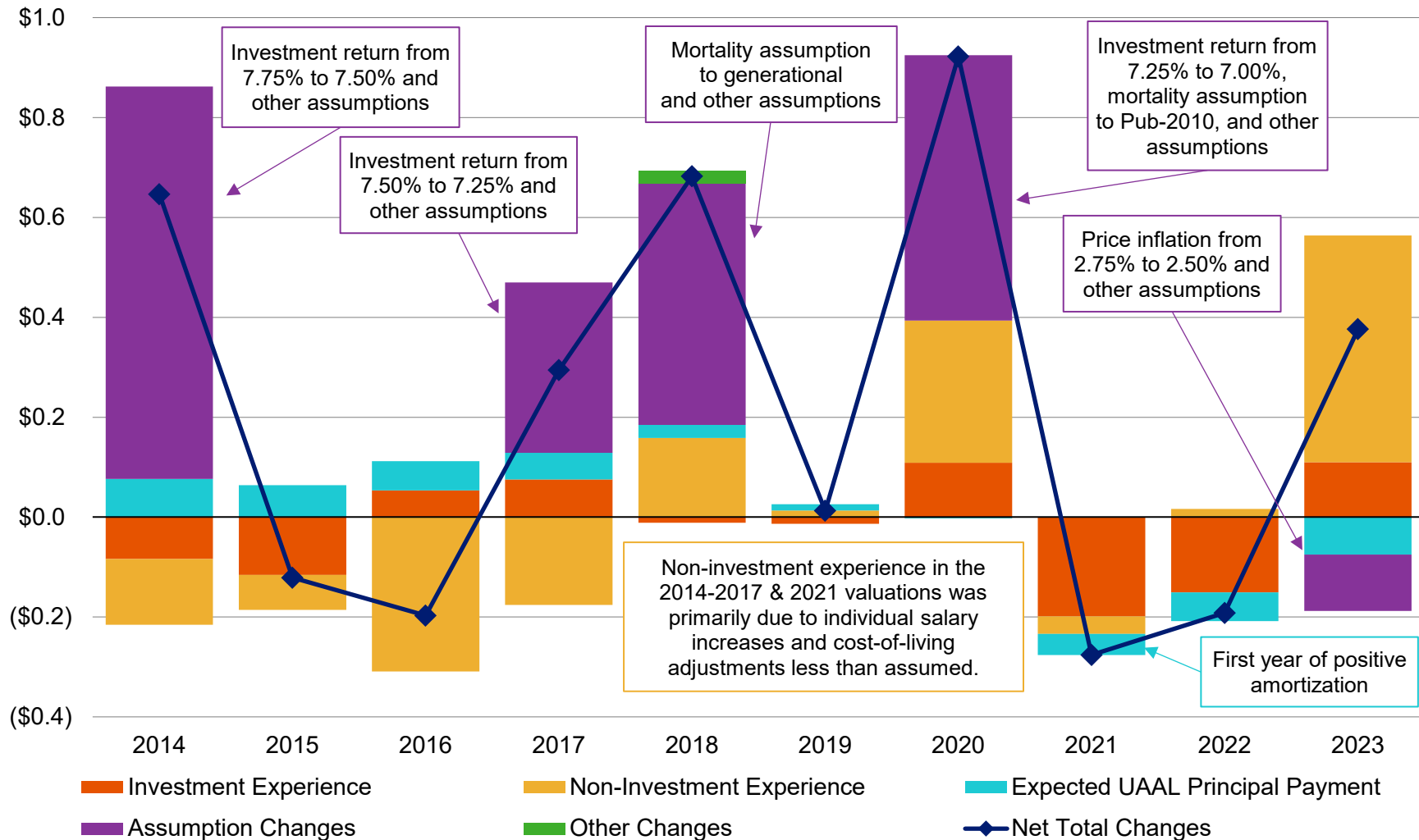
Chart 1b



Section 2: Key Plan Risks

Chart 2a

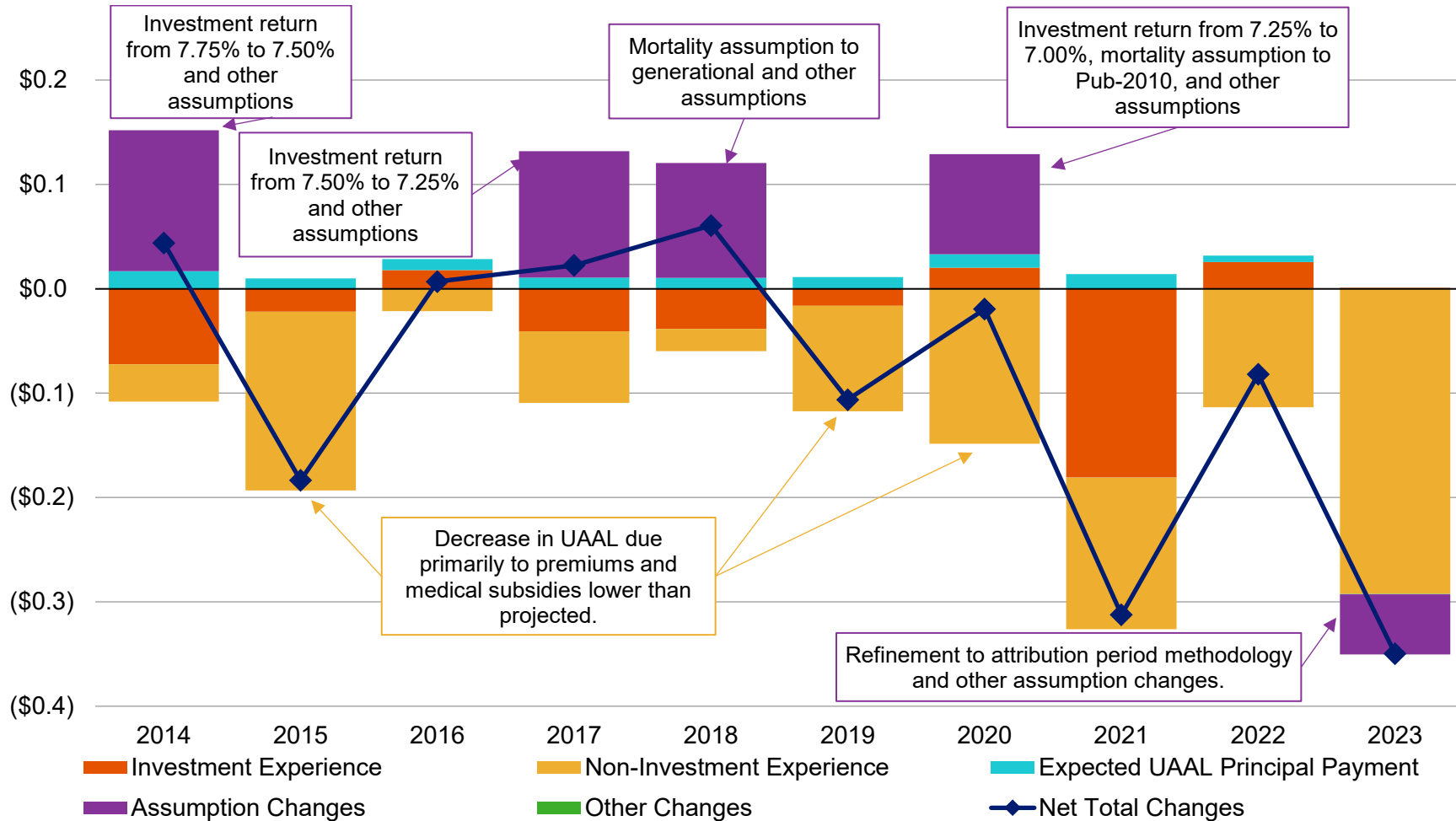
Retirement Plan – Factors that Changed UAAL for Year Ended June 30
(\$ in Billions)



Section 2: Key Plan Risks

Chart 2b

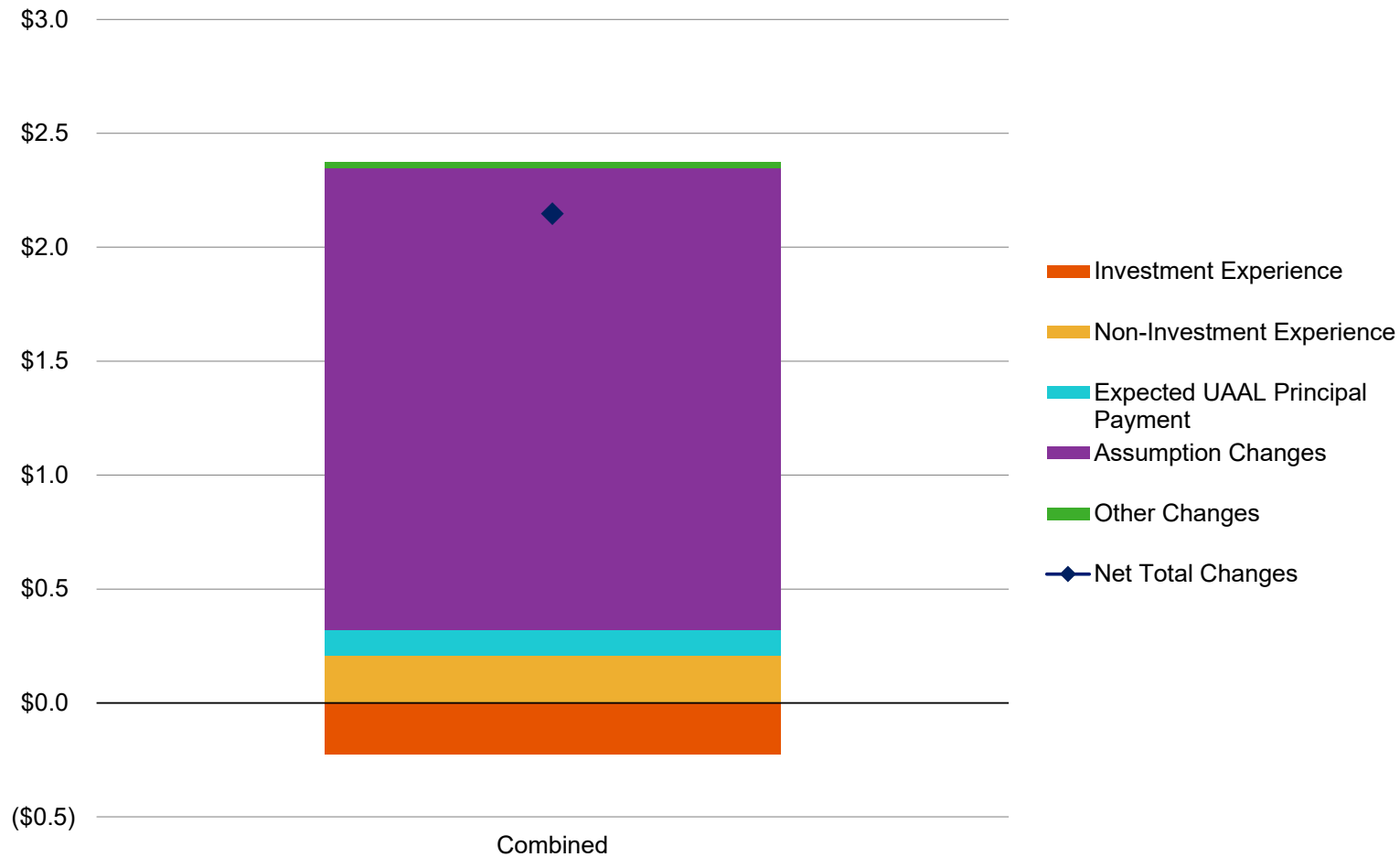
Health Plan – Factors that Changed UAAL for Year Ended June 30
(\$ in Billions)



Section 2: Key Plan Risks

Chart 2c

Retirement Plan – Combined Factors that Changed UAAL in the June 30, 2014 to 2023 Valuations
(\$ in Billions)

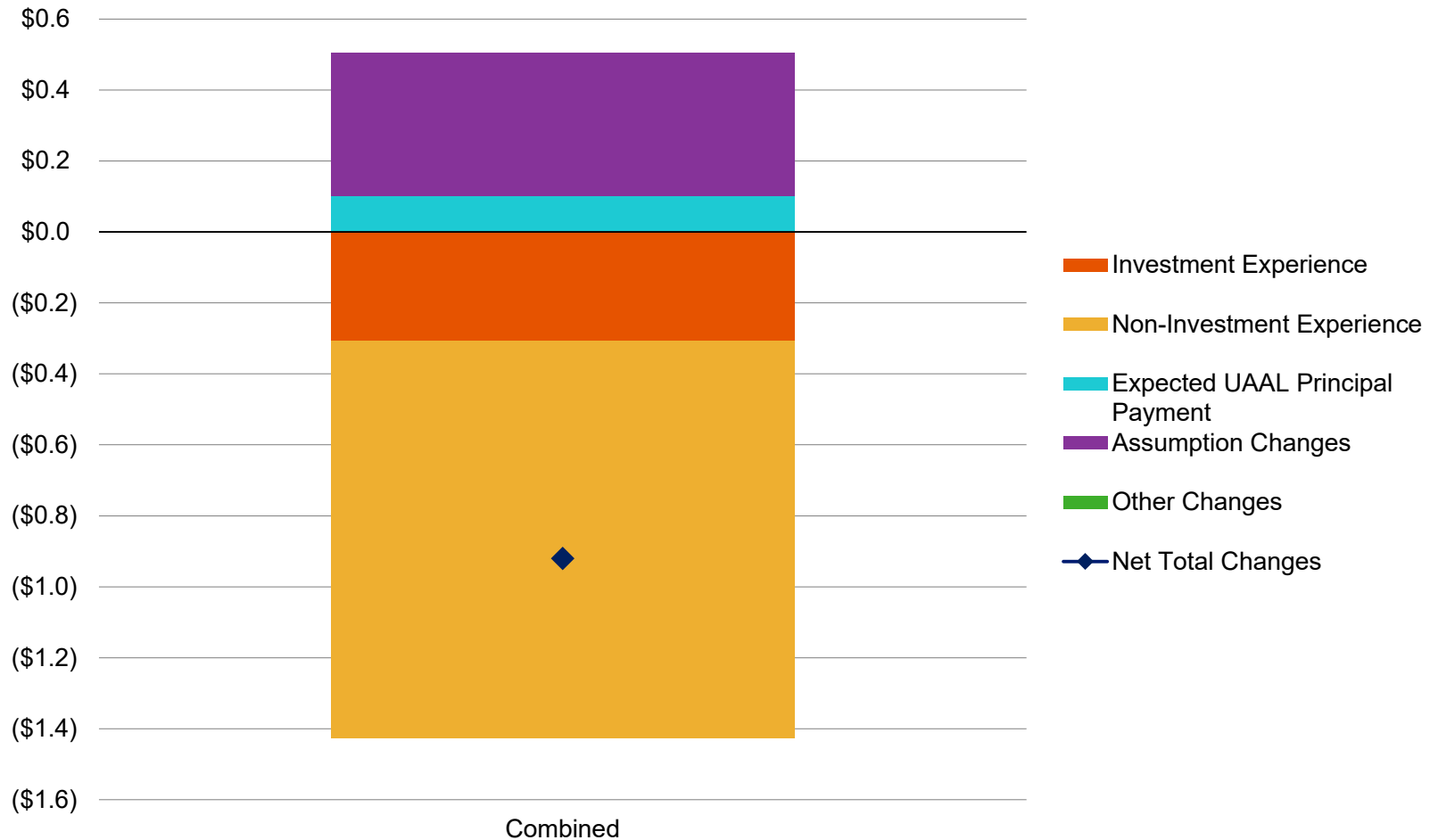


Note: This summation of UAAL changes by source does not account for the timing of when they occurred nor any resulting compounding effects. Also, the investment experience shown is investment returns after asset smoothing compared to the expected returns.

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Chart 2d

Health Plan – Combined Factors that Changed UAAL in the June 30, 2014 to 2023 Valuations
(\$ in Billions)



Note: This summation of UAAL changes by source does not account for the timing of when they occurred nor any resulting compounding effects. Also, the investment experience shown is investment returns after asset smoothing compared to the expected returns.

Section 2: Key Plan Risks

Employer contribution rates

The total (normal cost plus UAAL payment) employer contribution rates¹ determined in the June 30, 2014 to June 30, 2023 valuations for the Retirement and Health Plans are provided in *Chart 3a* and *Chart 3b*, respectively. These charts show that the employer normal cost rates for the Retirement and Health Plans have stayed relatively flat since the June 30, 2014 valuation. For the Retirement Plan, the UAAL rate generally increased between the June 30, 2014 and the June 30, 2023 valuations primarily due to changes in actuarial assumptions. While there have also been increases in the normal cost rates due to the changes in actuarial assumptions, those increases were offset to some degree by the plan changes – with the introduction of Tier 3 – as new members have been enrolled in the lower cost benefit tier since February 21, 2016. Furthermore, beginning with the June 30, 2012 valuation, an additional employee contribution (either 2% or 4%, becoming 4% for all affected employees effective January 1, 2013) was implemented by the City for certain bargaining groups and for all non-represented employees.² For the Health Plan, the UAAL rate generally decreased between the June 30, 2014 and the June 30, 2023 valuations. The primary sources of the decrease include health related assumption changes and other actuarial experience (primarily medical premiums and subsidies lower than projected).

The factors that caused the changes in the total employer contribution rates for the Retirement and Health Plans are provided in *Chart 4a* and *Chart 4b*, respectively.

For the Retirement Plan, *Chart 4a* shows that the changes in the expected investment return, mortality tables and other assumptions have had the most impact on increasing the UAAL contribution rates for the City. Favorable investment experience has partially offset the contribution rate increases during 2014 to 2023.

For the Health Plan, *Chart 4b* shows that the non-investment experience (primarily medical premiums and subsidies lower than projected, but which also includes the impact of the annual review and adjustment of the medical trend assumptions) has had the most impact on decreasing the employer contribution rates for the Plan, offset somewhat by changes in the expected investment return, mortality tables and other actuarial assumptions. There is also a rate reduction in the June 30, 2023 valuation due to the amortization of the surplus over 30 years.

¹ There are separate contribution rates determined in the valuation for each tier. The aggregate contribution rates shown herein have been calculated based on an average of those rates weighted by the payrolls of the active members reported in those valuations.

² As of the June 30, 2012 valuation, roughly 95% of active members were required to pay an additional member contribution rate. By the June 30, 2020 valuation, all active members were paying an additional member contribution rate (which was increased to 4.5% for less than 1% of active members).

Section 2: Key Plan Risks

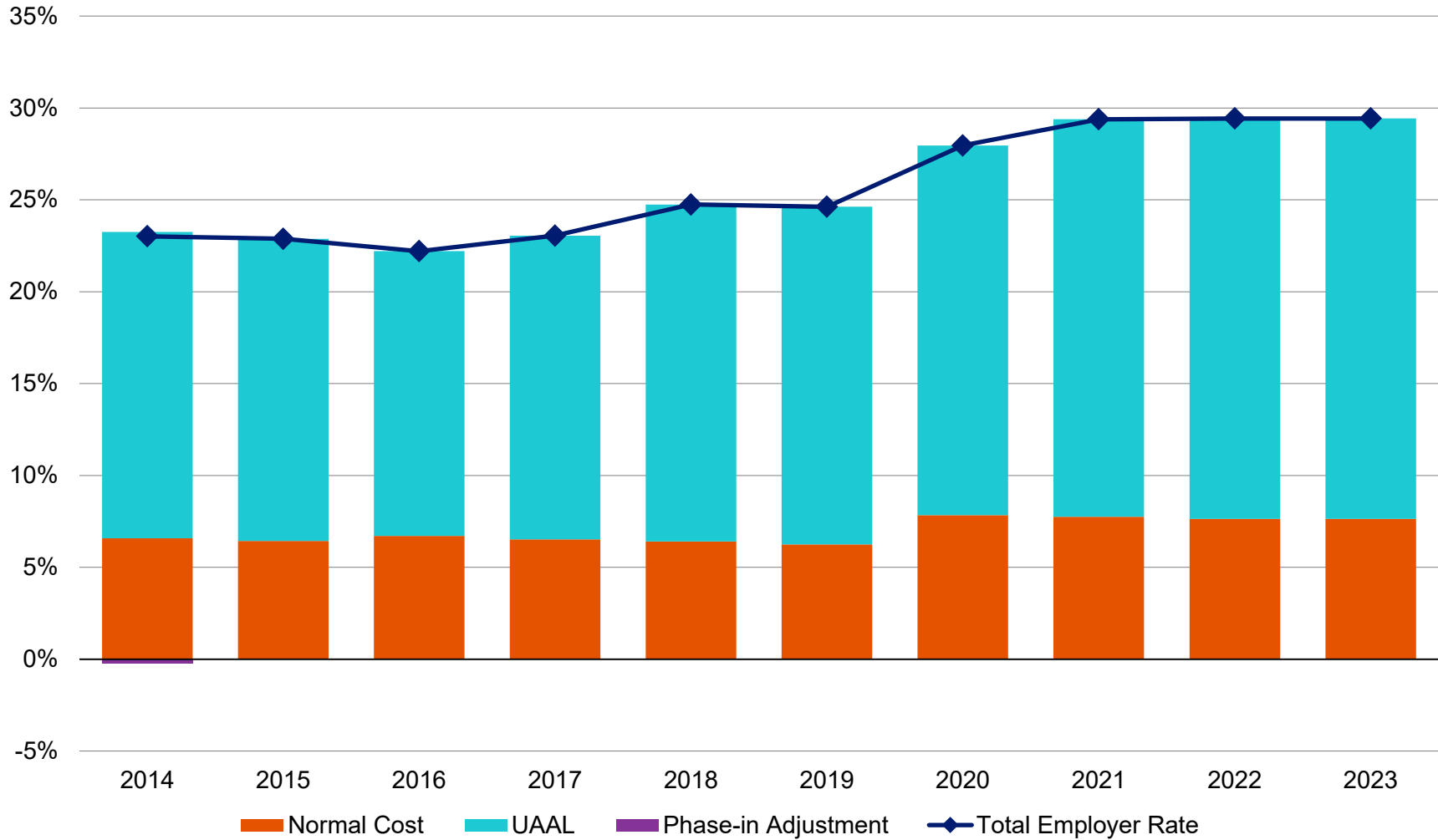
Employer Contribution Rate Impact from Assumption Changes *Retirement and Health Plans Combined*

Valuation Date	Total Aggregate Employer Contribution Rate Change
June 30, 2014	3.2% of payroll
June 30, 2017	2.0% of payroll
June 30, 2019	2.1% of payroll
June 30, 2020	3.9% of payroll
June 30, 2023	0.7% of payroll
Net Change	11.9% of payroll

Section 2: Key Plan Risks

Chart 3a

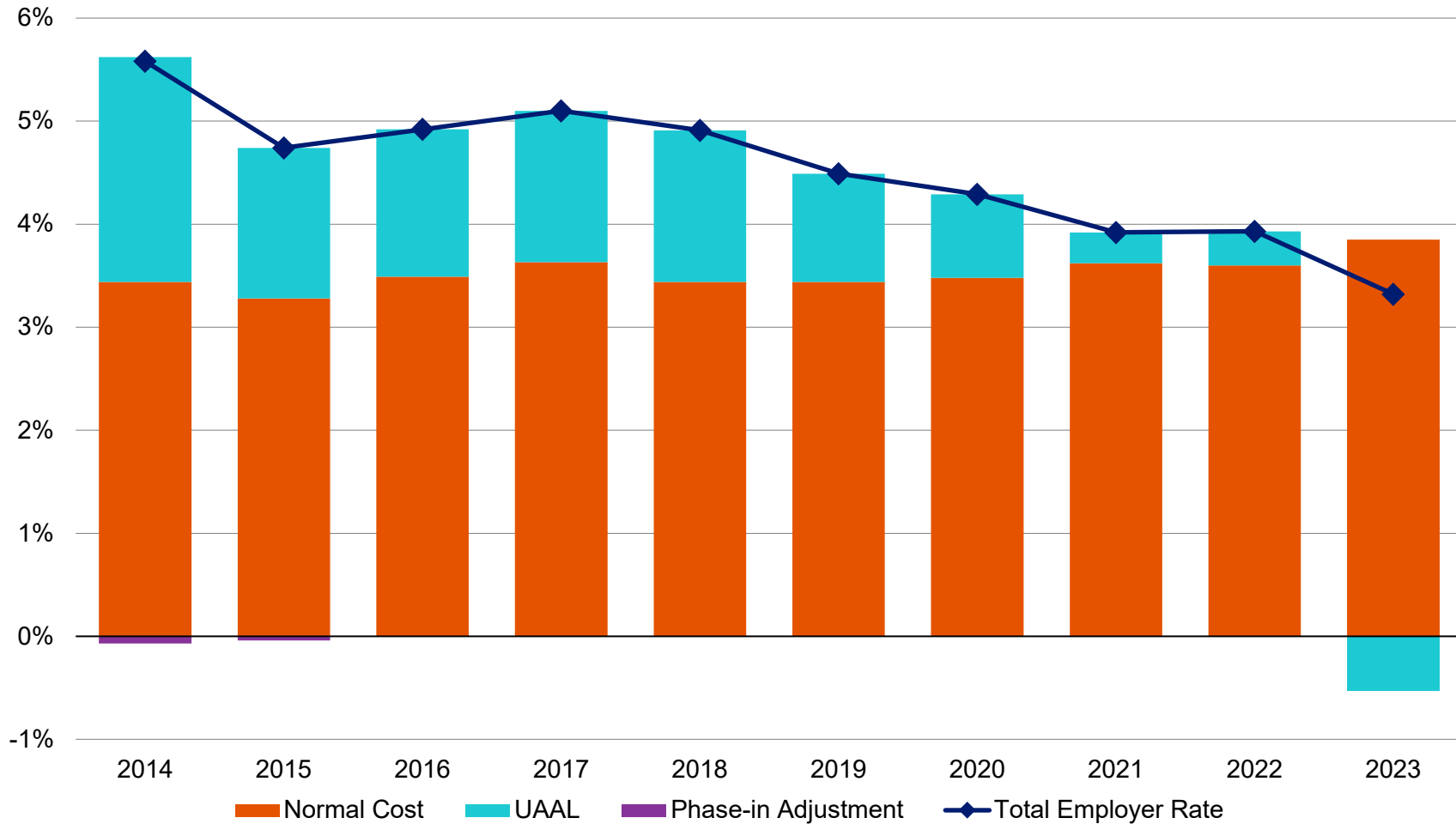
Retirement Plan – Employer Contribution Rates Calculated as of June 30
 (% of Payroll – Contributions Received on July 15)



Section 2: Key Plan Risks

Chart 3b

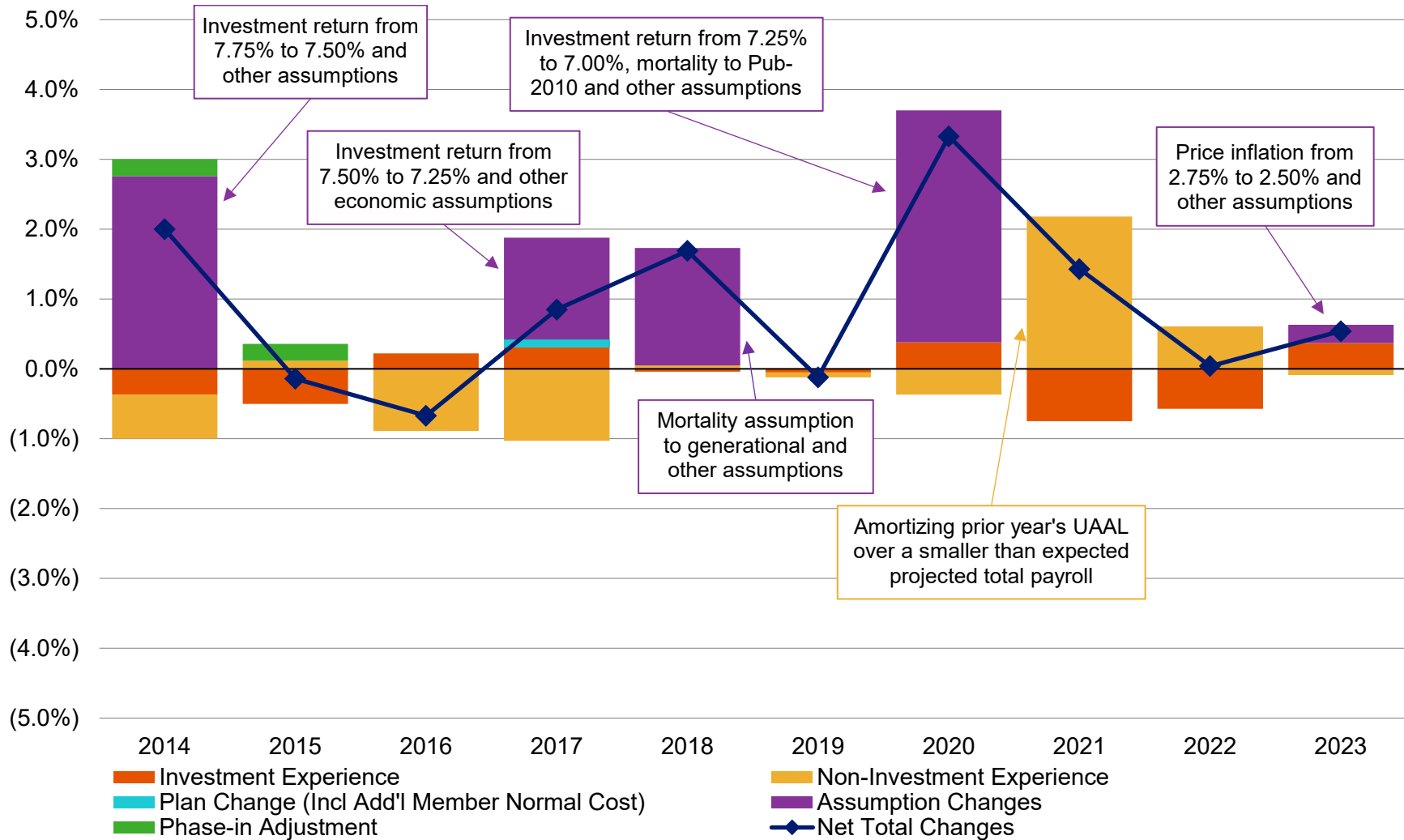
Health Plan – Employer Contribution Rates Calculated as of June 30
 (% of Payroll – Contributions Received on July 15)



Section 2: Key Plan Risks

Chart 4a

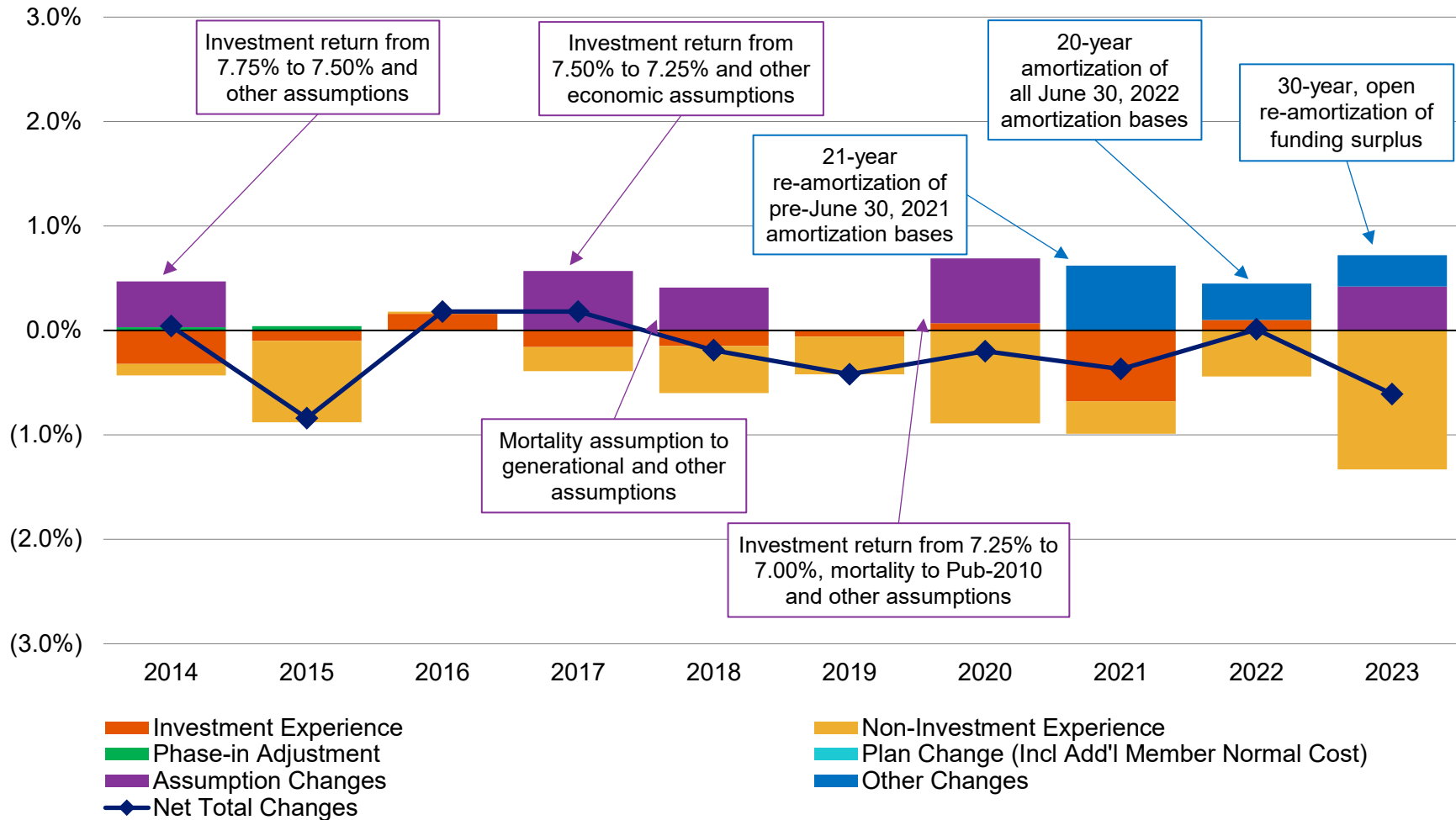
Retirement Plan – Factors that Affected Employer Contribution Rates Calculated as of June 30
 (% of Payroll – Contributions Received on July 15)



Section 2: Key Plan Risks

Chart 4b

Health Plan – Factors that Affected Employer Contribution Rates Calculated as of June 30
 (% of Payroll – Contributions Received on July 15)



Section 2: Key Plan Risks

Assessment of primary risk factors going forward

As discussed under the evaluation of historical trends section, the funded ratios and employer contribution rates have changed mainly due to changes in actuarial assumptions, investment experience, and non-investment experience in the last ten valuations.

In general, we anticipate the following risk factors to have an ongoing influence on those metrics in our future valuations:

- **Asset/liability mismatch risk** – the potential that future plan experience does not affect asset and liability values in the same way, causing them to diverge.

The most significant asset/liability mismatch risk to LACERS is investment risk, as defined below. In fact, investment risk has the potential to impact asset/liability mismatch in two ways. The first mismatch is evident in annual valuations; when asset values deviate from assumptions, those changes are typically independent from liability changes. The second mismatch can be caused when systemic asset deviations from assumptions may signal the need for an assumption change, which causes liability values and contribution rates to move in the opposite direction from any change in the expected experience of asset growth rates.

Asset/liability mismatch can also be caused by longevity and other demographic assumption risks, which affect liabilities but have no impact on asset levels. These risks are also discussed below.

It may be informative to use the asset volatility and liability volatility ratios and associated contribution rate impacts provided in the following plan maturity measures section when discussing with the City the effect of unfavorable or favorable actuarial experience on the assets and the liabilities of LACERS.

- **Investment risk** – the potential that future market returns will be different from the current expected 7.00% annual return assumption.

The investment return assumption is a long-term, deterministic assumption for valuation purposes even though in reality market experience can be quite volatile in any given year. We have included deterministic scenario tests later in this section so that LACERS can better understand the risk associated with earning either more or less than the assumed rate.

The Board has a policy of reviewing the investment return and the other actuarial assumptions generally every three years, with the next triennial experience study (recommending assumptions for the June 30, 2026 actuarial valuations) scheduled to be performed in 2026.

- **Longevity and other demographic risks** – the potential that mortality or other demographic experience will be different than expected.

For the Retirement Plan, the move to using generational amount-weighted mortality tables that reflect data from public sector retirement plans was made in the 2019 mortality experience study for use in the June 30, 2019 valuations. (For the Health Plan, we are using generational, headcount-weighted mortality tables.) As can be observed from *Chart 2a*, *Chart 2b*, *Chart 4a*, and *Chart*

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4b, for the Retirement and Health Plans combined there has been favorable impact on the UAAL and employer contribution rates due to non-investment related experience relative to the assumptions used in the last 10 valuations. Future mortality risks should be further mitigated by the updated tables.

- **Contribution risk** – the potential that actual future contributions will be different from expected future contributions.

ASOP 51 does not require the actuary to evaluate the ability or willingness of the plan sponsor or other contributing entity to make contributions to the plan when due. However, it does require the actuary to consider the potential for actual contributions deviating from expected in the future. The City has a well-established practice of making the ADC determined in the annual actuarial valuations, based on the Board of Administration's Actuarial Funding Policy. As a result, in practice LACERS has essentially no contribution risk.

Furthermore, when ADCs determined in accordance with the LACERS Actuarial Funding Policy are made in the future by the City (and contributions required by the Administrative Code are made by the employees), it is anticipated that the System would have enough assets to provide all future benefits promised to the current members enrolled in the System, if all of the actuarial assumptions used in the valuation are met.

ASOP 51 also lists interest rate risk as an example of a potential risk to consider. However, the valuations of the Plans' liabilities are not linked directly to market interest rates, so the resulting interest rate risk exposure is minimal.

Scenario tests

Since the funded ratio, UAAL and the employer contribution rates have fluctuated as a result of deviations in investment experience in the last 10 valuations, in this section we have examined this risk for LACERS using projections under a deterministic and stochastic approach.

Deterministic projections

To measure such risk, we have included scenario tests to study the change in the UAAL and employer contribution rates if LACERS were to earn a market return higher or lower than the assumed rate of 7.00% in the fiscal year following the June 30, 2023 valuations. In *Chart 5*, *Chart 6* and *Chart 7*, we show the total aggregate employer contribution rates, funded ratios, and UAAL, respectively, for the Plans (i.e., Retirement and Health Plans combined), assuming the System's portfolio market return in 2023/2024 will be as follows:

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- Scenario 1: 0.00% market return for 2023/2024
- Scenario 2: 7.00% market return for 2023/2024 (baseline)
- Scenario 3: 14.00% market return for 2023/2024

All other assumptions used in the projections can be found in *Appendix A*, including the assumption that the System will earn the assumed 7.00% market return per year beginning July 1, 2024 under all three scenarios.

Detailed employer contribution rates, funded ratios and UAAL have been developed for the City for each of the Retirement and Health Plans and in total under each of the three Scenarios. Those results are shown over a twenty-three-year period¹ and can be found in *Appendix B* of this report. This information is similar to what we understand has been provided to the City in the past to assist the City in their budgeting process.

The following table summarizes the projected total aggregate employer contribution rate changes for the Plans, relative to the total aggregate employer contribution rate of 33.29% in the June 30, 2023 valuations, in the next valuations (i.e., June 30, 2024) as well as in the June 30, 2030 valuations when all of the investment gains and losses are fully recognized in the (smoothed) actuarial value of assets. These results assume no further assumption changes, method changes or experience that differs significantly from the assumptions.

Total Aggregate Employer Contribution Rate Change

Valuation Date	0.00% Return for 2023/2024	7.00% Return for 2023/2024	14.00% Return for 2023/2024
June 30, 2024	-1.0% of payroll	-1.6% of payroll	-2.3% of payroll
June 30, 2030 ¹	+7.2% of payroll	+1.3% of payroll	-4.5% of payroll

Under the unfavorable (0.00%), baseline (7.00%), and favorable (14.00%) hypothetical market return scenarios for 2023/2024, the Plans would be expected to reach full funding in 2042, 2042, and 2041, respectively.² The total aggregate employer contribution rate would be expected to range from 7.9% to 8.3% of payroll at the end of the 23-year projection period under the three scenarios

¹ Generally speaking, under LACERS' seven-year asset smoothing period and 15-year amortization policy for gains/losses, it would take 23 years before any investment gains/losses are fully amortized in the valuations.

² The Plans are projected to reach full funding by 2042 when measured using the combined assets and liabilities of the Retirement and Health Plans. When measured separately, the Retirement Plan is projected to reach full funding in the June 30, 2042 valuation under all three scenarios, while the Health Plan has already reached full funding as of June 30, 2023.

Section 2: Key Plan Risks

modeled. That employer contribution rate reflects the employer normal cost, offset by the amortization of any surplus pursuant to the Board's Actuarial Funding Policy when the Plans become fully funded. This shows that the Board's funding policy is very effective in achieving the general policy goal of achieving the long-term full funding of the costs of the benefits paid by LACERS.

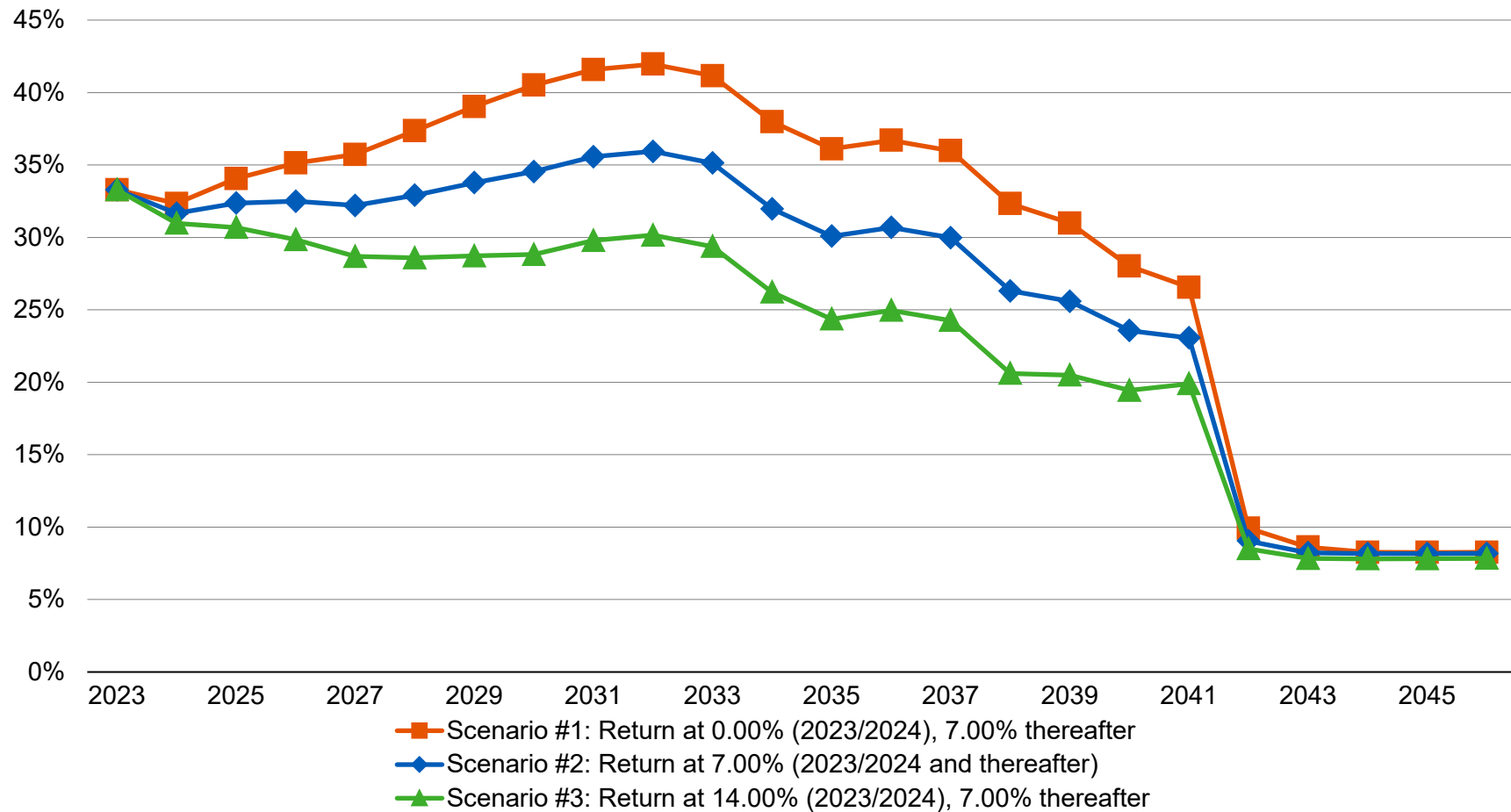
While we have not assigned a probability on the 2023/2024 market return coming in at these rates, the Board and other stakeholders monitoring LACERS can use these results to interpolate in order to estimate the funded status and employer contribution rates for the June 30, 2024 and next several valuations as the actual investment experience for the 2023/2024 year becomes available. Additionally, comparable experience in upcoming future years is likely to have a similar impact on the System absent any significant plan or assumption changes.

Section 2: Key Plan Risks

Chart 5

Retirement and Health Plans (Total Plan)

Projected Employer Contribution Rates Under Hypothetical Market Return Scenarios for 2023/2024
 (% of Payroll – Contributions Received on July 15)

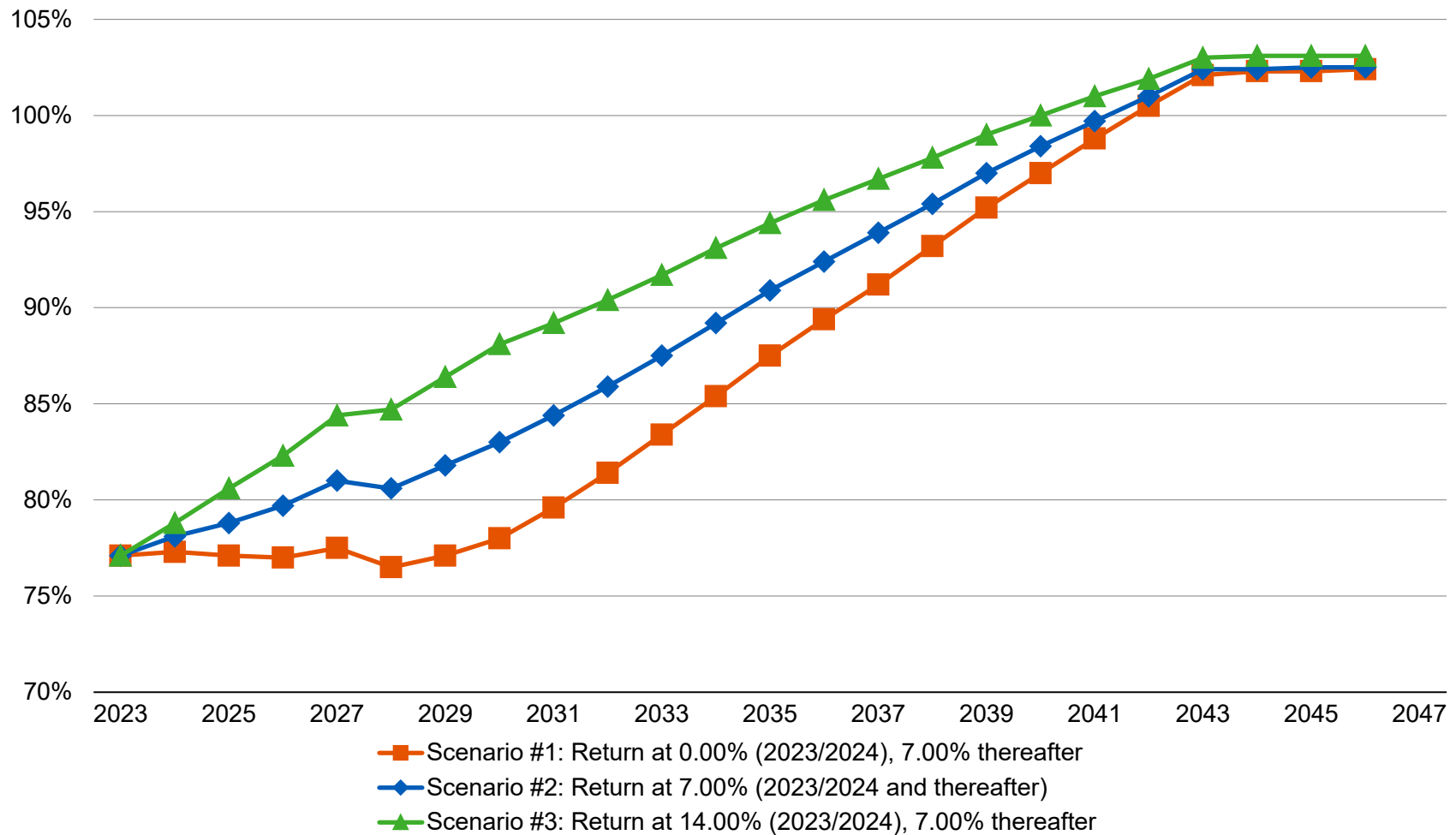


Section 2: Key Plan Risks

Chart 6

Retirement and Health Plans (Total Plan)

Projected Funded Ratios Under Hypothetical Market Return Scenarios for 2023/2024
(Valuation Value of Assets Basis)

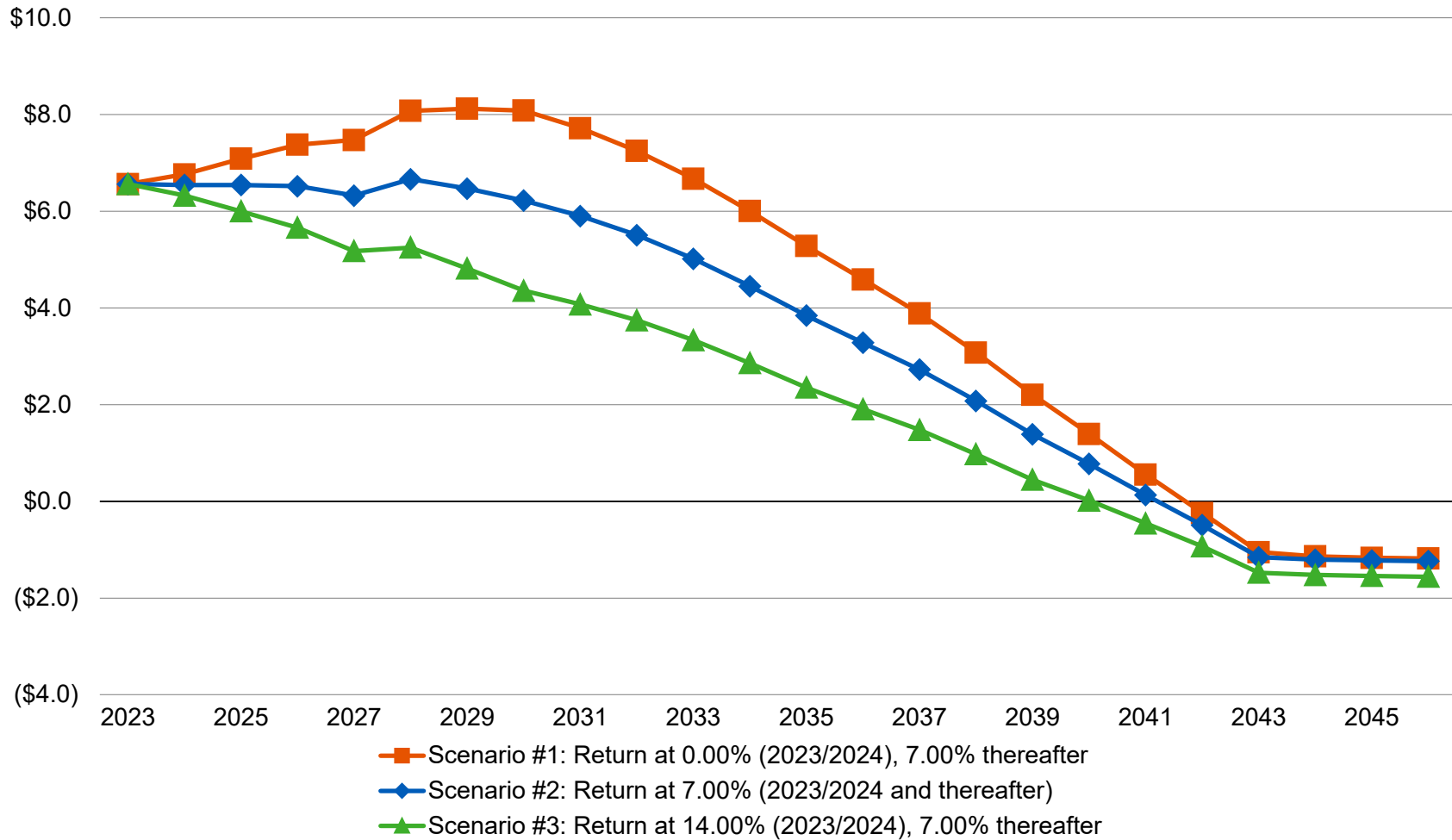


Section 2: Key Plan Risks

Chart 7

Retirement and Health Plans (Total Plan)

Projected UAAL Under Hypothetical Market Return Scenarios for 2023/2024
(Valuation Value of Assets Basis – \$ in Billions)



Section 2: Key Plan Risks

Stochastic projection

Based on our discussions with LACERS, we have also been directed to supplement the deterministic scenario tests by another analysis that shows the range of possible changes in funded status and contribution rates under a statistical distribution of potential market returns for 20 years following the June 30, 2023 valuation. We have accomplished the stochastic modeling of future market returns by using the expected return, standard deviation and other information about LACERS' asset portfolio¹ as provided in *Appendix A* of this report, assuming no future assumption or method changes to the plan.

In *Chart 8*, we summarize the cumulative compounded rate of return of LACERS' investment portfolio over the next 20 years based on performing 10,000 trial outcomes of future market returns. The projected funded ratios for those trials are provided in *Chart 9*. The UAAL and the resultant employer contribution rates are provided in *Chart 10 and Chart 11*, respectively. The results in *Charts 9 – 11* are for the Retirement and Health Plans combined.

At the end of 20 years, there is a 50% chance² that the annual return of LACERS' investment portfolio would average between 6.0% and 10.1%, the funded ratio would be between 92% and 158% and the corresponding UAAL would be between \$3.9 billion and a surplus (or a negative UAAL) of \$28.6 million.

On an Actuarial (smoothed) Value of Assets basis, the funded ratio for the Retirement and Health Plans combined is about 77.1% as of the June 30, 2023 valuation compared to 76.4% as of the June 30, 2022 valuation. There is a 42% chance LACERS would be fully funded at the end of 10 years and a 67% chance LACERS would be fully funded at the end of 20 years. The probabilities that the funded ratio would fall below 50%, 60% or 70% at any point in the next 20 years as projected in the current analysis as of June 30, 2023 and the prior analysis as of June 30, 2022 are as follows:

Probability of Various Funded Ratios

	Below 50%	Below 60%	Below 70%
Current (6/30/2023) Analysis Probability	2%	11%	30%
Prior (6/30/2022) Analysis Probability	5%	18%	40%

The total employer contribution rate is about 33% payroll based on both the June 30, 2023 and June 30, 2022 valuations. Stochastic modeling can help assess the range and relative likelihood of potential future contribution rates. At the end of 10 years (i.e., the June 30, 2033 valuation), there is a 50% chance that the employer contribution rates would be between 1% and 47% of payroll (with

¹ For the stochastic modeling, we have used the expected return, standard deviation and other information about LACERS' asset portfolio that we applied in developing the 7.00% expected investment return assumption we recommended to the Board for the June 30, 2023 valuation.

² This is based on the 25th to the 75th percentile results.

Section 2: Key Plan Risks

a median rate of 27% of payroll). At the end of 20 years (i.e., the June 30, 2043 valuation), there is a 50% chance that the employer contribution rates would be between 0% and 23% of payroll (with a median rate of 0% of payroll). It should be noted that the results of this year's stochastic projections are generally more favorable when compared to those provided last year due to the more optimistic capital market return assumptions as compiled by Horizon Actuarial Services in their August 2023 survey. The probabilities that the total employer contribution rate would increase at least by 5%, 10% or 15% of payroll at any point in the next 20 years as projected in the current analysis as of June 30, 2023 and the prior analysis as of June 30, 2022 are as follows:

Probability of Total Employer Rate Increases

	5% of Payroll (to 38% of Payroll)	10% of Payroll (to 43% of Payroll)	15% of Payroll (to 48% of Payroll)
Current (6/30/2023) Analysis Probability	51%	43%	35%
Prior (6/30/2022) Analysis Probability	58%	50%	43%

Finally, stochastic modeling can help assess the potential impact of investment experience on contribution volatility in any given year. The probabilities that the total employer contribution rate would spike by 2%, 4% or 6% of payroll in any single year during the next 20 years as projected in the current analysis as of June 30, 2023 and the prior analysis as of June 30, 2022 are as follows:

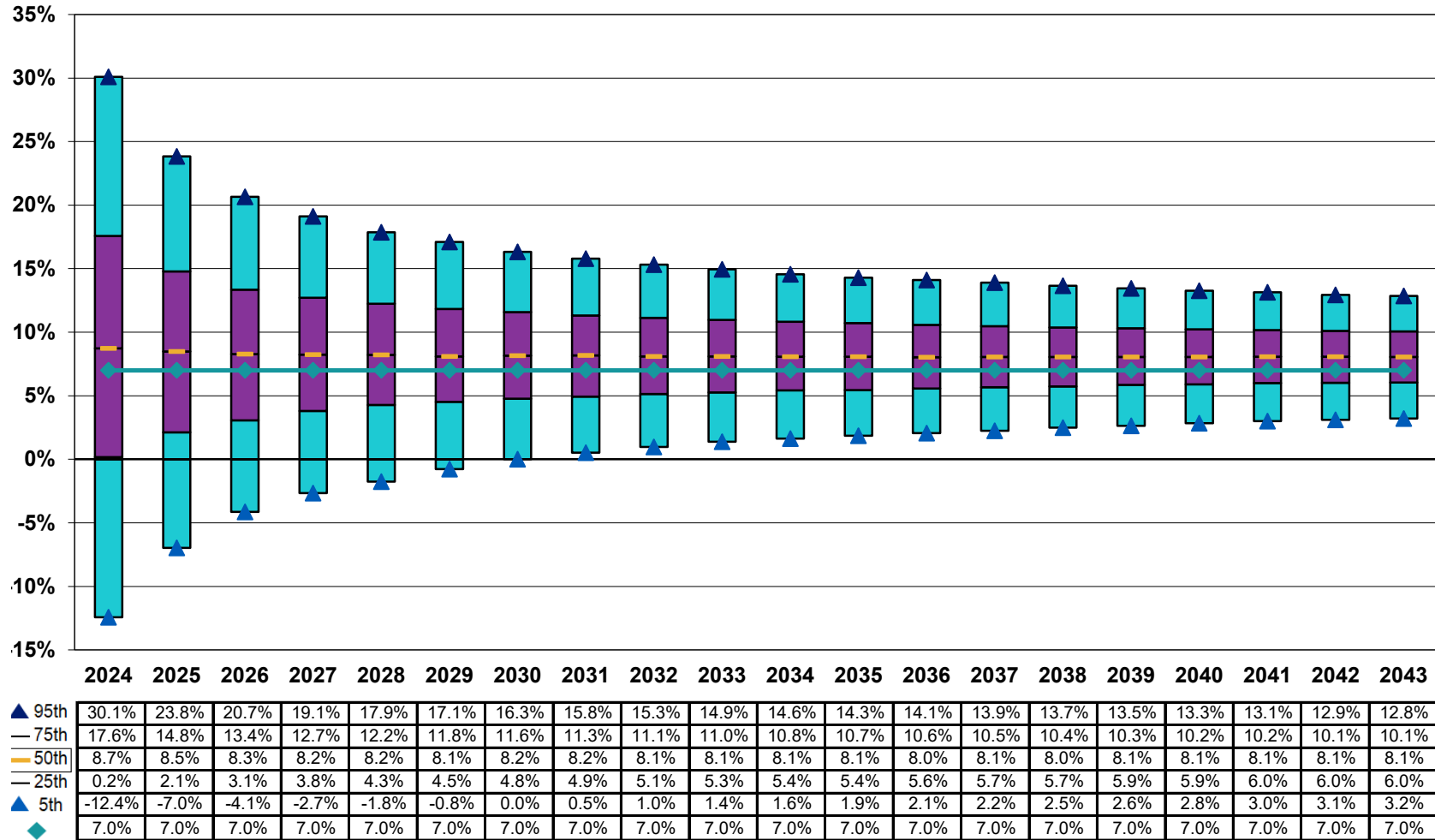
Probability of Total Employer Rate Spike in a Single Year

	2% of Payroll	4% of Payroll	6% of Payroll
Current (6/30/2023) Analysis Probability	21%	10%	4%
Prior (6/30/2022) Analysis Probability	24%	11%	4%

Section 2: Key Plan Risks

Chart 8

Projected Cumulative Investment Return for Plan Years Ending June 30



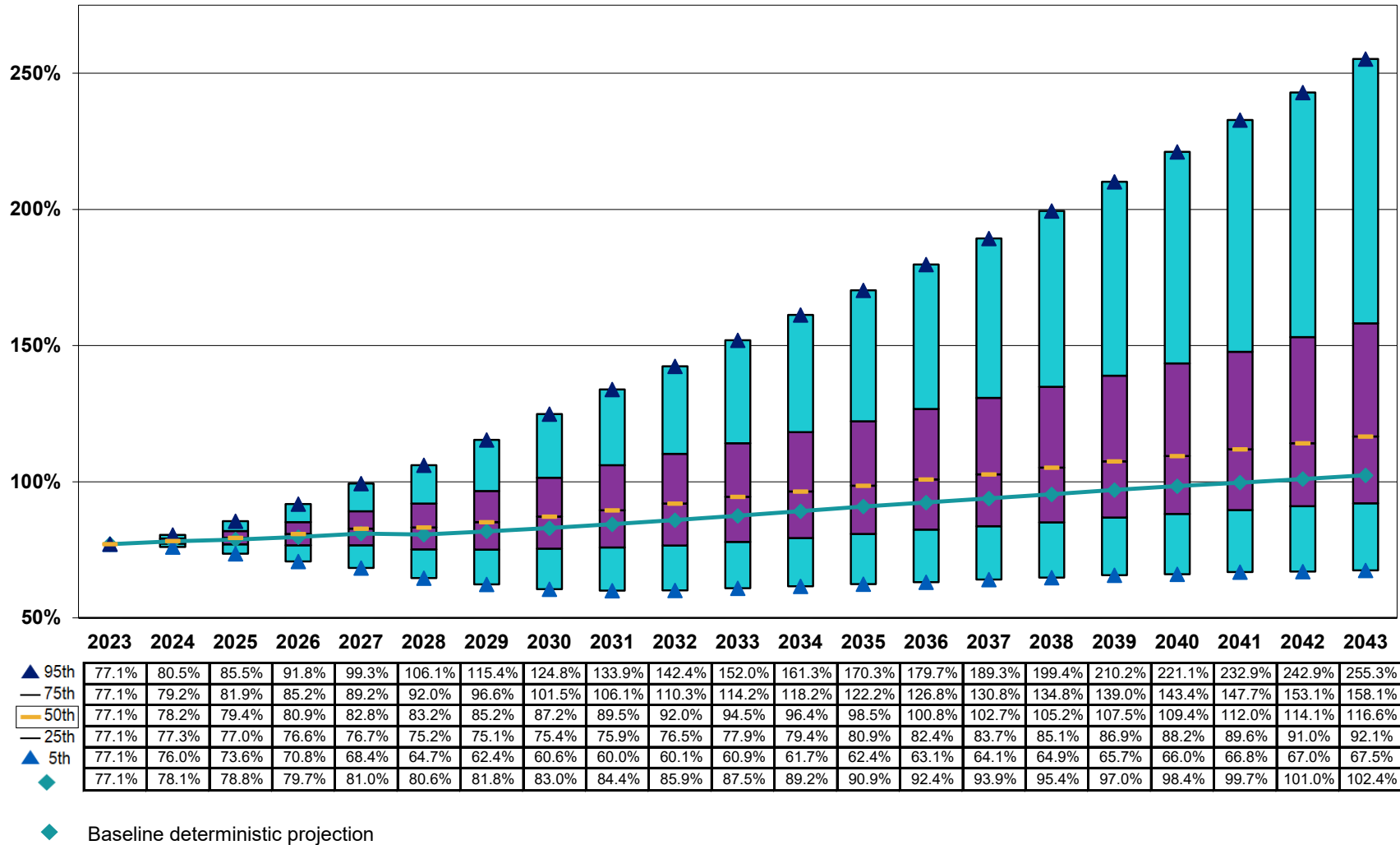
◆ Current investment return assumption

Note: Please see footnote 2 as provided on page 7 that explains why the above returns might be viewed with caution when considering the long-term portfolio return for LACERS.

Section 2: Key Plan Risks

Chart 9

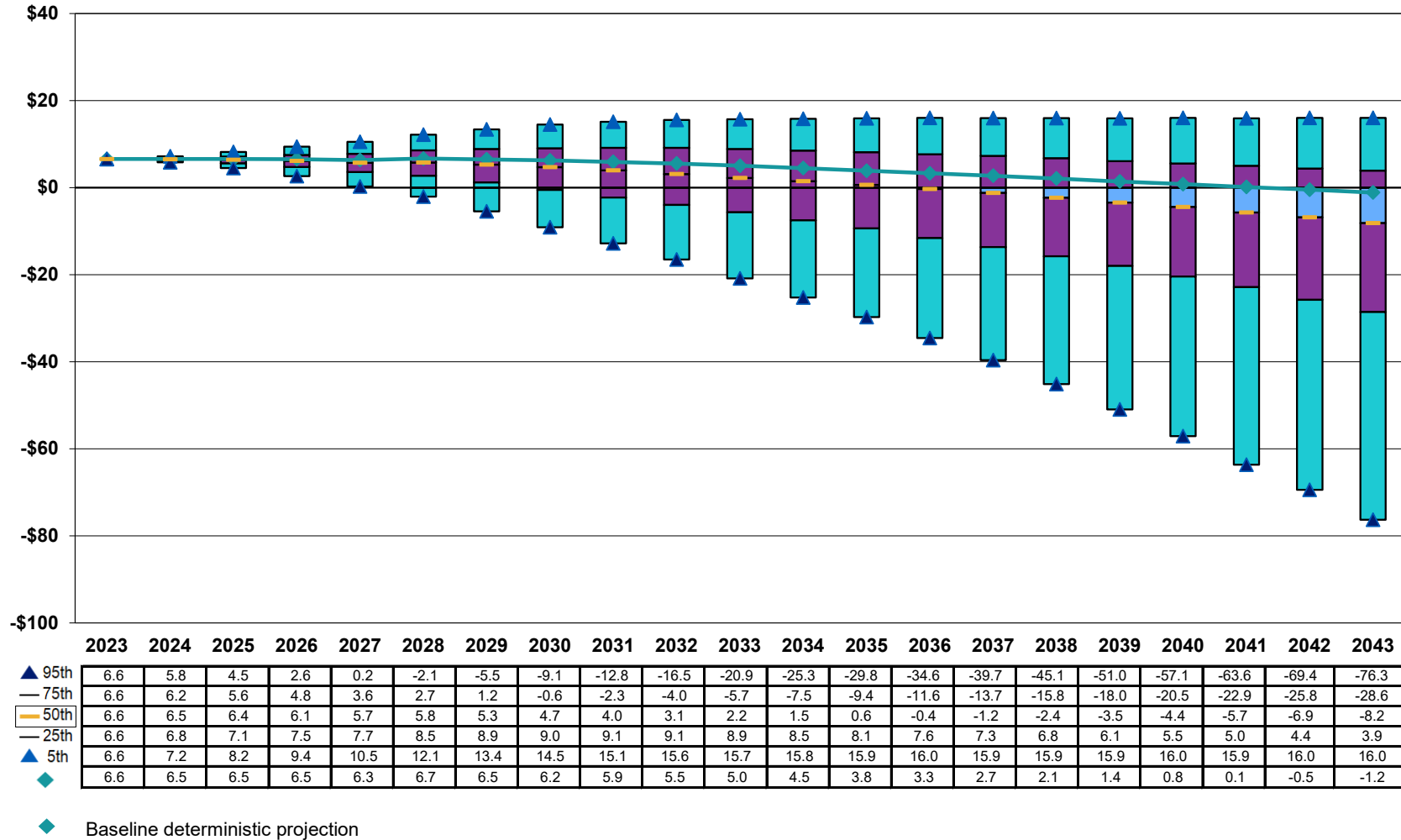
Projected Funded Ratios
(Valuation Value of Assets Basis)



Section 2: Key Plan Risks

Chart 10

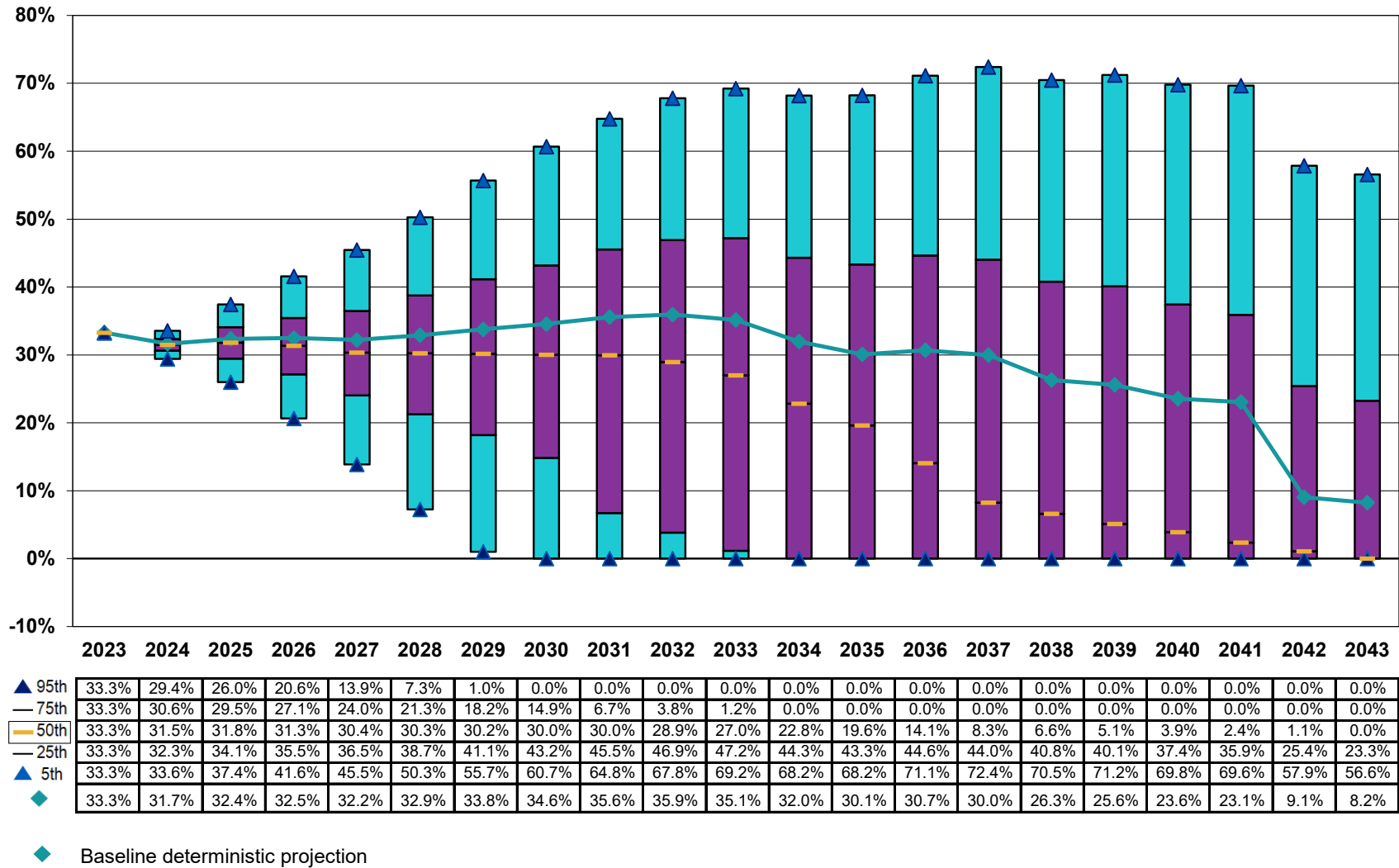
Projected UAAL (Valuation Value of Assets Basis – \$ in Billions)



Section 2: Key Plan Risks

Chart 11

Projected Employer Contribution Rates (% of Payroll)



Section 2: Key Plan Risks

Plan maturity measures that affect primary risks

The annual actuarial valuations consider the number and demographic characteristics of covered members, including active members and non-active members (inactive members, retirees and beneficiaries). Over the past 10 valuations from June 30, 2014 to June 30, 2023, LACERS has become more mature as indicated by the continued increase in the ratio of non-active to active members covered by the Retirement and Health Plans as shown in *Chart 12a* and *Chart 12b*, respectively. These charts also show the ratio of members in pay status (retirees and beneficiaries) to active members. This ratio excludes the inactive members who have relatively smaller liabilities. The increase in the ratios is significant because any increase in UAAL due to unfavorable future investment and non-investment experience for a plan with a relatively larger group of non-active members would have to be amortized and funded using the payroll of a relatively smaller group of active members.

Another indicator of a more mature plan is relatively large amounts of assets and/or liabilities compared to active member payroll, which leads to increasing volatility in the level of required contributions. The Asset Volatility Ratio (AVR), which is equal to the market value of assets divided by total payroll, provides an indication of contribution sensitivity to changes in the current level of assets and is detailed for the Retirement and Health Plans in *Chart 13a* and *Chart 13b*, respectively. The Liability Volatility Ratio (LVR), which is equal to the actuarial accrued liability divided by payroll, provides an indication of the contribution sensitivity to changes in the current level of liability and is also detailed for the Retirement and Health Plans in *Chart 13a* and *Chart 13b*, respectively. Over time, the AVR should approach the LVR because when a plan is fully funded the assets will equal the liabilities. As such, the LVR also indicates the long-term contribution sensitivity to the asset volatility, as the plan approaches full funding.

In particular, the Retirement Plan's AVR was 7.1 as of June 30, 2023. This means that a 1% asset gain or loss in 2023/2024 (relative to the assumed investment return) would amount to 7.1% of one year's payroll. Similarly, the Retirement Plan's LVR was 10.1 as of June 30, 2023, so a 1% liability gain or loss in 2023/2024 would amount to 10.1% of one year's payroll. Based on LACERS' policy to amortize actuarial experience over a period of 15 years when the Plan has an unfunded liability, for the Retirement Plan there would be a 0.6% of payroll decrease or increase in the required contribution rate for each 1% asset gain or loss, respectively, and a 0.9% of payroll decrease or increase in the required contribution rate for each 1% liability gain or loss, respectively.

It is also informative to note that the AVR and LVR for the Retirement Plan are significantly higher than for the Health Plan. This means that both investment volatility and assumption changes will have a greater impact on the contribution rates of the Retirement Plan than on the contribution rates of the Health Plan. This is illustrated in the following table:

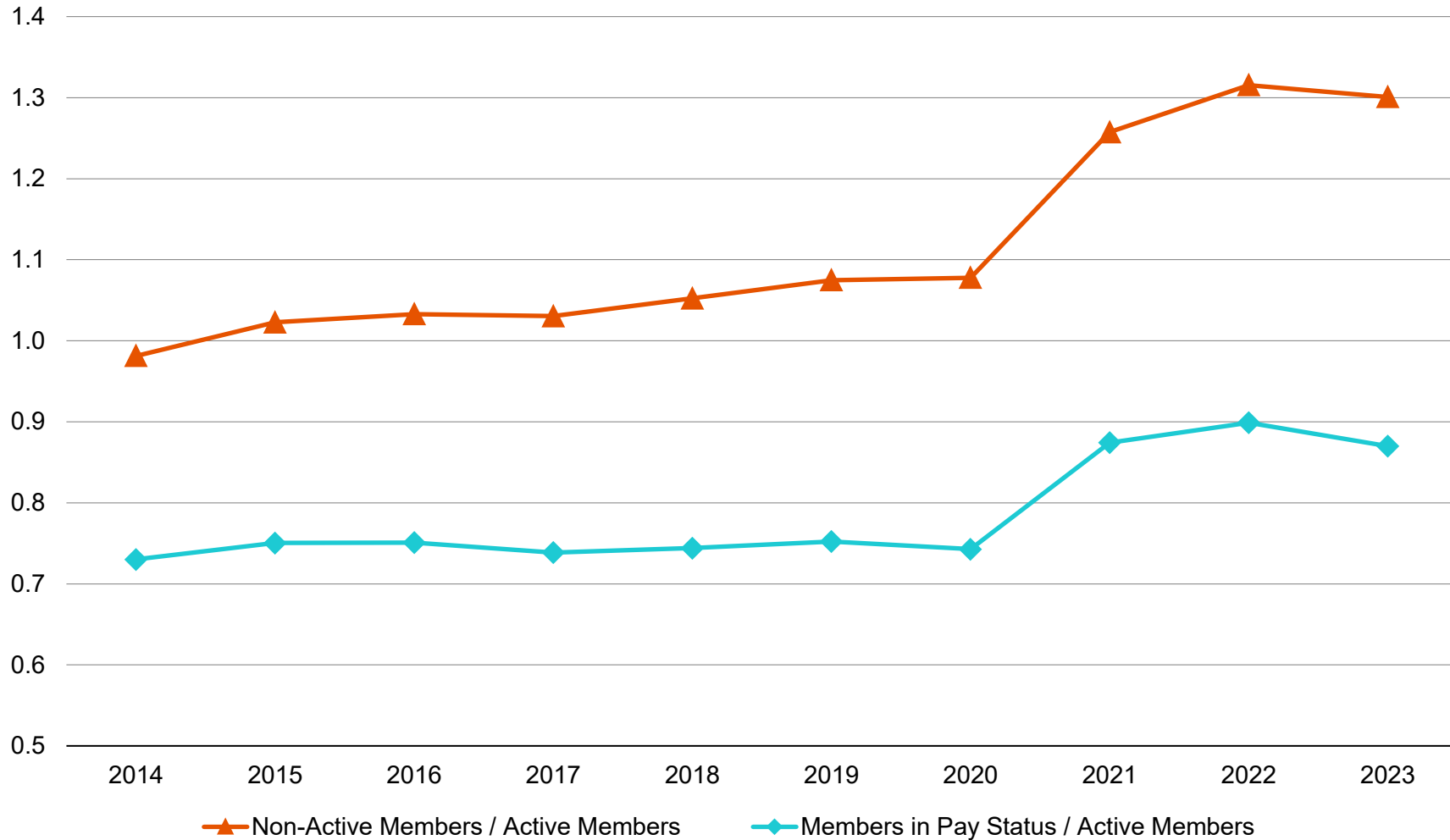
Section 2: Key Plan Risks

Plan	AVR	10% Investment Loss Compares to	LVR	10% Liability Change Compares to
Retirement Plan	7.1	71% of payroll	10.1	101% of payroll
Health Plan	1.4	14% of payroll	1.4	14% of payroll
Combined	8.5	85% of payroll	11.5	115% of payroll

Section 2: Key Plan Risks

Chart 12a

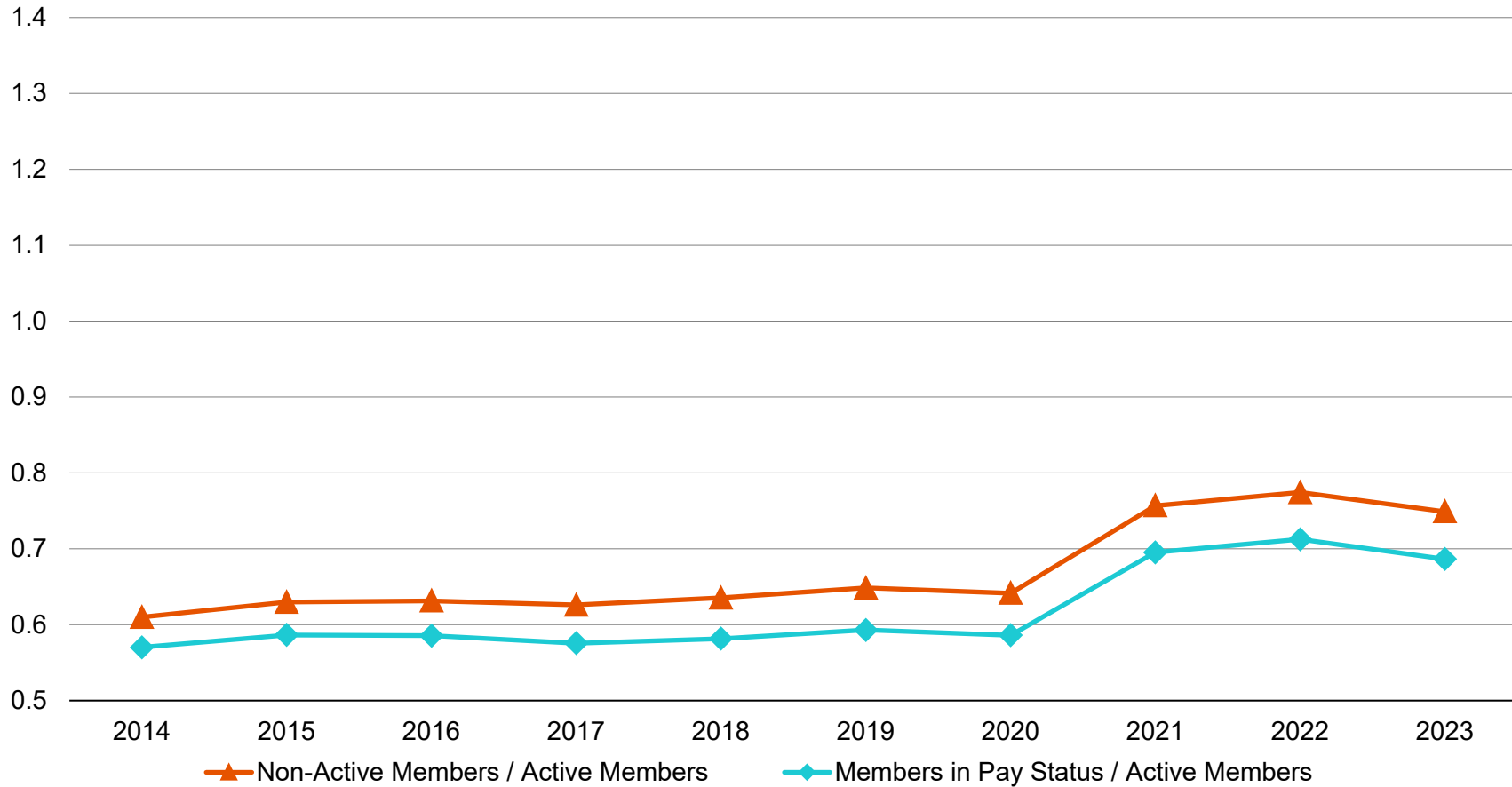
Retirement Plan – Ratio of Retirees and Beneficiaries (Pay Status) to Active Members & Ratio of Inactive, Retirees and Beneficiaries (Non-Active) to Active Members as of June 30



Section 2: Key Plan Risks

Chart 12b

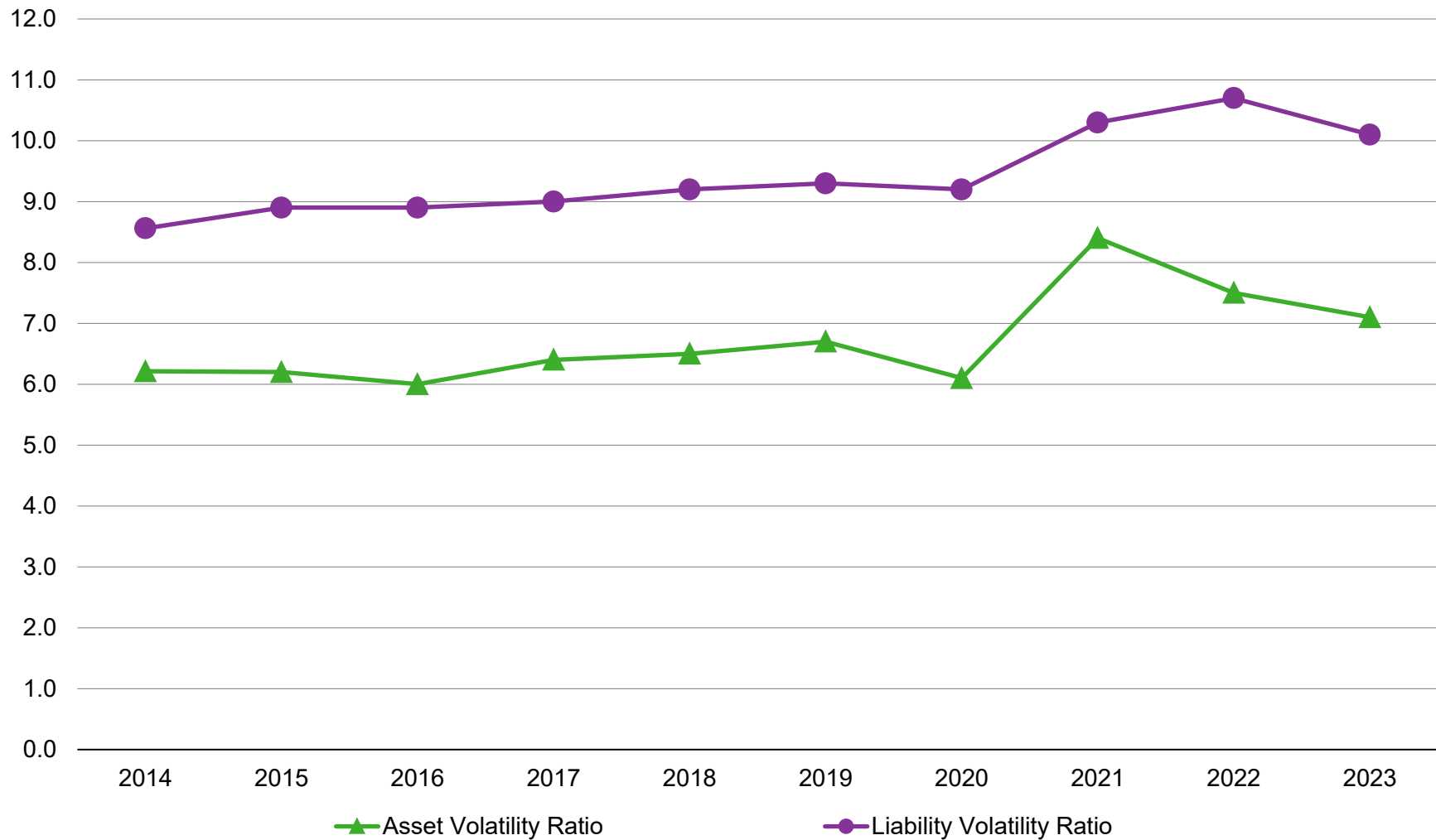
Health Plan – Ratio of Retirees and Beneficiaries (Pay Status) to Active Members & Ratio of Inactive, Retirees and Beneficiaries (Non-Active) to Active Members as of June 30



Section 2: Key Plan Risks

Chart 13a

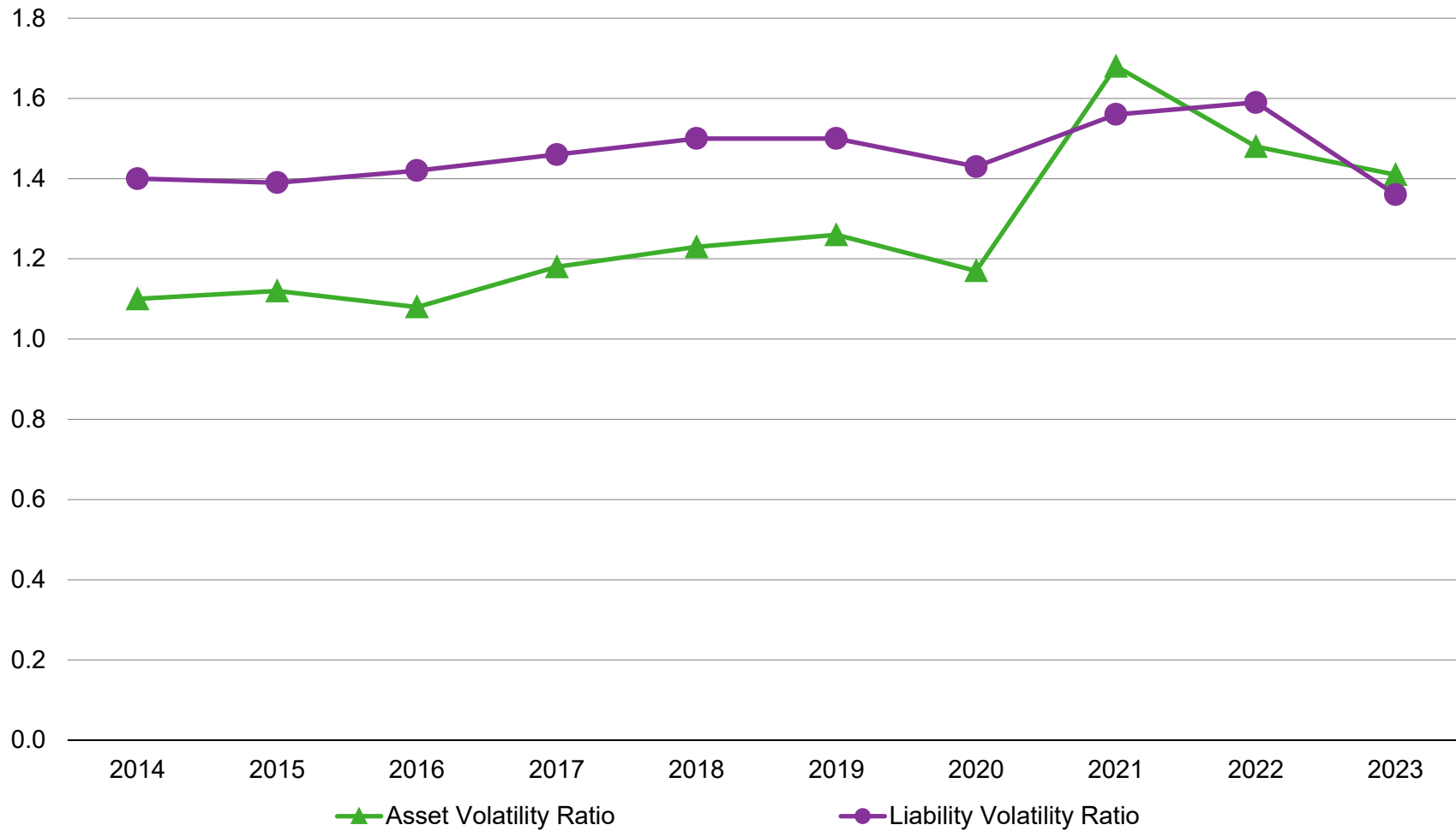
Retirement Plan – Volatility Ratios as of June 30



Section 2: Key Plan Risks

Chart 13b

Health Plan – Volatility Ratios as of June 30



Appendix A: Actuarial Assumptions & Methods

Unless otherwise noted, the results included in this report have been prepared based on the assumptions and methods used in preparing the June 30, 2023 actuarial valuations.

Deterministic projection

In addition, we have prepared the deterministic projection using the following assumptions and methods applied in the June 30, 2023 actuarial valuations:

- Non-economic assumptions will remain unchanged.
- Retirement benefit formulas will remain unchanged.
- Los Angeles Charter and Administrative Code will remain unchanged.
- UAAL amortization method will remain unchanged (i.e., 15-year layers for actuarial gains/losses, 20-year layers for assumption or method changes, 15-year layers for plan amendments, 30-year layers for actuarial surplus, and level percent of pay).
- Economic assumptions will remain unchanged, including the annual 7.00% investment earnings and 3.00% active payroll growth assumptions.
- Deferred investment gains and losses will be recognized over a seven-year period.
- In estimating the benefit payments for the open group, we have assumed that the annual payments will increase by 5% for both the Retirement and Health Plans. The assumption for the Retirement Plan, which was lowered from last year's assumption of 5.5%, was developed by analyzing the increase in the actual benefit payments over the five years ending June 30, 2023, excluding the two-year period from July 1, 2020 to June 30, 2022 to try to remove the effects of the 2020 City Separation Incentive Program, combined with the increase in the projected benefit payments based on the actuarial assumptions described herein for the five years after July 1, 2023. The assumption for the Health Plan was updated from 5.5% to 5.0% based on a review of actual benefit costs for the five years preceding June 30, 2023 and projected benefit costs for the five years after June 30, 2023.
- All other actuarial assumptions used in the June 30, 2023 actuarial valuations will be realized.

Appendix A: Actuarial Assumptions & Methods

Stochastic projection

Besides the assumptions and methods discussed above for the deterministic projection, the following additional assumptions or parameters are used in projecting LACERS' investment portfolio over the next 20 years based on performing 10,000 trial outcomes of future market returns.

Target asset allocation

The target asset allocation is based on that provided by LACERS at the last triennial experience study and used by Segal to set the investment return assumption of 7.00%. That target asset allocation is as follows:

Appendix A: Actuarial Assumptions & Methods

Target Asset Allocation

Asset Class	Target Allocation
Large Cap U.S. Equity	15.00%
Small/Mid Cap U.S. Equity	6.00%
Developed International Large Cap Equity	15.00%
Developed International Small Cap Equity	3.00%
Emerging Markets Equity	6.67%
Core Bonds	11.25%
High Yield Bonds	1.50%
Bank Loans	1.50%
TIPS	3.60%
Emerging Market External Debt	2.00%
Emerging Market Local Currency Debt	2.00%
Real Estate – Core	4.20%
Cash & Equivalents	1.00%
Private Equity	16.00%
Private Credit (Private Debt)	5.75%
Emerging Market Small-Cap Equity	1.33%
REIT	1.40%
Real Estate – Non-Core	2.80%
Total	100.00%

Simulation of future returns

In preparing the 10,000 trial outcomes of future market returns, we performed simulations using assumptions regarding the 20-year arithmetic returns, standard deviations and correlation matrix that were found in the 2023 survey prepared by Horizon Actuarial Services.¹ We used the assumptions that were closest to the asset classes found in LACERS' investment portfolio.

¹ That survey included responses from 42 investment advisors, including LACERS' investment advisor at NEPC.

Appendix A: Actuarial Assumptions & Methods

A summary of the 20-year arithmetic returns,¹ standard deviations and correlation matrix for each of the different asset classes used in the modeling is as follows:

20-Year Arithmetic Return and Standard Deviation

Asset Class	20-Year Arithmetic Return	Standard Deviation
US Equity – Large Cap	8.67%	16.64%
US Equity – Small/Mid Cap	9.72%	20.51%
Non-US Equity – Developed	9.38%	18.26%
Non-US Equity – Emerging	11.39%	23.87%
US Corporate Bonds – Core	4.93%	5.85%
US Corporate Bonds – High Yield	7.03%	10.01%
Non-US Debt – Emerging	7.00%	10.93%
US Treasuries (Cash Equivalents)	3.23%	1.09%
TIPS (Inflation-Protected)	4.29%	6.17%
Real Estate	7.48%	16.72%
Private Equity	12.77%	22.57%
Private Debt	8.89%	11.73%

¹ Note that only 27 investment advisors provided long-term (e.g. 20-year) capital market assumptions in the survey. These returns are gross of inflation and before any adjustment for administrative and investment expenses. The annual inflation assumption based on the Horizon Survey was 2.47%. The annual adjustment for investment expenses was 0.16%.

Appendix A: Actuarial Assumptions & Methods

Correlation Matrix

Asset Class	1	2	3	4	5	6	7	8	9	10	11	12
1. US Equity – Large Cap	1.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2. US Equity – Small/Mid Cap	0.89	1.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3. Non-US Equity – Developed	0.81	0.77	1.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4. Non-US Equity – Emerging	0.68	0.66	0.76	1.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5. US Corporate Bonds – Core	0.26	0.22	0.24	0.24	1.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6. US Corporate Bonds – High Yield	0.64	0.65	0.61	0.60	0.47	1.00	N/A	N/A	N/A	N/A	N/A	N/A
7. Non-US Debt – Emerging	0.50	0.47	0.53	0.60	0.55	0.61	1.00	N/A	N/A	N/A	N/A	N/A
8. US Treasuries (Cash Equivalents)	(0.06)	(0.07)	(0.05)	(0.04)	0.16	(0.05)	0.05	1.00	N/A	N/A	N/A	N/A
9. TIPS (Inflation-Protected)	0.14	0.11	0.15	0.18	0.64	0.32	0.40	0.16	1.00	N/A	N/A	N/A
10. Real Estate	0.56	0.55	0.50	0.42	0.25	0.45	0.38	(0.01)	0.19	1.00	N/A	N/A
11. Private Equity	0.73	0.71	0.66	0.60	0.16	0.50	0.39	(0.07)	0.08	0.45	1.00	N/A
12. Private Debt	0.51	0.52	0.49	0.46	0.14	0.61	0.36	(0.07)	0.08	0.35	0.54	1.00

Other considerations

This risk report has been prepared for the exclusive use and benefit of LACERS, based upon information provided by LACERS and LACERS' other service providers or otherwise made available to Segal at the time this document was created. The results presented in this report are intended to provide insight into key plan risks that can inform financial preparation and future decision making. However, Segal makes no representation or warranty as to the accuracy of any forward-looking statements and does not guarantee any particular outcome or result. The modeling projections are intended to serve as illustrations of future financial outcomes that are based on the information available to us at the time the modeling is undertaken and completed, and the agreed-upon assumptions and methodologies described herein. Emerging results may differ significantly if the actual experience proves to be different from these assumptions or if alternative methodologies are used. Actual experience may differ due to such variables as demographic experience, the economy, stock market performance and the regulatory environment.

Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Deterministic cost projections are based on a proprietary forecasting model. Our Actuarial Technology and Systems unit, comprising

Appendix A: Actuarial Assumptions & Methods

both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

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Appendix B: Detailed Scenario Test

The following pages contain twenty-three-year illustrations of City contributions, funded ratios and unfunded actuarial accrued liabilities for each of the Retirement and Health Plans, as well as for the two plans combined.

In addition to the assumptions outlined in *Appendix A* of this report, we have used the following market return assumptions to model three hypothetical market return scenarios:

- Scenario 1: Assumed market return of 0.00% for fiscal year 2023/2024, 7.00% market return per year thereafter
- Scenario 2: Assumed market return of 7.00% for fiscal year 2023/2024, 7.00% market return per year thereafter
- Scenario 3: Assumed market return of 14.00% for fiscal year 2023/2024, 7.00% market return per year thereafter

While we have not assigned a probability on the 2023/2024 market return coming in at these rates, the City can use these results to interpolate in order to estimate the funded status and employer contribution rates for the June 30, 2024 and next several valuations as the actual investment experience for the 2023/2024 year becomes available. Additionally, comparable experience in upcoming future years is likely to have a similar impact on the System absent any significant plan or assumption changes.

Appendix B: Detailed Scenario Test

Scenario 1: Assumed market return of 0.00% for 2023/24, 7.00% thereafter

Twenty-Three-Year Illustration of UAAL, Funded Ratio and City Contributions

(Contributions Received on July 15 – \$ in Thousands)

Retirement Plan Only

Valuation Year	UAAL	Funded Ratio	Fiscal Year End	Fiscal Year Pay	Normal Cost	UAAL Payment	Total Rate	Contribution Amount	Incremental Increase
2022	\$6,429,484	73.3%	2024	\$2,512,179	7.64%	21.79%	29.43%	\$739,334	N/A
2023	6,805,716	73.1%	2025	2,587,544	7.78%	22.19%	29.97%	775,487	\$36,153
2024	6,970,731	73.4%	2026	2,665,171	7.53%	21.43%	28.96%	771,833	(3,654)
2025	7,223,528	73.4%	2027	2,745,126	7.92%	22.58%	30.50%	837,263	65,430
2026	7,444,685	73.5%	2028	2,827,480	7.72%	23.71%	31.43%	888,677	51,414
2027	7,498,398	74.2%	2029	2,912,304	7.52%	24.40%	31.92%	929,607	40,930
2028	7,968,595	73.5%	2030	2,999,673	7.32%	25.85%	33.17%	994,992	65,385
2029	7,964,766	74.3%	2031	3,089,663	7.14%	27.55%	34.69%	1,071,804	76,812
2030	7,886,033	75.3%	2032	3,182,353	6.97%	29.06%	36.03%	1,146,602	74,798
2031	7,525,286	77.1%	2033	3,277,824	6.80%	30.29%	37.09%	1,215,745	69,143
2032	7,060,485	79.1%	2034	3,376,159	6.64%	30.80%	37.44%	1,264,034	48,289
2033	6,490,964	81.3%	2035	3,477,443	6.48%	30.13%	36.61%	1,273,092	9,058
2034	5,831,240	83.6%	2036	3,581,767	6.35%	27.08%	33.43%	1,197,385	(75,707)
2035	5,117,586	86.0%	2037	3,689,220	6.21%	25.32%	31.53%	1,163,211	(34,174)
2036	4,437,212	88.1%	2038	3,799,896	6.09%	26.01%	32.10%	1,219,767	56,556
2037	3,747,529	90.2%	2039	3,913,893	5.99%	25.38%	31.37%	1,227,788	8,021
2038	2,952,318	92.4%	2040	4,031,310	5.89%	21.80%	27.69%	1,116,270	(111,518)
2039	2,096,518	94.7%	2041	4,152,249	5.81%	20.52%	26.33%	1,093,287	(22,983)
2040	1,302,930	96.7%	2042	4,276,817	5.72%	17.63%	23.35%	998,637	(94,650)
2041	482,451	98.8%	2043	4,405,121	5.65%	16.23%	21.88%	963,841	(34,796)
2042	(290,560)	100.7%	2044	4,537,275	5.59%	-0.35%	5.24%	237,753	(726,088)
2043	(1,075,425)	102.6%	2045	4,673,393	5.54%	-1.30%	4.24%	198,152	(39,601)
2044	(1,135,168)	102.8%	2046	4,813,595	5.50%	-1.33%	4.17%	200,727	2,575
2045	(1,151,123)	102.8%	2047	4,958,003	5.46%	-1.31%	4.15%	205,757	5,030
2046	(1,164,743)	102.8%	2048	5,106,743	5.43%	-1.29%	4.14%	211,419	5,662

Appendix B: Detailed Scenario Test

Health Plan Only

Valuation Year	UAAL	Funded Ratio	Fiscal Year End	Fiscal Year Pay	Normal Cost	UAAL Payment	Total Rate	Contribution Amount	Incremental Increase
2022	\$107,741	97.0%	2024	\$2,512,179	3.60%	0.33%	3.93%	\$98,729	N/A
2023	(241,890)	107.1%	2025	2,587,544	3.85%	-0.53%	3.32%	85,906	\$(12,823)
2024	(208,473)	105.8%	2026	2,665,171	3.83%	-0.45%	3.38%	90,083	4,177
2025	(134,160)	103.6%	2027	2,745,126	3.83%	-0.27%	3.56%	97,726	7,643
2026	(66,401)	101.7%	2028	2,827,480	3.84%	-0.13%	3.71%	104,899	7,173
2027	(24,166)	100.6%	2029	2,912,304	3.86%	-0.05%	3.81%	110,959	6,060
2028	109,042	97.5%	2030	2,999,673	3.86%	0.33%	4.19%	125,686	14,727
2029	157,453	96.5%	2031	3,089,663	3.87%	0.47%	4.34%	134,091	8,405
2030	196,403	95.8%	2032	3,182,353	3.89%	0.59%	4.48%	142,569	8,478
2031	195,274	96.0%	2033	3,277,824	3.90%	0.60%	4.50%	147,502	4,933
2032	189,385	96.3%	2034	3,376,159	3.93%	0.59%	4.52%	152,602	5,100
2033	182,421	96.6%	2035	3,477,443	3.94%	0.61%	4.55%	158,224	5,622
2034	174,334	96.9%	2036	3,581,767	3.95%	0.61%	4.56%	163,329	5,105
2035	164,556	97.2%	2037	3,689,220	3.97%	0.61%	4.58%	168,966	5,637
2036	153,631	97.5%	2038	3,799,896	3.99%	0.61%	4.60%	174,795	5,829
2037	141,147	97.8%	2039	3,913,893	4.01%	0.61%	4.62%	180,822	6,027
2038	127,009	98.1%	2040	4,031,310	4.02%	0.62%	4.64%	187,053	6,231
2039	111,019	98.4%	2041	4,152,249	4.04%	0.62%	4.66%	193,495	6,442
2040	93,080	98.7%	2042	4,276,817	4.06%	0.61%	4.67%	199,727	6,232
2041	72,920	99.0%	2043	4,405,121	4.07%	0.61%	4.68%	206,160	6,433
2042	50,438	99.4%	2044	4,537,275	4.08%	0.61%	4.69%	212,798	6,638
2043	25,519	99.7%	2045	4,673,393	4.08%	0.30%	4.38%	204,695	(8,103)
2044	(2,092)	100.0%	2046	4,813,595	4.10%	-0.01%	4.09%	196,876	(7,819)
2045	(16,422)	100.2%	2047	4,958,003	4.12%	-0.02%	4.10%	203,278	6,402
2046	(16,297)	100.2%	2048	5,106,743	4.13%	-0.01%	4.12%	210,398	7,120

Appendix B: Detailed Scenario Test

Retirement and Health Plans Combined

Valuation Year	UAAL	Funded Ratio	Fiscal Year End	Fiscal Year Pay	Normal Cost	UAAL Payment	Total Rate	Contribution Amount	Incremental Increase
2022	\$6,537,225	76.4%	2024	\$2,512,179	11.24%	22.12%	33.36%	\$838,063	N/A
2023	6,563,826	77.1%	2025	2,587,544	11.63%	21.66%	33.29%	861,393	\$23,330
2024	6,762,257	77.3%	2026	2,665,171	11.36%	20.98%	32.34%	861,916	523
2025	7,089,367	77.1%	2027	2,745,126	11.75%	22.31%	34.06%	934,989	73,073
2026	7,378,284	77.0%	2028	2,827,480	11.56%	23.58%	35.14%	993,576	58,587
2027	7,474,232	77.5%	2029	2,912,304	11.38%	24.35%	35.73%	1,040,566	46,990
2028	8,077,638	76.5%	2030	2,999,673	11.18%	26.18%	37.36%	1,120,678	80,112
2029	8,122,219	77.1%	2031	3,089,663	11.01%	28.02%	39.03%	1,205,895	85,217
2030	8,082,437	78.0%	2032	3,182,353	10.86%	29.65%	40.51%	1,289,171	83,276
2031	7,720,560	79.6%	2033	3,277,824	10.70%	30.89%	41.59%	1,363,247	74,076
2032	7,249,871	81.4%	2034	3,376,159	10.57%	31.39%	41.96%	1,416,636	53,389
2033	6,673,385	83.4%	2035	3,477,443	10.42%	30.74%	41.16%	1,431,316	14,680
2034	6,005,574	85.4%	2036	3,581,767	10.30%	27.69%	37.99%	1,360,714	(70,602)
2035	5,282,142	87.5%	2037	3,689,220	10.18%	25.93%	36.11%	1,332,177	(28,537)
2036	4,590,842	89.4%	2038	3,799,896	10.08%	26.62%	36.70%	1,394,562	62,385
2037	3,888,675	91.2%	2039	3,913,893	10.00%	25.99%	35.99%	1,408,610	14,048
2038	3,079,326	93.2%	2040	4,031,310	9.91%	22.42%	32.33%	1,303,323	(105,287)
2039	2,207,537	95.2%	2041	4,152,249	9.85%	21.14%	30.99%	1,286,782	(16,541)
2040	1,396,010	97.0%	2042	4,276,817	9.78%	18.24%	28.02%	1,198,364	(88,418)
2041	555,371	98.8%	2043	4,405,121	9.72%	16.84%	26.56%	1,170,001	(28,363)
2042	(240,122)	100.5%	2044	4,537,275	9.67%	0.26%	9.93%	450,551	(719,450)
2043	(1,049,906)	102.1%	2045	4,673,393	9.62%	-1.00%	8.62%	402,847	(47,704)
2044	(1,137,261)	102.3%	2046	4,813,595	9.60%	-1.34%	8.26%	397,603	(5,244)
2045	(1,167,545)	102.3%	2047	4,958,003	9.58%	-1.33%	8.25%	409,035	11,432
2046	(1,181,041)	102.4%	2048	5,106,743	9.56%	-1.30%	8.26%	421,817	12,782

Note: Results may not total exactly due to rounding.

Appendix B: Detailed Scenario Test

Scenario 2: Assumed market return of 7.00% for 2023/24, 7.00% thereafter

Twenty-Three-Year Illustration of UAAL, Funded Ratio and City Contributions

(Contributions Received on July 15 – \$ in Thousands)

Retirement Plan Only

Valuation Year	UAAL	Funded Ratio	Fiscal Year End	Fiscal Year Pay	Normal Cost ¹	UAAL Payment	Total Rate	Contribution Amount	Incremental Increase
2022	\$6,429,484	73.3%	2024	\$2,512,179	7.64%	21.79%	29.43%	\$739,334	N/A
2023	6,805,716	73.1%	2025	2,587,544	7.78%	22.19%	29.97%	775,487	\$36,153
2024	6,787,557	74.1%	2026	2,665,171	7.53%	20.82%	28.35%	755,576	(19,911)
2025	6,767,425	75.1%	2027	2,745,126	7.92%	21.08%	29.00%	796,086	40,510
2026	6,726,767	76.1%	2028	2,827,480	7.72%	21.35%	29.07%	821,948	25,862
2027	6,539,822	77.5%	2029	2,912,304	7.52%	21.25%	28.77%	837,870	15,922
2028	6,792,376	77.4%	2030	2,999,673	7.32%	21.97%	29.29%	878,604	40,734
2029	6,595,241	78.7%	2031	3,089,663	7.14%	23.00%	30.14%	931,225	52,621
2030	6,348,860	80.1%	2032	3,182,353	6.97%	23.92%	30.89%	983,029	51,804
2031	6,030,269	81.7%	2033	3,277,824	6.80%	25.09%	31.89%	1,045,298	62,269
2032	5,635,500	83.3%	2034	3,376,159	6.64%	25.59%	32.23%	1,088,136	42,838
2033	5,147,906	85.2%	2035	3,477,443	6.48%	24.93%	31.41%	1,092,265	4,129
2034	4,581,656	87.1%	2036	3,581,767	6.35%	21.87%	28.22%	1,010,775	(81,490)
2035	3,973,644	89.1%	2037	3,689,220	6.21%	20.11%	26.32%	971,003	(39,772)
2036	3,412,100	90.9%	2038	3,799,896	6.09%	20.80%	26.89%	1,021,792	50,789
2037	2,855,533	92.5%	2039	3,913,893	5.99%	20.17%	26.16%	1,023,874	2,082
2038	2,208,902	94.3%	2040	4,031,310	5.89%	16.58%	22.47%	905,835	(118,039)
2039	1,518,413	96.1%	2041	4,152,249	5.81%	15.92%	21.73%	902,284	(3,551)
2040	908,661	97.7%	2042	4,276,817	5.72%	13.97%	19.69%	842,105	(60,179)
2041	264,067	99.4%	2043	4,405,121	5.65%	13.52%	19.17%	844,462	2,357
2042	(357,657)	100.9%	2044	4,537,275	5.59%	-0.45%	5.14%	233,216	(611,246)
2043	(1,019,955)	102.5%	2045	4,673,393	5.54%	-1.23%	4.31%	201,423	(31,793)
2044	(1,071,446)	102.6%	2046	4,813,595	5.50%	-1.26%	4.24%	204,096	2,673
2045	(1,086,440)	102.6%	2047	4,958,003	5.46%	-1.24%	4.22%	209,228	5,132
2046	(1,099,138)	102.7%	2048	5,106,743	5.43%	-1.22%	4.21%	214,994	5,766

¹ Once the City is expected to be at or above 100% actuarially funded, the employer's normal cost rate has been adjusted to include an additional 1% of Tier 5 projected payroll for the Tier 5 members.

Appendix B: Detailed Scenario Test

Health Plan Only

Valuation Year	UAAL	Funded Ratio	Fiscal Year End	Fiscal Year Pay	Normal Cost	UAAL Payment	Total Rate	Contribution Amount	Incremental Increase
2022	\$107,741	97.0%	2024	\$2,512,179	3.60%	0.33%	3.93%	\$98,729	N/A
2023	(241,890)	107.1%	2025	2,587,544	3.85%	-0.53%	3.32%	85,906	\$(12,823)
2024	(244,025)	106.8%	2026	2,665,171	3.83%	-0.52%	3.31%	88,217	2,311
2025	(222,685)	105.9%	2027	2,745,126	3.83%	-0.46%	3.37%	92,511	4,294
2026	(207,121)	105.3%	2028	2,827,480	3.84%	-0.41%	3.43%	96,983	4,472
2027	(214,662)	105.2%	2029	2,912,304	3.86%	-0.42%	3.44%	100,183	3,200
2028	(129,336)	103.0%	2030	2,999,673	3.86%	-0.24%	3.62%	108,588	8,405
2029	(126,611)	102.8%	2031	3,089,663	3.87%	-0.23%	3.64%	112,464	3,876
2030	(127,291)	102.7%	2032	3,182,353	3.89%	-0.23%	3.66%	116,474	4,010
2031	(127,937)	102.6%	2033	3,277,824	3.90%	-0.22%	3.68%	120,624	4,150
2032	(128,529)	102.5%	2034	3,376,159	3.93%	-0.22%	3.71%	125,255	4,631
2033	(128,988)	102.4%	2035	3,477,443	3.94%	-0.21%	3.73%	129,709	4,454
2034	(129,612)	102.3%	2036	3,581,767	3.95%	-0.20%	3.75%	134,316	4,607
2035	(130,155)	102.2%	2037	3,689,220	3.97%	-0.20%	3.77%	139,084	4,768
2036	(130,667)	102.1%	2038	3,799,896	3.99%	-0.19%	3.80%	144,396	5,312
2037	(131,077)	102.1%	2039	3,913,893	4.01%	-0.19%	3.82%	149,511	5,115
2038	(131,744)	102.0%	2040	4,031,310	4.02%	-0.18%	3.84%	154,802	5,291
2039	(132,343)	101.9%	2041	4,152,249	4.04%	-0.18%	3.86%	160,277	5,475
2040	(132,810)	101.9%	2042	4,276,817	4.06%	-0.18%	3.88%	165,940	5,663
2041	(133,239)	101.8%	2043	4,405,121	4.07%	-0.17%	3.90%	171,800	5,860
2042	(134,000)	101.7%	2044	4,537,275	4.08%	-0.17%	3.91%	177,407	5,607
2043	(135,064)	101.7%	2045	4,673,393	4.08%	-0.16%	3.92%	183,197	5,790
2044	(136,049)	101.6%	2046	4,813,595	4.10%	-0.16%	3.94%	189,656	6,459
2045	(136,753)	101.6%	2047	4,958,003	4.12%	-0.16%	3.96%	196,337	6,681
2046	(137,325)	101.5%	2048	5,106,743	4.13%	-0.15%	3.98%	203,248	6,911

Appendix B: Detailed Scenario Test

Retirement and Health Plans Combined

Valuation Year	UAAL	Funded Ratio	Fiscal Year End	Fiscal Year Pay	Normal Cost	UAAL Payment	Total Rate	Contribution Amount	Incremental Increase
2022	\$6,537,225	76.4%	2024	\$2,512,179	11.24%	22.12%	33.36%	\$838,063	N/A
2023	6,563,826	77.1%	2025	2,587,544	11.63%	21.66%	33.29%	861,393	\$23,330
2024	6,543,532	78.1%	2026	2,665,171	11.36%	20.30%	31.66%	843,793	(17,600)
2025	6,544,740	78.8%	2027	2,745,126	11.75%	20.62%	32.37%	888,597	44,804
2026	6,519,645	79.7%	2028	2,827,480	11.56%	20.94%	32.50%	918,931	30,334
2027	6,325,160	81.0%	2029	2,912,304	11.38%	20.83%	32.21%	938,053	19,122
2028	6,663,040	80.6%	2030	2,999,673	11.18%	21.73%	32.91%	987,192	49,139
2029	6,468,630	81.8%	2031	3,089,663	11.01%	22.77%	33.78%	1,043,689	56,497
2030	6,221,569	83.0%	2032	3,182,353	10.86%	23.69%	34.55%	1,099,503	55,814
2031	5,902,332	84.4%	2033	3,277,824	10.70%	24.87%	35.57%	1,165,922	66,419
2032	5,506,971	85.9%	2034	3,376,159	10.57%	25.37%	35.94%	1,213,391	47,469
2033	5,018,919	87.5%	2035	3,477,443	10.42%	24.72%	35.14%	1,221,974	8,583
2034	4,452,044	89.2%	2036	3,581,767	10.30%	21.67%	31.97%	1,145,091	(76,883)
2035	3,843,489	90.9%	2037	3,689,220	10.18%	19.91%	30.09%	1,110,087	(35,004)
2036	3,281,433	92.4%	2038	3,799,896	10.08%	20.61%	30.69%	1,166,188	56,101
2037	2,724,456	93.9%	2039	3,913,893	10.00%	19.98%	29.98%	1,173,385	7,197
2038	2,077,158	95.4%	2040	4,031,310	9.91%	16.40%	26.31%	1,060,637	(112,748)
2039	1,386,070	97.0%	2041	4,152,249	9.85%	15.74%	25.59%	1,062,561	1,924
2040	775,851	98.4%	2042	4,276,817	9.78%	13.79%	23.57%	1,008,045	(54,516)
2041	130,829	99.7%	2043	4,405,121	9.72%	13.35%	23.07%	1,016,262	8,217
2042	(491,657)	101.0%	2044	4,537,275	9.67%	-0.62%	9.05%	410,623	(605,639)
2043	(1,155,019)	102.4%	2045	4,673,393	9.62%	-1.39%	8.23%	384,620	(26,003)
2044	(1,207,495)	102.4%	2046	4,813,595	9.60%	-1.42%	8.18%	393,752	9,132
2045	(1,223,193)	102.5%	2047	4,958,003	9.58%	-1.40%	8.18%	405,565	11,813
2046	(1,236,464)	102.5%	2048	5,106,743	9.56%	-1.37%	8.19%	418,242	12,677

Note: Results may not total exactly due to rounding.

Appendix B: Detailed Scenario Test

Scenario 3: Assumed market return of 14.00% for 2023/24, 7.00% thereafter

Twenty-Three-Year Illustration of UAAL, Funded Ratio and City Contributions

(Contributions Received on July 15 – \$ in Thousands)

Retirement Plan Only

Valuation Year	UAAL	Funded Ratio	Fiscal Year End	Fiscal Year Pay	Normal Cost ¹	UAAL Payment	Total Rate	Contribution Amount	Incremental Increase
2022	\$6,429,484	73.3%	2024	\$2,512,179	7.64%	21.79%	29.43%	\$739,334	N/A
2023	6,805,716	73.1%	2025	2,587,544	7.78%	22.19%	29.97%	775,487	\$36,153
2024	6,604,383	74.8%	2026	2,665,171	7.53%	20.22%	27.75%	739,585	(35,902)
2025	6,311,323	76.8%	2027	2,745,126	7.92%	19.58%	27.50%	754,910	15,325
2026	6,008,563	78.7%	2028	2,827,480	7.72%	18.98%	26.70%	754,937	27
2027	5,580,942	80.8%	2029	2,912,304	7.52%	18.10%	25.62%	746,132	(8,805)
2028	5,616,133	81.3%	2030	2,999,673	7.32%	18.10%	25.42%	762,517	16,385
2029	5,225,691	83.2%	2031	3,089,663	7.14%	18.46%	25.60%	790,954	28,437
2030	4,811,337	85.0%	2032	3,182,353	6.97%	18.77%	25.74%	819,138	28,184
2031	4,534,879	86.2%	2033	3,277,824	6.80%	19.88%	26.68%	874,523	55,385
2032	4,210,116	87.6%	2034	3,376,159	6.64%	20.38%	27.02%	912,238	37,715
2033	3,804,772	89.1%	2035	3,477,443	6.48%	19.71%	26.19%	910,742	(1,496)
2034	3,331,991	90.7%	2036	3,581,767	6.35%	16.66%	23.01%	824,164	(86,578)
2035	2,829,987	92.2%	2037	3,689,220	6.21%	14.91%	21.12%	779,163	(45,001)
2036	2,387,294	93.6%	2038	3,799,896	6.09%	15.60%	21.69%	824,197	45,034
2037	1,963,864	94.8%	2039	3,913,893	5.99%	14.97%	20.96%	820,352	(3,845)
2038	1,465,835	96.2%	2040	4,031,310	5.89%	11.38%	17.27%	696,207	(124,145)
2039	940,682	97.6%	2041	4,152,249	5.81%	11.32%	17.13%	711,280	15,073
2040	514,359	98.7%	2042	4,276,817	5.72%	10.32%	16.04%	686,001	(25,279)
2041	46,094	99.9%	2043	4,405,121	5.65%	10.83%	16.48%	725,964	39,963
2042	(424,315)	101.0%	2044	4,537,275	5.59%	-0.53%	5.06%	229,586	(496,378)
2043	(964,486)	102.4%	2045	4,673,393	5.54%	-1.17%	4.37%	204,227	(25,359)
2044	(1,008,211)	102.5%	2046	4,813,595	5.50%	-1.18%	4.32%	207,947	3,720
2045	(1,021,779)	102.5%	2047	4,958,003	5.46%	-1.16%	4.30%	213,194	5,247
2046	(1,034,071)	102.5%	2048	5,106,743	5.43%	-1.14%	4.29%	219,079	5,885

¹ Once the City is expected to be at or above 100% actuarially funded, the employer normal cost rate has been adjusted to include an additional 1% of Tier 5 projected payroll for the Tier 5 members.

Appendix B: Detailed Scenario Test

Health Plan Only

Valuation Year	UAAL	Funded Ratio	Fiscal Year End	Fiscal Year Pay	Normal Cost	UAAL Payment	Total Rate	Contribution Amount	Incremental Increase
2022	\$107,741	97.0%	2024	\$2,512,179	3.60%	0.33%	3.93%	\$98,729	N/A
2023	(241,890)	107.1%	2025	2,587,544	3.85%	-0.53%	3.32%	85,906	\$(12,823)
2024	(279,577)	107.8%	2026	2,665,171	3.83%	-0.60%	3.23%	86,085	179
2025	(311,210)	108.3%	2027	2,745,126	3.83%	-0.64%	3.19%	87,570	1,485
2026	(347,557)	108.9%	2028	2,827,480	3.84%	-0.69%	3.15%	89,066	1,496
2027	(405,148)	109.9%	2029	2,912,304	3.86%	-0.79%	3.07%	89,408	342
2028	(367,702)	108.5%	2030	2,999,673	3.86%	-0.69%	3.17%	95,090	5,682
2029	(410,662)	109.1%	2031	3,089,663	3.87%	-0.75%	3.12%	96,397	1,307
2030	(454,823)	109.6%	2032	3,182,353	3.89%	-0.81%	3.08%	98,016	1,619
2031	(461,205)	109.4%	2033	3,277,824	3.90%	-0.79%	3.11%	101,940	3,924
2032	(465,376)	109.0%	2034	3,376,159	3.93%	-0.79%	3.14%	106,011	4,071
2033	(469,423)	108.7%	2035	3,477,443	3.94%	-0.76%	3.18%	110,583	4,572
2034	(473,286)	108.4%	2036	3,581,767	3.95%	-0.74%	3.21%	114,975	4,392
2035	(477,422)	108.1%	2037	3,689,220	3.97%	-0.73%	3.24%	119,531	4,556
2036	(481,547)	107.9%	2038	3,799,896	3.99%	-0.72%	3.27%	124,257	4,726
2037	(485,598)	107.6%	2039	3,913,893	4.01%	-0.70%	3.31%	129,550	5,293
2038	(489,532)	107.4%	2040	4,031,310	4.02%	-0.68%	3.34%	134,646	5,096
2039	(493,818)	107.1%	2041	4,152,249	4.04%	-0.67%	3.37%	139,931	5,285
2040	(498,020)	106.9%	2042	4,276,817	4.06%	-0.66%	3.40%	145,412	5,481
2041	(502,243)	106.7%	2043	4,405,121	4.07%	-0.65%	3.42%	150,655	5,243
2042	(506,870)	106.5%	2044	4,537,275	4.08%	-0.64%	3.44%	156,082	5,427
2043	(511,409)	106.3%	2045	4,673,393	4.08%	-0.61%	3.47%	162,167	6,085
2044	(515,920)	106.2%	2046	4,813,595	4.10%	-0.61%	3.49%	167,994	5,827
2045	(520,713)	106.0%	2047	4,958,003	4.12%	-0.60%	3.52%	174,522	6,528
2046	(524,985)	105.8%	2048	5,106,743	4.13%	-0.57%	3.56%	181,800	7,278

Appendix B: Detailed Scenario Test

Retirement and Health Plans Combined

Valuation Year	UAAL	Funded Ratio	Fiscal Year End	Fiscal Year Pay	Normal Cost	UAAL Payment	Total Rate	Contribution Amount	Incremental Increase
2022	\$6,537,225	76.4%	2024	\$2,512,179	11.24%	22.12%	33.36%	\$838,063	N/A
2023	6,563,826	77.1%	2025	2,587,544	11.63%	21.66%	33.29%	861,393	\$23,330
2024	6,324,806	78.8%	2026	2,665,171	11.36%	19.62%	30.98%	825,670	(35,723)
2025	6,000,113	80.6%	2027	2,745,126	11.75%	18.94%	30.69%	842,480	16,810
2026	5,661,006	82.3%	2028	2,827,480	11.56%	18.29%	29.85%	844,003	1,523
2027	5,175,794	84.4%	2029	2,912,304	11.38%	17.31%	28.69%	835,540	(8,463)
2028	5,248,431	84.7%	2030	2,999,673	11.18%	17.41%	28.59%	857,607	22,067
2029	4,815,029	86.4%	2031	3,089,663	11.01%	17.71%	28.72%	887,351	29,744
2030	4,356,515	88.1%	2032	3,182,353	10.86%	17.96%	28.82%	917,154	29,803
2031	4,073,674	89.2%	2033	3,277,824	10.70%	19.09%	29.79%	976,463	59,309
2032	3,744,739	90.4%	2034	3,376,159	10.57%	19.59%	30.16%	1,018,249	41,786
2033	3,335,350	91.7%	2035	3,477,443	10.42%	18.95%	29.37%	1,021,325	3,076
2034	2,858,705	93.1%	2036	3,581,767	10.30%	15.92%	26.22%	939,139	(82,186)
2035	2,352,565	94.4%	2037	3,689,220	10.18%	14.18%	24.36%	898,694	(40,445)
2036	1,905,747	95.6%	2038	3,799,896	10.08%	14.88%	24.96%	948,454	49,760
2037	1,478,266	96.7%	2039	3,913,893	10.00%	14.27%	24.27%	949,902	1,448
2038	976,304	97.8%	2040	4,031,310	9.91%	10.70%	20.61%	830,853	(119,049)
2039	446,864	99.0%	2041	4,152,249	9.85%	10.65%	20.50%	851,211	20,358
2040	16,339	100.0%	2042	4,276,817	9.78%	9.66%	19.44%	831,413	(19,798)
2041	(456,149)	101.0%	2043	4,405,121	9.72%	10.18%	19.90%	876,619	45,206
2042	(931,184)	101.9%	2044	4,537,275	9.67%	-1.17%	8.50%	385,668	(490,951)
2043	(1,475,896)	103.0%	2045	4,673,393	9.62%	-1.78%	7.84%	366,394	(19,274)
2044	(1,524,131)	103.1%	2046	4,813,595	9.60%	-1.79%	7.81%	375,941	9,547
2045	(1,542,492)	103.1%	2047	4,958,003	9.58%	-1.76%	7.82%	387,716	11,775
2046	(1,559,057)	103.1%	2048	5,106,743	9.56%	-1.71%	7.85%	400,879	13,163

Note: Results may not total exactly due to rounding.

Appendix C: Definition of Pension Terms

The following list defines certain technical terms as they relate to LACERS for the convenience of the reader:

Term	Definition
Actuarial accrued liability for actives	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial accrued liability for retirees and beneficiaries	Single-sum present value of the lifetime benefits expected to be paid to the existing retirees and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial value of assets	The value of the Plan's assets that is equal to the market value of assets less unrecognized returns. Unrecognized returns are equal to the difference between the actual market return and the expected return on the market value and are recognized over a seven-year period per LACERS' funding policy.
Employer normal cost	The portion of the normal cost to be paid by the employer. This is equal to the normal cost less expected member contributions.
Funded ratio	The ratio of the actuarial value of assets to the actuarial accrued liability. Plans sometimes also calculate a market funded ratio, using the market value of assets, rather than the actuarial value of assets.
Generational mortality	A generational mortality table provides dynamic projections of mortality experience for each cohort of current and future retirees. For example, the mortality rate for someone who is 65 next year will be slightly less than for someone who is 65 this year. In general, using generational mortality anticipates increases in the cost of the Plan over time as participants' life expectancies are projected to increase. This is in contrast to updating a static mortality assumption with each experience study as we had proposed in experience studies prior to 2019.
Normal cost	The amount of contributions required to fund the portion of the level cost of the member's projected retirement benefit that is allocated to the current year of service.
Unfunded actuarial accrued liability	The excess of the actuarial accrued liability over the actuarial value of assets. This value may be negative, in which case it may be expressed as a negative unfunded actuarial accrued liability, also called the funding surplus or an overfunded actuarial accrued liability.
Valuation value of assets	The portion of the total actuarial value of assets allocated to either the Retirement or Health Plans.

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