

City of Austin Employees' Retirement System

Actuarial Valuation Report
for the Year Ending December 31, 2022





April 10, 2023

Mr. Christopher Hanson
Executive Director
City of Austin Employees' Retirement System
6836 Austin Center Blvd, Suite 190
Austin, TX 78731

Dear Mr. Hanson:

Subject: Actuarial Valuation as of December 31, 2022

We are pleased to present our report on the actuarial valuation of the City of Austin Employees' Retirement System (COAERS or the System). This report describes the current actuarial condition of COAERS, determines the period over which the unfunded liabilities of the System are expected to be paid off, and determines the funded status of the System.

In addition, the report provides various summaries of the data. A separate report is issued with regard to valuation results determined in accordance with Governmental Accounting Standards Board (GASB) Statements 67 and 68. Results of this report should not be used for any other purpose without consultation with the undersigned. Valuations are prepared annually as of December 31st, the last day of the COAERS plan year. This report was prepared at the request of the Board and is intended for use by the COAERS staff and those designated or approved by the Board. This report may be provided to parties other than COAERS staff only in its entirety and only with the permission of the Board.

As you know, the employee and employer contribution rates are set by statute. It is expected that these contribution rates will remain level as a percentage of payroll. The System's funding policy is for the contribution rates to be sufficient to cover the normal cost of the plan and to amortize the unfunded actuarial accrued liability (UAAL) as of December 31, 2020 over a closed period of 25 years, with subsequent unanticipated changes in the UAAL amortized over closed 15-year periods (layers).

Currently, the total contribution rate is sufficient to amortize the System's unfunded liabilities in approximately 34 years. Therefore, the Board's funding policy is not currently being met. As of the prior valuation, the total contribution rate was sufficient to amortize the unfunded liabilities in 33 years. The increase in the funding period is primarily due to investment shortfalls versus expectations.

In 2010, the City of Austin adopted the Amended Supplemental Funding Plan (ASFP). The ASFP provides for an additional City contribution rate of up to a maximum of 10.0% above the statutory 8.0% rate. Beginning in January 2021, the City increased its contribution rate an additional 1.0% of pay and is now contributing an additional 11.0% of pay above the statutory rate, or a total rate of 19.0%. For purposes of determining the funding period, it is assumed that this additional City contribution rate will remain in place until the System's unfunded actuarial accrued liability is eliminated.

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All of the supporting schedules and tables contained in this actuarial valuation report were prepared by Gabriel, Roeder, Smith and Company (GRS), including various accounting and statistical tables which should help you compare the results of this plan year with prior years. The information presented in the trend data schedules of this report has been prepared by GRS.

The following schedules in the actuarial section of the COAERS Annual Comprehensive Financial Report were prepared by GRS: Summary of Cost Items, Analysis of Normal Cost by Component, Actuarial Present Value of Future Benefits and Calculation of Actuarial Accrued Liability, Development of Actuarial Value of Assets, Change in Net Position, Change in Unfunded Actuarial Accrued Liability, Relative Size of Unfunded Actuarial Accrued Liability, Schedule of Active Member Valuation Data, Schedule of Retirees and Beneficiaries Added to and Removed from Rolls, Solvency Test, Schedule of Funding Progress.

GRS provided COAERS with the information used in preparing the following trend schedules in the financial section of the Annual Comprehensive Financial Report: Notes to the Financial Statements - Schedule of Net Pension Liability, and Sensitivity of the Net Pension Liability to Changes in the Discount Rate; Required Supplementary Information - Schedule of Changes in the Net Pension Liability and Related Ratios. GRS provided no additional assistance in the preparation of any other schedules in the financial section of the Annual Comprehensive Financial Report. These schedules were provided to COAERS in a separate GASB report.

As authorized under Article 6243n of the Vernon's Civil Statutes of the State of Texas, actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the plan's actuary. An experience investigation was performed for the five-year period ending December 31, 2018. As a result of that study, revised assumptions were adopted by the Board effective with the valuation as of December 31, 2019. The investment return assumption was decreased from 7.00% to 6.75% effective with the December 31, 2021 actuarial valuation. The assumptions and methods used in this valuation are the same as used in the prior valuation.

We believe the assumptions are internally consistent, reasonable, and, where appropriate, based on the actual experience of COAERS. All of the assumptions and methods used in this valuation for funding purposes meet the parameters set by the Actuarial Standards of Practice. Additional information about the assumptions and methods is included in the Section of this report titled Statement of Actuarial Assumptions and Methods.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates, and funding periods. Due to the limited scope of this assignment, GRS did not perform an analysis of the potential range of such possible future differences. The actuarial calculations are intended to provide information for rational decision making.



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Member data for retired, active, and inactive participants was supplied as of December 31, 2022 by the COAERS staff. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information was also supplied by the COAERS staff.

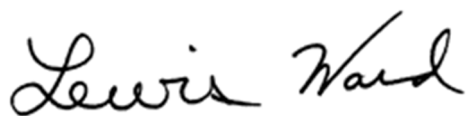
The last actuarial valuation of COAERS was prepared as of December 31, 2021 by GRS. Valuations are prepared annually as of December 31st.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. We certify that the information presented herein is accurate and fairly portrays the actuarial position of COAERS as of December 31, 2022. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and with applicable governing statutes.

The undersigned are independent actuaries and consultants. Mr. Falls is an Enrolled Actuary and a Member of the American Academy of Actuaries and he meets the Qualification Standards of the American Academy of Actuaries. Both Mr. Falls and Mr. Ward are experienced in performing valuations for large public retirement systems.

We would like to thank you and your staff for your assistance in providing all necessary information to complete this valuation. Your courteous help is very much appreciated. We look forward to discussing this actuarial valuation report with you at your convenience. Please do not hesitate to let us know if you have any questions or need additional information.

Sincerely,



Lewis Ward
Consultant



R. Ryan Falls, F.S.A, E.A., M.A.A.A.
Senior Consultant

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SECTION A

EXECUTIVE SUMMARY

Executive Summary

The key results from the valuation of the City of Austin Employees' Retirement System as of December 31, 2022 may be summarized as follows:

	<u>December 31, 2022</u>	<u>December 31, 2021</u>
	(1)	(2)
• Members		
— Actives	10,438	10,228
— Retirees (including disabled) and beneficiaries	7,530	7,221
— Vested - terminated	<u>1,529</u>	<u>1,369</u>
— Total	19,497	18,818
• Covered payroll	\$ 810,041,877	\$ 752,180,499
• Normal cost as % of payroll*	17.39%	17.69%
• Actuarial accrued liability	\$ 5,295,941,805	\$ 5,032,043,201
• Actuarial value of assets	\$ 3,394,988,979	\$ 3,320,288,049
• Unfunded actuarial accrued liability (UAAL)	\$ 1,900,952,826	\$ 1,711,755,152
• Estimated yield on assets		
— Actuarial value basis	3.95%	9.74%
— Market value basis	-15.55%	12.94%
• Contribution rate		
— Employee	8.00%	8.00%
— Employer	19.00%	19.00%
• Benefit and refund payments	\$ 264,320,962	\$ 247,127,397
• Amortization period of unfunded actuarial accrued liability	34 years	33 years
• Funding Policy employer contribution rate	22.91%	21.88%
• Funded ratio using actuarial value of assets	64.1%	66.0%
• Funded ratio using market value of assets	55.9%	70.8%

* Includes 0.51% of payroll for administrative expenses.



SECTION B

DISCUSSION

Introduction

This December 31, 2022 actuarial valuation of the City of Austin Employees' Retirement System has been prepared by GRS. The primary purpose of the valuation is to value the liabilities of the System as of December 31, 2022, determine the funding period of any unfunded liability for the plan year beginning January 1, 2023, and to provide certain required disclosure information. We are pleased to have the privilege of working for the Board, and look forward to discussing the results with you at your convenience.

Pages B-2 and B-3 of this report provide the current funded status of the plan and review the valuation results. Assets are discussed on page B-4, while page B-5 contains an analysis of the actuarial gains and losses during the past year.

Page B-6 discusses some of the historical comparisons and statistical summaries for the plan. Pages B-7 through B-10 provide an assessment and disclosure of risk associated with measuring pension obligations and determining pension plan contributions. Page B-11 provides a summary of the valuation results along with other comments.

Various tables supporting the report are contained in Sections C and D. Section E describes the actuarial methods and assumptions used in the valuation and Section F outlines the Plan's benefit provisions, including any changes since the last valuation. Finally, Section G provides definitions of terms used throughout this report.

Funded Status of the Plan

The funded status of the plan is shown in Table 1, Table 2, and Table 3. Table 1 summarizes the various cost items from the current year's and prior year's actuarial valuations, while Table 2 provides an allocation of the normal cost by its various components. Table 3 shows the components of the actuarial liability (including the impact of the change in assumptions).

Reviewing the composition of normal cost of the System, Table 2 indicates that the normal cost as of December 31, 2022 is 17.39% of pay. This compares with 17.69% of pay as of the prior valuation on December 31, 2021. This normal cost is developed based on the Individual Entry Age Normal (EAN) actuarial cost method. As may be seen in Item 1, the normal cost for the retirement benefits is 13.47% of pay. Similarly, the normal cost is 1.24% for the deferred termination benefits, 1.69% for refunds of terminated employees (both vested and non-vested), 0.21% for disability benefits, and 0.27% for death benefits. In addition, the cost of anticipated administrative expenses is being added to the normal cost rate. This adds 0.51% of pay to the normal cost rate as of December 31, 2022. The decline in the average normal cost reflects the continued shift in the active membership from Group A to Group B. We expect this pattern of declining normal costs (as a percentage of payroll) to continue until the active population is mostly Group B.

Table 1 illustrates a number of the key actuarial items for the 2022 valuation. As mentioned above, the total normal cost rate is 17.39% of covered payroll. The actuarial accrued liability is \$5,295.9 million as shown in Item 5 and as detailed in Table 1. The actuarial value of assets equals \$3,395.0 million, as shown in Item 6. Item 7 of Table 1 shows that the plan has a \$1,901.0 million unfunded liability (i.e. liabilities exceed plan assets) as of the valuation date. As of the last valuation (December 31, 2021), the System was underfunded by \$1,711.8 million. The increase in the unfunded liability is described in greater detail on page B-5 and in Table 7.

The City is contributing 19.00% of payroll and the employees are contributing 8.00% of payroll. Combining the employees' contributions with the City contribution, the System will have 27.00% of payroll to fund benefits. The current normal cost of the plan is 17.39%, which means that the System is currently receiving contributions in excess of the normal cost equal to 9.61% of pay (27.00% less 17.39%). These excess contributions are available to amortize any unfunded actuarial accrued liability. Based on these contribution rates, if all assumptions are exactly met then the current unfunded liability will be fully amortized over the next 34 years.



Funded Status of the Plan (Continued)

The actuarial valuation report as of December 31, 2022 reveals that the funded ratio (the ratio of actuarial assets to actuarial accrued liability) is 64.1%. On a market value of asset basis, the funded status is 55.9%. The funded status is one of many metrics used to show trends and develop future expectations about the health of the System. The funded status measure itself is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations or assessing the need for or the amount of future contributions since it does not reflect normal cost contributions, the timing of amortization payments, or future experience other than expected.

As stated previously, the City is currently contributing 19.00% of payroll. For purposes of determining the funding period, it is assumed that this contribution rate will remain in effect until the unfunded actuarial accrued liability is eliminated.

The normal cost was determined using the Individual Entry Age Normal (EAN) actuarial cost method. This method determines the normal cost for all employees on an individual basis, based on the benefits applicable to each individual member. Because employees hired on or after January 1, 2012 (Group B) have a less valuable benefit tier than employees hired prior to that date (Group A), the normal cost for Group B is less than the normal cost of Group A. With the application of the Individual EAN method, the normal cost is equal to the average of the individual members' normal costs. Since the current group of employees is still approximately 35% Group A, the average normal costs for the System will continue to decline over time as Group B employees replace Group A employees.

Because the contributions to the System are a fixed percentage of payroll, this means that the percentage of payroll that will go to pay off the unfunded liability will increase in the future as the average normal cost decreases. This result makes it difficult to calculate the funding period using a mathematical formula since the amount of contributions to pay off the unfunded liability will not be either a constant dollar amount or a constant percentage of payroll in the future. For this reason, we are using an open group projection to determine when the System is expected to pay off its unfunded liability. The open group projection assumes a constant active population and that there will be no actuarial gains or losses on liabilities or the actuarial value of assets. Based on the open group projection, the funding period of the System as of the valuation date is 34 years. Please see Table 5, which shows selected information from this projection.

Change in Assets

Table 4 shows the development of the actuarial value of assets. Item 11 of Table 4 shows that the actuarial value of assets as of December 31, 2022 is \$3,395.0 million. Table 4 also shows the development of the gain/(loss) on the actuarial value of assets for the prior plan year. As shown in Item 12, the System had a loss on an actuarial asset basis of \$92.3 million in 2022. This compares to the \$83.4 million gain in 2021.

The method for determining the actuarial value of assets offsets excesses or shortfalls in the current year's investment income dollar for dollar against prior years' deferred excesses or shortfalls. Any remaining amounts from the current or prior years continue to be recognized over a five-year period. The investment income fell short of the prior year's assumed 6.75% rate of return on a market value of assets (MVA) basis, by \$788.9 million. As shown in column 2 of Table 4, this investment income shortfall fully offset the prior years' deferred gains in investment income. In addition, \$544.0 million in income shortfall remained, 20% of which (\$108.8 million) is recognized in this year's actuarial value of assets with the remainder deferred for future valuations. The total deferral of all Excess/(Shortfall) investment income for all prior years (shown in Table 4, Column 6 of Item 8) is (\$435.2 million).

An analysis of the change in the System's market value of assets for the last two plan years and an estimate of the return on assets for the System are included in Table 6. The estimated average annual rate of return for the year ending December 31, 2022 assuming that income, revenue, and expenditures are evenly distributed throughout the year is -15.55% on a market value of assets basis. The rate of return for the year ending December 31, 2022 on an actuarial value basis was 3.95%. This compares with the actuarial assumed investment return at the beginning of the year of 6.75%. Since the return on an actuarial basis was less than 6.75%, an actuarial loss has occurred as shown in Item 12 on Table 4.

Actuarial Gains and Losses

An important part of the change in unfunded actuarial accrued liability from year to year is due to the impact of actuarial gains and losses of the System. This section summarizes the combined asset and liability experience changes since the prior valuation on December 31, 2021.

As can be seen in Item 7 of Table 7, the expected value of the unfunded actuarial accrued liability as of December 31, 2022 was an underfunded position of \$1,756.1 million. This expected value reflects the prior year's assumed investment return assumption of 6.75% applied to the beginning of year unfunded actuarial accrued liability, normal cost, and contributions during 2022.

Since the actual unfunded actuarial accrued liability as of December 31, 2022 is \$1,901.0 million, it represents a total unexpected net increase for the period of \$144.9 million, as shown in Item 9 of Table 7. That is, the unfunded actuarial accrued liability is greater than expected. The net increase in the unfunded actuarial accrued liability includes an asset experience loss of \$92.3 million as shown in Table 4 and an unanticipated increase on the liability equal to \$52.6 million, which is broken out by source in Items 16-23 of Table 7.

Please see Section E for a more detailed description of the assumptions and methods.

Historical Comparisons and Statistical Summaries

Various statistical data on the System is shown in the tables contained in Section D. In addition, Tables 8 through 11 of Section C contain certain actuarial trend information which may be of interest.

Table 8 relates the size of the unfunded actuarial accrued liability (UAAL) to three different measurements. In Columns 3 and 4, the UAAL is related to the covered payroll of the System. Columns 5 and 6 relate the UAAL to the actuarial value of assets, while Columns 7 and 8 relate the UAAL to the total actuarial liabilities of the System.

Tables 9 through 11 provide information which should be included in your annual report. Table 9 provides a schedule of active member valuation data. Table 10 provides a schedule of retirees and beneficiaries added to and removed from payment rolls. Solvency test results are presented in Table 11.

Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions

The determination of the accrued liability and an actuarially determined contribution (or funding period) requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and an actuarially determined contribution (or funding period) that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

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

1. Investment risk – actual investment returns may differ from the expected returns;
2. Asset/Liability mismatch – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
6. Other demographic risks – members may terminate, retire, or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (Continued)

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The Funding Policy employer contribution rate shown on the Executive Summary may be considered as a minimum contribution rate that complies with the Board's funding policy. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Several generally accepted plan maturity measures are described below and are followed by a table showing a 10-year history of the measurements for COAERS.

RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (Continued)

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll (5 to 2 ratio), a change in liability of 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

DURATION OF ACTUARIAL ACCRUED LIABILITY

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

ADDITIONAL RISK ASSESSMENT

Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability. A robust measurement of additional risk assessment is outside the scope of the annual actuarial valuation.

Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (Continued)

	<u>2022</u>	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2013</u>
Ratio of the market value of assets to payroll	3.65	4.74	4.39	4.14	3.71	4.21	3.84	3.83	4.10	4.34
Ratio of actuarial accrued liability to payroll	6.54	6.69	6.45	6.34	6.01	6.03	5.99	6.06	5.74	5.93
Ratio of actives to retirees and beneficiaries	1.39	1.42	1.46	1.51	1.53	1.54	1.58	1.60	1.67	1.68
Ratio of net cash flow to market value of assets	-1.9%	-1.3%	-1.1%	-1.3%	-1.3%	-1.0%	-0.7%	-0.8%	-0.9%	-0.9%
Duration of the actuarial accrued liability*	14.12	14.12	13.89	14.01	13.81	NA	NA	NA	NA	NA

*Duration measure not available prior to 2018

Summary and Closing Comments

It is our opinion that the results of this valuation provide a reasonable reflection of the funded status of the System as of the valuation date. The System's contributions are currently sufficient to amortize the unfunded liability of the System.

As previously mentioned, in 2010 the City of Austin adopted an Amended Supplemental Funding Plan (ASFP) which provides for an additional contribution from the City, above the 8.0% base rate, which has resulted in a gradual increase the City's total contribution rate to the System to 18.0%. In January 2021, the City increased its contribution an additional 1.0% of pay bringing its total contribution rate to 19.0% of pay. It is assumed that this contribution rate will remain unchanged until the System has eliminated its unfunded liability.

The overall funded position of the System decreased from 66.0% at the prior valuation to 64.1% at this valuation. Using an open group projection, we have determined that the System is expected to be fully funded in 34 years, assuming all valuation assumptions are realized in the future. The increase in the funding period is primarily due to the significant investment shortfall in calendar year 2022. Some of this impact was offset by an increase in active membership and the corresponding increase in covered payroll. Because the payroll base is larger, we are now expecting larger future contributions towards the unfunded liability than in the prior year.

As the System is well aware, a funding period of 34 years is longer than the period outlined in the Board's Funding Policy. Because of the asymptotic nature of funding periods, even small differences between the expected and actual experience in the future could significantly increase the funding period. In addition, the unfunded actuarial accrued liability of the System is still expected to increase as a dollar amount for more than a decade if all assumptions are exactly met. Therefore, we recommend that the System's Board and Staff continue discussions with the City and other stakeholders about appropriate measures to ensure the solvency of the System on a long-term basis.

SECTION C

ACTUARIAL TABLES

Actuarial Tables

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Table 1 Summary of Cost Items

	December 31, 2022		December 31, 2021	
	Cost Item	Cost as % of Pay	Cost Item	Cost as % of Pay
	(1)	(2)	(3)	(4)
1. Participants				
a. Active	10,438		10,228	
b. Terminated vested	1,529		1,369	
c. Retired participants and beneficiaries	7,429		7,114	
d. Disabled	101		107	
e. Total	19,497		18,818	
2. Covered Payroll	\$ 810,041,877		\$ 752,180,499	
3. Averages for Active Participants				
a. Average age	45.4		45.4	
b. Average years of service	9.8		10.0	
c. Average pay	\$ 77,605		\$ 73,541	
4. Total Normal Cost				
a. Normal Cost Rate	16.88%		17.18%	
b. Administrative Expenses	0.51%		0.51%	
c. Total	17.39%		17.69%	
5. Actuarial Accrued Liability				
a. Active participants	\$ 2,265,283,789		\$ 2,186,780,594	
b. Terminated vested participants	115,089,494		103,691,750	
c. Refunds of terminated nonvested participants	15,736,472		12,416,543	
d. Retired participants and beneficiaries	2,879,848,109		2,707,381,439	
e. Disabled participants	19,983,941		21,772,875	
f. Total	\$ 5,295,941,805	653.79%	\$ 5,032,043,201	668.99%
6. Actuarial Value of Assets	\$ 3,394,988,979	419.11%	\$ 3,320,288,049	441.42%
7. Unfunded Actuarial Accrued Liability (UAAL)	\$ 1,900,952,826	234.67%	\$ 1,711,755,152	227.57%
8. Relative Size of UAAL				
a. As percent of actuarial value of assets	55.99%		51.55%	
b. As percent of covered payroll	234.67%		227.57%	
9. Funding period using open group projection	34		33	
10. Employer contribution rate to satisfy funding policy*	22.91%		21.88%	

* Employer rate that amortizes the December 31, 2020 UAAL over 25 years and any subsequent layers over 15 years.



Table 2 Analysis of Normal Cost by Component

Benefit Component (1)	Cost as % of Pay	
	December 31, 2022 (2)	December 31, 2021 (3)
1. Retirement Benefits	13.47%	13.79%
2. Termination - Deferred Benefits	1.24%	1.27%
3. Termination - Refund Benefits	1.69%	1.64%
4. Disability Benefits	0.21%	0.21%
5. Death Benefits	0.27%	0.27%
6. Administrative Expenses	<u>0.51%</u>	<u>0.51%</u>
7. Normal Cost	17.39%	17.69%

Table 3
**Actuarial Present Value of Future Benefits
and Calculation of Actuarial Accrued Liability**

	<u>December 31, 2022</u>	<u>December 31, 2021</u>
	(1)	(2)
A. Present Value of Future Benefits		
1. Active participants		
a. Retirement benefits	\$ 3,009,036,592	\$ 2,893,317,803
b. Deferred termination benefits	125,694,750	117,347,301
c. Refund of contributions terminations	90,466,645	81,065,844
d. Disability benefits	22,878,968	20,820,438
e. Death benefits	<u>41,053,041</u>	<u>39,107,456</u>
f. Total	\$ 3,289,129,996	\$ 3,151,658,842
2. Retired participants		
a. Service retirements and beneficiaries	\$ 2,879,848,109	\$ 2,707,381,439
b. Disability retirements	<u>19,983,941</u>	<u>21,772,875</u>
c. Total	\$ 2,899,832,050	\$ 2,729,154,314
3. Inactive participants		
a. Vested terminations with deferred benefits	\$ 115,089,494	\$ 103,691,750
b. Nonvested terminations with refunds payable	<u>15,736,472</u>	<u>12,416,543</u>
c. Total	\$ 130,825,966	\$ 116,108,293
4. Total actuarial present value of future benefits	\$ 6,319,788,012	\$ 5,996,921,449
B. Normal Cost Rate (including administrative expenses)	17.39%	17.69%
C. Present Value of Future Normal Costs	\$ 1,023,846,207	\$ 964,878,248
D. Actuarial Accrued Liability for Active Members		
1. Present value of future benefits (Item A.1.f)	\$ 3,289,129,996	\$ 3,151,658,842
2. Less present value of future normal costs (Item C)	<u>1,023,846,207</u>	<u>964,878,248</u>
3. Actuarial accrued liability	\$ 2,265,283,789	\$ 2,186,780,594
E. Total Actuarial Accrued Liability (Item A.2.c + Item A.3.c + Item D.3)	\$ 5,295,941,805	\$ 5,032,043,201

Table 4

Development of Actuarial Value of Assets

	Year Ending December 31, 2022																																																								
1. Market value of assets at beginning of year	\$ 3,565,139,844																																																								
2. Net new investments																																																									
a. Contributions	\$ 215,807,498																																																								
b. Benefits and refunds paid	(264,320,962)																																																								
c. Administrative expenses	(6,763,638)																																																								
d. Subtotal	\$ (55,277,102)																																																								
3. Assumed investment return rate for fiscal year	6.75%																																																								
4. Expected net investment income	\$ 238,781,337																																																								
5. Expected market value at end of year (Item 1+ Item 2 + Item 4)	\$ 3,748,644,079																																																								
6. Market value of assets at end of year	\$ 2,959,775,761																																																								
7. Excess or Shortfall in Investment Income (Item 6 - Item 5)	\$ (788,868,318)																																																								
8. Development of amounts to be recognized as of December 31, 2022:																																																									
<table style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 15%; text-align: center;">Remaining Deferrals of Excess (Shortfall) of Investment Income</th> <th style="width: 15%; text-align: center;">Offsetting of Excesses/ (Shortfalls)</th> <th style="width: 15%; text-align: center;">Net Deferrals Remaining</th> <th style="width: 10%; text-align: center;">Years Remaining</th> <th style="width: 15%; text-align: center;">Recognized for this Valuation</th> <th style="width: 15%; text-align: center;">Remaining after this Valuation</th> </tr> <tr> <th style="text-align: left;">Fiscal Year End</th> <th style="text-align: center;">(1)</th> <th style="text-align: center;">(2)</th> <th style="text-align: center;">(3) = (1) + (2)</th> <th style="text-align: center;">(4)</th> <th style="text-align: center;">(5) = (3) / (4)</th> <th style="text-align: center;">(6) = (3) - (5)</th> </tr> </thead> <tbody> <tr> <td>2018</td> <td style="text-align: right;">\$ 0</td> <td style="text-align: right;">\$ 0</td> <td style="text-align: right;">\$ 0</td> <td style="text-align: center;">1</td> <td style="text-align: right;">\$ 0</td> <td style="text-align: right;">\$ 0</td> </tr> <tr> <td>2019</td> <td style="text-align: right;">31,633,231</td> <td style="text-align: right;">(31,633,231)</td> <td style="text-align: right;">0</td> <td style="text-align: center;">2</td> <td style="text-align: right;">0</td> <td style="text-align: right;">0</td> </tr> <tr> <td>2020</td> <td style="text-align: right;">62,147,430</td> <td style="text-align: right;">(62,147,430)</td> <td style="text-align: right;">0</td> <td style="text-align: center;">3</td> <td style="text-align: right;">0</td> <td style="text-align: right;">0</td> </tr> <tr> <td>2021</td> <td style="text-align: right;">151,071,134</td> <td style="text-align: right;">(151,071,134)</td> <td style="text-align: right;">0</td> <td style="text-align: center;">4</td> <td style="text-align: right;">0</td> <td style="text-align: right;">0</td> </tr> <tr> <td>2022</td> <td style="text-align: right;">(788,868,318)</td> <td style="text-align: right;">244,851,795</td> <td style="text-align: right;">(544,016,523)</td> <td style="text-align: center;">5</td> <td style="text-align: right;">(108,803,305)</td> <td style="text-align: right;">(435,213,218)</td> </tr> <tr> <td>Total</td> <td style="text-align: right;">\$ (544,016,523)</td> <td style="text-align: right;">\$ 0</td> <td style="text-align: right;">\$ (544,016,523)</td> <td></td> <td style="text-align: right;">\$ (108,803,305)</td> <td style="text-align: right;">\$ (435,213,218)</td> </tr> </tbody> </table>		Remaining Deferrals of Excess (Shortfall) of Investment Income	Offsetting of Excesses/ (Shortfalls)	Net Deferrals Remaining	Years Remaining	Recognized for this Valuation	Remaining after this Valuation	Fiscal Year End	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)	2018	\$ 0	\$ 0	\$ 0	1	\$ 0	\$ 0	2019	31,633,231	(31,633,231)	0	2	0	0	2020	62,147,430	(62,147,430)	0	3	0	0	2021	151,071,134	(151,071,134)	0	4	0	0	2022	(788,868,318)	244,851,795	(544,016,523)	5	(108,803,305)	(435,213,218)	Total	\$ (544,016,523)	\$ 0	\$ (544,016,523)		\$ (108,803,305)	\$ (435,213,218)	
	Remaining Deferrals of Excess (Shortfall) of Investment Income	Offsetting of Excesses/ (Shortfalls)	Net Deferrals Remaining	Years Remaining	Recognized for this Valuation	Remaining after this Valuation																																																			
Fiscal Year End	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)																																																			
2018	\$ 0	\$ 0	\$ 0	1	\$ 0	\$ 0																																																			
2019	31,633,231	(31,633,231)	0	2	0	0																																																			
2020	62,147,430	(62,147,430)	0	3	0	0																																																			
2021	151,071,134	(151,071,134)	0	4	0	0																																																			
2022	(788,868,318)	244,851,795	(544,016,523)	5	(108,803,305)	(435,213,218)																																																			
Total	\$ (544,016,523)	\$ 0	\$ (544,016,523)		\$ (108,803,305)	\$ (435,213,218)																																																			
9. Preliminary actuarial value of plan assets, end of year (Item 6 - Item 8: Column 6)	\$ 3,394,988,979																																																								
10. Actuarial value of assets corridor																																																									
a. 80% of market value, end of year	\$ 2,367,820,609																																																								
b. 120% of market value, end of year	\$ 3,551,730,913																																																								
11. Final actuarial value of plan net assets, end of year (Item 9, but recognize 1/3 of any deferred gains or losses outside of Item 10)	\$ 3,394,988,979																																																								
12. Actuarial Asset gain (loss) for year (Item 11 - Item 5)																																																									
a. Expected Actuarial Value of Assets	\$ 3,487,264,788																																																								
b. Actuarial gain (loss) in actuarial value of assets (Item 11 - Item 12.a)	\$ (92,275,809)																																																								
13. Asset gain (loss) as % of final actuarial value of assets	(2.72%)																																																								
14. Ratio of actuarial value to market value	114.70%																																																								

Notes: Remaining deferrals in Column (1) for prior years are from Column (5) in last year's report.
Column (2) is a direct offset of the current year's excess/(shortfall) return against prior years' excess/(shortfall) of the opposite type.



Table 5
Open Group Projection

Valuation as of December 31,	Compensation (in Millions)	Contributions Year Following Valuation (in Millions)	Benefit Payments Year Following Valuation (in Millions)	Actuarial Accrued Liability (AAL, in Millions)	Actuarial Value of Assets (AVA, in Millions)	Unfunded Actuarial Accrued Liability (UAAL, in Millions)	Funded Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2022	\$810	\$220	\$289	\$5,296	\$3,395	\$1,901	64.1%
2023	834	227	294	5,498	3,549	1,949	64.5%
2024	860	234	316	5,708	3,714	1,993	65.1%
2025	886	241	336	5,912	3,876	2,036	65.6%
2026	914	249	355	6,111	4,035	2,076	66.0%
2027	943	257	375	6,306	4,192	2,114	66.5%
2028	973	265	395	6,497	4,347	2,150	66.9%
2029	1,004	273	416	6,682	4,500	2,182	67.3%
2030	1,035	282	436	6,862	4,651	2,211	67.8%
2031	1,069	291	455	7,037	4,800	2,237	68.2%
2032	1,104	300	474	7,206	4,948	2,258	68.7%
2033	1,140	310	492	7,372	5,097	2,275	69.1%
2034	1,177	321	508	7,535	5,247	2,288	69.6%
2035	1,217	331	522	7,696	5,401	2,295	70.2%
2036	1,258	343	535	7,858	5,562	2,297	70.8%
2037	1,301	354	547	8,023	5,731	2,292	71.4%
2038	1,346	367	558	8,193	5,912	2,281	72.2%
2039	1,392	379	568	8,368	6,105	2,263	73.0%
2040	1,441	392	578	8,552	6,315	2,237	73.8%
2041	1,490	406	588	8,743	6,541	2,202	74.8%
2042	1,541	420	598	8,945	6,787	2,158	75.9%
2043	1,594	434	609	9,156	7,052	2,104	77.0%
2044	1,649	449	621	9,378	7,338	2,039	78.3%
2045	1,705	464	634	9,609	7,647	1,962	79.6%
2046	1,763	480	647	9,851	7,978	1,873	81.0%
2047	1,824	497	661	10,103	8,334	1,769	82.5%
2048	1,886	514	676	10,367	8,716	1,651	84.1%
2049	1,950	531	692	10,642	9,126	1,516	85.8%
2050	2,017	549	708	10,928	9,565	1,363	87.5%
2051	2,087	568	725	11,227	10,035	1,191	89.4%
2052	2,159	588	744	11,538	10,539	999	91.3%
2053	2,234	608	763	11,861	11,077	784	93.4%
2054	2,311	629	782	12,198	11,653	545	95.5%
2055	2,392	651	803	12,548	12,269	279	97.8%
2056	2,475	674	824	12,913	12,928	-15	100.1%
2057	2,561	698	846	13,292	13,632	-340	102.6%
2058	2,651	722	870	13,686	14,384	-698	105.1%
2059	2,743	747	894	14,096	15,187	-1,092	107.7%
2060	2,839	773	920	14,521	16,045	-1,524	110.5%
2061	2,938	800	946	14,963	16,962	-1,998	113.4%
2062	3,041	828	974	15,422	17,940	-2,517	116.3%

Projection assumes all assumptions exactly met.



Table 6 Change in Net Position

	Valuation Period Ending December 31,	
	2022 (1)	2021 (2)
1. Assets in plan at beginning of year (A)	\$ 3,565,139,844	\$ 3,199,546,583
2. Employer contributions	146,618,486	141,218,720
3. Employee contributions	69,189,012	66,819,864
4. Benefit payments made*	259,245,111	242,860,638
5. Refunds of contributions	5,075,851	4,266,759
6. Expenses paid from trust	6,763,638	6,528,499
7. Investment expense	5,599,635	6,749,253
8. Investment return	<u>(544,487,346)</u>	<u>417,959,826</u>
9. Assets in plan at end of year (B) (1 + 2 + 3 - 4 - 5 - 6 - 7 + 8)	\$ 2,959,775,761	\$ 3,565,139,844
10. Approximate rate of return on average invested assets		
a. Net investment income (8 - 7 = I)	-\$ 550,086,981	\$ 411,210,573
b. Estimated yield based on (2I/(A + B - I))	-15.55%	12.94%

* Benefit payments exclude any distributions from the 415 Restoration Plan

Table 7
Change in Unfunded Actuarial Accrued Liability
as of December 31, 2022

<u>CALCULATION OF TOTAL ACTUARIAL GAIN OR LOSS</u>	<u>2022</u>	<u>2021</u>
1. Unfunded actuarial accrued liability (UAAL) as of prior year	\$ 1,711,755,152	\$ 1,631,981,669
2. Actual normal cost paid during year (includes service purchases)	<u>146,934,159</u>	<u>135,777,624</u>
3. Subtotal (1 + 2)	\$ 1,858,689,311	\$ 1,767,759,293
4. Interest at prior year assumption of 6.75%	120,502,501	118,990,934
5. Contributions during year	(215,807,498)	(208,038,584)
6. Interest on contributions for one-half year	(7,283,503)	(7,281,350)
7. Expected UAAL as of December 31st (3 + 4 + 5 + 6)	1,756,100,811	1,671,430,293
8. Actual UAAL as of December 31st	1,900,952,826	1,711,755,152
9. Unexpected Change in UAAL for the period (8 - 7)	144,852,015	40,324,859
 <u>SOURCE OF CHANGE IN UAAL</u>		
10. Asset (gain)/loss (See Table 4)	\$ 92,275,809	\$ (83,422,125)
11. Actuarial Value of Asset Method change	0	0
12. Increase/(decrease) due to assumption & method changes	0	142,269,829
13. Increase/(decrease) due to benefit enhancements	0	0
14. Total unanticipated increase/(decrease) in liabilities for the period (9-10-11-12-13)	<u>52,576,206</u>	<u>(18,522,845)</u>
15. Total liability changes (12 + 13 + 14)	\$ 52,576,206	\$ 123,746,984
 <u>SOURCE OF LIABILITY EXPERIENCE (GAINS) AND LOSSES</u>		
16. Salary Increases	\$ 55,561,666	\$ (13,659,356)
17. Service Retirement	(6,317,010)	(8,231,806)
18. Withdrawal	(5,652,679)	(1,617,944)
19. Disability Retirement	56,348	36,817
20. Active Mortality	(452,385)	(28,309)
21. Retiree Mortality	(2,790,909)	(3,405,554)
22. Rehires with past service	1,668,166	1,722,660
23. Other (Data) including proportionate program	<u>10,503,009</u>	<u>6,660,647</u>
24. Total Liability Experience (Gain)/Loss	\$ 52,576,206	\$ (18,522,845)

Table 8
Relative Size of Unfunded Actuarial Accrued Liability

Valuation as of December 31,	Unfunded/ (Overfunded) Actuarial Accrued Liability	Relative to Covered Payroll		Relative to Actuarial Value of Present Assets		Relative to Total Actuarial Accrued Liability	
		Covered Payroll	Percent of Covered Payroll	Present Assets	Percent of Present Assets	Actuarial Accrued Liability	Percent of Actuarial Accrued Liability
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2003	\$ 203,040,300	\$ 312,790,966	64.9%	\$ 1,348,790,502	15.1%	\$ 1,551,830,802	13.1%
2004	321,383,795	326,590,164	98.4%	1,356,797,448	23.7%	1,678,181,243	19.2%
2005	395,382,953	348,619,141	113.4%	1,398,798,722	28.3%	1,794,181,675	22.0%
2006	476,226,660	390,963,991	121.8%	1,497,783,958	31.8%	1,974,010,618	24.1%
2007	459,277,808	417,450,797	110.0%	1,653,533,484	27.8%	2,112,811,292	21.7%
2008	765,526,422	448,740,469	170.6%	1,481,377,439	51.7%	2,246,903,861	34.1%
2009	658,466,636	422,539,199	155.8%	1,672,470,344	39.4%	2,330,936,980	28.2%
2010	749,087,565	438,877,002	170.7%	1,711,577,229	43.8%	2,460,664,794	30.4%
2011	932,942,173	451,831,198	206.5%	1,790,902,641	52.1%	2,723,844,815	34.3%
2012	1,070,656,825	470,231,969	227.7%	1,897,722,867	56.4%	2,968,379,692	36.1%
2013	861,988,246	490,553,170	175.7%	2,047,929,504	42.1%	2,909,917,750	29.6%
2014	900,174,491	539,158,693	167.0%	2,193,881,221	41.0%	3,094,055,712	29.1%
2015	1,083,708,976	559,829,504	193.6%	2,308,087,140	47.0%	3,391,796,116	32.0%
2016	1,168,107,291	599,574,934	194.8%	2,423,269,015	48.2%	3,591,376,306	32.5%
2017	1,205,362,672	629,943,122	191.3%	2,592,460,631	46.5%	3,797,823,303	31.7%
2018	1,294,171,745	664,335,027	194.8%	2,695,388,392	48.0%	3,989,560,137	32.4%
2019	1,638,934,062	707,534,152	231.6%	2,848,950,000	57.5%	4,487,884,062	36.5%
2020	1,631,981,669	729,252,035	223.8%	3,069,233,497	53.2%	4,701,215,166	34.7%
2021	1,711,755,152	752,180,499	227.6%	3,320,288,049	51.6%	5,032,043,201	34.0%
2022	1,900,952,826	810,041,877	234.7%	3,394,988,979	56.0%	5,295,941,805	35.9%



Table 9
Schedule of Active Member Valuation Data

Year Ending December 31, (1)	Active Participants (2)	Percent Change (3)	Covered Payroll (4)	Percent Change (5)	Average Salary (6)	Percent Change (7)
2003	7,432	-2.8%	\$ 312,790,966	-2.9%	\$ 42,087	-0.1%
2004	7,489	0.8%	326,590,164	4.4%	43,609	3.6%
2005	7,638	2.0%	348,619,141	6.7%	45,643	4.7%
2006	8,055	5.5%	390,963,991	12.1%	48,537	6.3%
2007	8,358	3.8%	417,450,797	6.8%	49,946	2.9%
2008	8,643	3.4%	448,740,469	7.5%	51,920	4.0%
2009	8,142	-5.8%	422,539,199	-5.8%	51,896	0.0%
2010	8,270	1.6%	438,877,002	3.9%	53,069	2.3%
2011	8,348	0.9%	451,831,198	3.0%	54,124	2.0%
2012	8,387	0.5%	470,231,969	4.1%	56,067	3.6%
2013	8,592	2.4%	490,553,170	4.3%	57,094	1.8%
2014	9,028	5.1%	539,158,693	9.9%	59,721	4.6%
2015	9,063	0.4%	559,829,504	3.8%	61,771	3.4%
2016	9,364	3.3%	599,574,934	7.1%	64,030	3.7%
2017	9,612	2.6%	629,943,122	5.1%	65,537	2.4%
2018	9,838	2.4%	664,335,027	5.5%	67,527	3.0%
2019	10,149	3.2%	707,534,152	6.5%	69,715	3.2%
2020	10,138	-0.1%	729,252,035	3.1%	71,933	3.2%
2021	10,228	0.9%	752,180,499	3.1%	73,541	2.2%
2022	10,438	2.1%	810,041,877	7.7%	77,605	5.5%



Table 10**Schedule of Retirees and Beneficiaries Added to and Removed from Rolls**

Year Ending December 31,	Added to Rolls		Removed from Rolls		Rolls-End of Year		% Increase in Annual Allowances	Average Annual Allowances
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2003	271	\$ 7,706,066	59	\$ 1,502,757	2,995	\$ 78,596,302	8.4%	\$ 26,243
2004	227	5,619,478	85	1,741,624	3,137	82,121,249	4.5%	26,178
2005	258	6,699,023	98	2,438,555	3,297	85,324,686	3.9%	25,879
2006	259	6,788,190	89	1,883,938	3,467	90,312,037	5.8%	26,049
2007	289	8,523,459	123	2,262,126	3,633	96,071,149	6.4%	26,444
2008	290	8,299,468	88	2,056,217	3,835	101,840,870	6.0%	26,556
2009	331	9,953,411	80	1,630,148	4,086	109,656,152	7.7%	26,837
2010	341	10,495,807	92	2,029,423	4,335	117,954,059	7.6%	27,210
2011	324	9,851,119	117	2,785,375	4,542	124,748,580	5.8%	27,466
2012	405	13,035,228	116	3,011,032	4,831	134,653,163	7.9%	27,873
2013	387	12,451,142	98	2,176,950	5,120	144,755,297	7.5%	28,273
2014	397	12,737,257	121	2,568,479	5,396	154,937,553	7.0%	28,713
2015	411	13,547,663	128	2,980,334	5,679	165,579,191	6.9%	29,156
2016	385	12,920,841	130	3,199,901	5,934	175,327,721	5.9%	29,546
2017	422	14,942,887	131	2,979,178	6,225	187,304,849	6.8%	30,089
2018	338	12,352,947	149	3,496,334	6,414	196,302,394	4.8%	30,605
2019	434	17,128,087	145	3,358,432	6,703	210,148,047	7.1%	31,351
2020	453	17,927,288	193	4,828,468	6,963	223,247,694	6.2%	32,062
2021	432	17,816,028	174	4,378,064	7,221	236,613,025	6.0%	32,767
2022	480	19,660,962	171	3,968,030	7,530	252,345,484	6.6%	33,512

Table 11
Solvency Test

Valuation Date	Aggregated Accrued Liabilities for			Reported Assets	Portions of Accrued Liabilities Covered by Reported Assets		
	Active and Inactive Members Contributions	Retirees and Beneficiaries	Active and Inactive Members (Employer Financed Portion)		(5)/(2)	[(5)-(2)]/3	[(5)-(2)-(3)]/(4)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
December 31, 2003	252,182,701	777,100,825	522,547,276	1,348,790,502	100.0%	100.0%	61.1%
December 31, 2004	261,905,526	812,266,336	604,009,381	1,356,797,448	100.0%	100.0%	46.8%
December 31, 2005	280,994,642	848,185,652	665,001,381	1,398,798,722	100.0%	100.0%	40.5%
December 31, 2006	\$ 295,166,238	\$ 904,166,079	\$ 774,678,301	\$ 1,497,783,958	100.0%	100.0%	38.5%
December 31, 2007	333,340,167	968,493,997	810,977,128	1,653,533,484	100.0%	100.0%	43.4%
December 31, 2008	357,423,035	1,025,407,475	864,073,351	1,481,377,439	100.0%	100.0%	11.4%
December 31, 2009	362,288,592	1,109,773,550	858,874,838	1,672,470,344	100.0%	100.0%	23.3%
December 31, 2010	377,651,365	1,195,328,215	887,685,214	1,711,577,229	100.0%	100.0%	15.6%
December 31, 2011	413,944,399	1,267,467,354	1,042,433,062	1,790,902,641	100.0%	100.0%	10.5%
December 31, 2012	417,481,360	1,375,244,710	1,175,653,622	1,897,722,867	100.0%	100.0%	8.9%
December 31, 2013	436,164,975	1,478,146,019	995,606,756	2,047,929,504	100.0%	100.0%	13.4%
December 31, 2014	453,220,166	1,580,320,342	1,060,515,204	2,193,881,221	100.0%	100.0%	15.1%
December 31, 2015	471,000,910	1,771,674,810	1,149,120,396	2,308,087,140	100.0%	100.0%	5.7%
December 31, 2016	497,752,958	1,873,037,310	1,220,586,038	2,423,269,015	100.0%	100.0%	4.3%
December 31, 2017	517,234,871	2,007,105,437	1,273,482,995	2,592,460,631	100.0%	100.0%	5.3%
December 31, 2018	549,887,200	2,096,091,332	1,343,581,605	2,695,388,392	100.0%	100.0%	3.7%
December 31, 2019	572,708,759	2,378,309,300	1,536,866,003	2,848,950,000	100.0%	95.7%	0.0%
December 31, 2020	594,832,013	2,522,531,880	1,583,851,273	3,069,233,497	100.0%	98.1%	0.0%
December 31, 2021	606,219,719	2,729,154,314	1,696,669,168	3,320,288,049	100.0%	99.4%	0.0%
December 31, 2022	637,753,724	2,899,832,050	1,758,356,031	3,394,988,979	100.0%	95.1%	0.0%

Table 12
Schedule of Funding Progress

Valuation Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)	Annual Covered Payroll	UAAL as % of Payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
December 31, 2003	\$ 1,348.8	\$ 1,551.8	\$ 203.0	86.9%	\$ 312.8	64.9%
December 31, 2004	1,356.8	1,678.2	321.4	80.8%	326.6	98.4%
December 31, 2005	1,398.8	1,794.2	395.4	78.0%	348.6	113.4%
December 31, 2006	1,497.8	1,974.0	476.2	75.9%	391.0	121.8%
December 31, 2007	1,653.5	2,112.8	459.3	78.3%	417.5	110.0%
December 31, 2008	1,481.4	2,246.9	765.5	65.9%	448.7	170.6%
December 31, 2009	1,672.5	2,330.9	658.5	71.8%	422.5	155.8%
December 31, 2010	1,711.6	2,460.7	749.1	69.6%	438.9	170.7%
December 31, 2011	1,790.9	2,723.8	932.9	65.7%	451.8	206.5%
December 31, 2012	1,897.7	2,968.4	1,070.7	63.9%	470.2	227.7%
December 31, 2013	2,047.9	2,909.9	862.0	70.4%	490.6	175.7%
December 31, 2014	2,193.9	3,094.1	900.2	70.9%	539.2	167.0%
December 31, 2015	2,308.1	3,391.8	1,083.7	68.0%	559.8	193.6%
December 31, 2016	2,423.3	3,591.4	1,168.1	67.5%	599.6	194.8%
December 31, 2017	2,592.5	3,797.8	1,205.4	68.3%	629.9	191.3%
December 31, 2018	2,695.4	3,989.6	1,294.2	67.6%	664.3	194.8%
December 31, 2019	2,849.0	4,487.9	1,638.9	63.5%	707.5	231.6%
December 31, 2020	3,069.2	4,701.2	1,632.0	65.3%	729.3	223.8%
December 31, 2021	3,320.3	5,032.0	1,711.8	66.0%	752.2	227.6%
December 31, 2022	3,395.0	5,295.9	1,901.0	64.1%	810.0	234.7%

Note: Dollar amount in millions.



SECTION D

STATISTICAL TABLES

The Statistical Section provides additional historical perspective, context, and detail to assist the reader in using the information in the financial statements and note disclosures to understand and assess the economic condition of the City of Austin Employees’ Retirement System (COAERS). In compliance with *GASB Statement No. 44, Economic Condition Reporting: The Statistical Section*, schedules are classified into the following categories: Demographic and Economic Information, Operating Information, and Financial Trends.

Statistical Tables

Table Number	Content of Tables	Page
<p>Demographic and Economic Information – designed to assist the reader in understanding the environment in which COAERS operates.</p>		
13A	Distribution of All Active Participants by Age and Length of Service	D-2
13B	Distribution of Group A Active Participants by Age and Length of Service	D-3
13C	Distribution of Group B Active Participants by Age and Length of Service	D-4
14	Distribution of All Active Participants by Service and Current Rate of Pay	D-5
<p>Operating Information – provides contextual information to help the reader understand how COAERS’ financial information relates to the services it provides and the activities it performs.</p>		
15	Schedule of Average Benefit Payments	D-6
16	Retired Members by Type of Benefit	D-7
17	Schedule of Participating Employers	D-8
<p>Financial Trends – schedules to help the reader understand and assess changes in COAERS’ financial position over time.</p>		
18	Change in Net Position, Last Ten Fiscal Years	D-9
19	Benefit and Refund Deductions from Net Position by Type, Last Ten Fiscal Years	D-10

Sources: Schedules and data are provided by the consulting actuary, GRS Retirement Consulting, unless otherwise noted.



Table 13A
Distribution of All Active Participants by Age and Length of Service
As of December 31, 2022

Attained Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35+	Number of Employees	Average Annual Salary
Under 25	112	44	16	12	4	0	0	0	0	0	0	0	188	\$ 49,829
25-29	257	150	75	84	55	92	3	0	0	0	0	0	716	56,928
30-34	189	146	90	159	122	354	49	1	0	0	0	0	1,110	64,907
35-39	178	140	80	120	110	481	227	96	2	0	0	0	1,434	73,116
40-44	137	102	60	92	83	450	279	266	96	2	0	0	1,567	79,597
45-49	96	63	50	83	61	333	251	270	231	31	1	0	1,470	85,542
50-54	96	59	39	64	79	306	239	236	262	95	17	0	1,492	85,187
55-59	66	52	38	52	54	184	192	199	184	106	43	14	1,184	83,735
60-64	46	25	19	31	29	166	127	170	132	74	31	21	871	82,541
65 & Over	16	14	8	10	18	79	80	71	57	24	17	12	406	84,752
All Ages	1,193	795	475	707	615	2,445	1,447	1,309	964	332	109	47	10,438	\$ 77,605

Service includes proportionate service.



Table 13B
Distribution of Group A Active Participants by Age and Length of Service
as of December 31, 2022

Attained Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35+	Number of Employees	Average Annual Salary
Under 25	0	0	0	0	0	0	0	0	0	0	0	0	0	\$ 0
25-29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-34	0	0	0	1	0	0	19	1	0	0	0	0	21	76,431
35-39	0	0	0	0	1	4	149	93	1	0	0	0	248	82,416
40-44	0	0	0	1	2	3	188	256	92	2	0	0	544	87,249
45-49	0	1	0	1	1	12	176	256	226	29	1	0	703	92,678
50-54	0	0	1	1	1	8	173	226	253	92	14	0	769	89,844
55-59	1	0	0	0	0	5	135	187	177	103	39	10	657	87,533
60-64	0	0	0	0	0	5	91	162	123	69	25	15	490	85,191
65 & Over	0	0	0	0	0	0	58	69	55	23	16	9	230	86,710
All Ages	1	1	1	4	5	37	989	1,250	927	318	95	34	3,662	\$ 88,188

Service includes proportionate service.



Table 13C
Distribution of Group B Active Participants by Age and Length of Service
as of December 31, 2022

Attained Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35+	Number of Employees	Average Annual Salary
Under 25	112	44	16	12	4	0	0	0	0	0	0	0	188	\$ 49,829
25-29	257	150	75	84	55	92	3	0	0	0	0	0	716	56,928
30-34	189	146	90	158	122	354	30	0	0	0	0	0	1,089	64,685
35-39	178	140	80	120	109	477	78	3	1	0	0	0	1,186	71,171
40-44	137	102	60	91	81	447	91	10	4	0	0	0	1,023	75,528
45-49	96	62	50	82	60	321	75	14	5	2	0	0	767	79,002
50-54	96	59	38	63	78	298	66	10	9	3	3	0	723	80,233
55-59	65	52	38	52	54	179	57	12	7	3	4	4	527	79,000
60-64	46	25	19	31	29	161	36	8	9	5	6	6	381	79,133
65 & Over	16	14	8	10	18	79	22	2	2	1	1	3	176	82,194
All Ages	1,192	794	474	703	610	2,408	458	59	37	14	14	13	6,776	\$ 71,885

Service includes proportionate service.



Table 14
**Distribution of All Active Participants by Service and
 Current Rate of Pay as of December 31, 2022**

<u>Completed Years of Service</u>	<u>Number of Employees</u>	<u>Total Average Salary</u>
0	1,193	\$ 61,101
1	795	65,486
2	475	69,874
3	707	70,775
4	615	73,316
5-9	2,445	76,433
10-14	1,447	84,239
15-19	1,309	87,133
20-24	964	90,383
25-29	332	96,121
30-34	109	95,697
35+	<u>47</u>	<u>95,062</u>
All Years	10,438	\$ 77,605

Service includes proportionate service.

Table 15
Schedule of Average Benefit Payments

Retirement Effective Dates January 1, 2017 to December 31, 2022	Years Creditable Service						
	0-4	5-9	10-14	15-19	20-24	25-29	30+
Period 01/01/2017 to 12/31/2017							
Average Monthly Benefit	\$371	\$925	\$1,788	\$3,032	\$3,871	\$4,630	\$6,037
Average Final Salary	\$50,749	\$54,135	\$61,636	\$71,751	\$73,301	\$74,520	\$80,261
Number of Active Retirees	21	43	63	61	114	43	28
Period 01/01/2018 to 12/31/2018							
Average Monthly Benefit	\$293	\$1,112	\$1,772	\$2,863	\$3,979	\$5,495	\$6,080
Average Final Salary	\$56,345	\$69,022	\$64,441	\$70,931	\$78,425	\$87,300	\$84,409
Number of Active Retirees	10	44	45	39	78	43	23
Period 01/01/2019 to 12/31/2019							
Average Monthly Benefit	\$371	\$1,053	\$1,923	\$2,916	\$3,899	\$5,097	\$6,723
Average Final Salary	\$51,792	\$64,130	\$68,532	\$73,958	\$74,027	\$81,487	\$91,779
Number of Active Retirees	14	37	51	46	138	64	27
Period 01/01/2020 to 12/31/2020							
Average Monthly Benefit	\$209	\$935	\$2,103	\$2,961	\$4,020	\$5,400	\$6,620
Average Final Salary	\$36,278	\$59,966	\$73,939	\$75,450	\$77,580	\$86,388	\$88,646
Number of Active Retirees	23	47	47	46	134	61	30
Period 01/01/2021 to 12/31/2021							
Average Monthly Benefit	\$411	\$1,033	\$2,058	\$3,085	\$4,377	\$5,554	\$7,073
Average Final Salary	\$60,936	\$64,068	\$73,405	\$77,396	\$84,850	\$86,953	\$95,822
Number of Active Retirees	16	42	42	43	149	49	21
Period 01/01/2022 to 12/31/2022							
Average Monthly Benefit	\$336	\$989	\$1,952	\$2,848	\$4,426	\$5,816	\$6,889
Average Final Salary	\$52,332	\$63,398	\$70,497	\$74,090	\$84,661	\$93,608	\$90,300
Number of Active Retirees	14	42	55	50	169	51	26

Table 16
Retired Members by Type of Benefit (as of December 31, 2022)

Amount of Monthly Benefit	Number of Retired Members	Type of Retirement ^a				Option Selected ^b								
		1	2	3	4	Unmod.	1	2	3	4	5	6	7	
Deferred						1,529								
\$1-250	228	191	16	2	19	154	55	6	2		11			
251-500	317	257	37	10	13	180	97	16	8	2	12	1	1	
501-750	383	298	59	7	19	231	113	14	12	3	10			
751-1,000	376	277	70	12	17	222	108	18	13	2	10		3	
1,001-1,250	371	276	69	15	11	203	115	23	17	4	9			
1,251-1,500	411	317	72	15	7	208	139	31	20	2	6	1	4	
1,501-1,750	425	349	64	11	1	209	127	31	39	4	12		3	
1,751-2,000	476	408	50	11	7	221	160	43	36	5	10		1	
Over \$2,000	4,543	4,294	217	18	14	1,821	1,717	456	370	46	105	24	4	
Total	7,530	6,667	654	101	108	4,978	2,631	638	517	68	185	26	16	

Notes:

^a Type of Retirement

1. Normal retirement for age and service
2. Beneficiary payment, normal retirement or death in service
3. Disability retirement
4. QDRO - alternate payee

^b Option Selected:

Unmodified Plan: life annuity (includes Type 2 receiving survivor benefit for life)

The following options reduce the retired member's monthly benefit:

Option 1 - Beneficiary receives 100 percent of member's reduced monthly benefit

Option 2 - Beneficiary receives 50 percent of member's reduced monthly benefit

Option 3 - Beneficiary receives 66-2/3 percent of member's reduced monthly benefit

Option 4 - Survivor receives 66-2/3 percent of member's reduced monthly benefit upon first death

Option 5 - Life annuity with 15 years guaranteed

Option 6 - Other: participant created actuarial equivalent forms of payment

Option 7 - Beneficiary of Option 5 receiving payment until termination of guaranteed period

Note: The number of Retired Members and the number of options selected are not equal due to the inclusion of 1,529 deferred vested members in the Unmodified option selection.

Table 17 **Schedule of Participating Employers**

The City of Austin and the City of Austin Employees' Retirement System are the only participating employers in the plan.

Table 18
Change in Net Position, Last Ten Fiscal Years

	Fiscal Year									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Additions										
Member Contributions	\$47,449	\$50,489	\$54,066	\$60,801	\$56,194	\$58,713	\$63,626	\$71,470	\$66,820	\$69,189
Employer Contributions	86,713	93,470	100,637	104,488	111,058	116,671	123,770	130,914	141,418	146,799
Investment Income (net of expenses)	287,075	99,704	(47,608)	171,641	376,819	(157,242)	503,854	307,289	411,211	(550,087)
Total additions to plan net assets	\$421,237	\$243,663	\$107,095	\$336,930	\$544,071	\$18,142	\$691,250	\$509,673	\$619,449	(\$334,099)
Deductions										
Benefit Payments	\$141,923	\$152,664	\$162,085	\$171,736	\$183,344	\$195,538	\$208,828	\$222,460	\$235,620	\$252,006
Refunds	4,738	4,154	4,052	3,911	4,045	4,141	4,265	3,656	4,267	5,076
Administrative Expenses	2,561	2,631	2,421	2,701	2,778	4,024	6,218	6,595	6,528	6,764
Lump-sum Payments	4,858	5,039	3,532	3,697	3,154	3,494	5,288	5,449	7,439	7,420
Total deductions from plan net assets	\$154,080	\$164,488	\$172,090	\$182,045	\$193,321	\$207,197	\$224,599	\$238,160	\$253,854	\$271,266
Change in net assets	\$267,157	\$79,175	(\$64,995)	\$154,884	\$350,750	(\$189,055)	\$466,651	\$271,513	\$365,595	(\$605,365)

Notes: Dollar amounts in thousands

Columns may not add due to rounding

Includes contributions to and benefit payments from 415 Restoration Plan



Table 19
Benefit and Refund Deductions from Net Position by Type, Last Ten Fiscal Years

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Type of Benefit										
Age and service benefits:										
Retirees ^a	\$139,667	\$150,335	\$160,219	\$170,031	\$181,270	\$192,905	\$205,575	\$219,582	\$231,849	\$248,043
Beneficiaries ^a										
Lump-sum payments	\$4,858	\$5,039	\$3,532	\$3,697	\$3,154	\$3,494	\$5,288	\$5,449	\$7,439	\$7,420
In service death benefits: ^b	\$2,256	\$2,329	\$1,866	\$1,705	\$2,074	\$2,633	\$3,253	\$2,878	\$3,772	\$3,963
Disability benefits: ^c										
Total benefits	\$146,781	\$157,703	\$165,617	\$175,433	\$186,498	\$199,032	\$214,116	\$227,909	\$243,060	\$259,426
Type of Refund										
Death ^b										
Separation	\$4,738	\$4,154	\$4,052	\$3,911	\$4,045	\$4,141	\$4,265	\$3,656	\$4,267	\$5,076
Total refunds	\$4,738	\$4,154	\$4,052	\$3,911	\$4,045	\$4,141	\$4,265	\$3,656	\$4,267	\$5,076

Notes: Dollar amounts in thousands

^a Segregation of age benefits for beneficiaries not currently available

^b Segregation of death benefits between refunds and in service death benefits not currently available

^c Segregation of disability benefits from age and service benefits not currently available

Includes benefit payments from 415 Restoration Plan

Excludes administrative expenses

SECTION E

STATEMENT OF ACTUARIAL METHODS AND ASSUMPTIONS

Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2022)

The most recent experience study was completed based on data collected through December 31, 2018. Except as noted below, the Board adopted the assumptions outlined below to be effective with the December 31, 2019 actuarial valuation. Please see our Experience Study report to see more detail of the rationale for the current assumptions. As authorized under Article 6243n of the Vernon's Civil Statutes of the State of Texas, actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the plan's actuary.

A. ACTUARIAL ASSUMPTIONS

1. Investment Return Rate (adopted effective December 31, 2021)

6.75% per annum, compounded annually, composed of an assumed inflation rate of 2.50% and a real rate of return of 4.25%, net of investment expenses.

2. Mortality

a. Nondisabled annuitants (adopted effective December 31, 2019)

Healthy retirees and beneficiaries – The PubG-2010 Healthy Retiree Mortality Table (for General employees) for males and females with full generational projection assuming immediate convergence of rates in the mortality projection scale MP-2018, 2D for male and female. Mortality improvement is projected from the mortality table's base year of 2010.

b. Disabled annuitants (adopted effective December 31, 2019)

Disabled annuitants – The PubG-2010 Healthy Retiree Mortality Table (for General employees) for males and females, set forward three years with full generational projection assuming immediate convergence of rates in the mortality projection scale MP-2018, 2D for male and female. Mortality improvement is projected from the mortality table's base year of 2010. A minimum 3% rate of mortality applies at all ages.

c. Active members (adopted effective December 31, 2019)

Active employees – The PubG-2010 Employee Mortality Table (for General employees) for males and females with full generational projection assuming immediate convergence of rates in the mortality projection scale MP-2018, 2D for male and female. Mortality improvement is projected from the mortality table's base year of 2010.

Note regarding mortality table extensions:

Pub-2010 mortality tables are not inclusive of all ages. Mortality rates for active members were extended above age 80 by a constant exponential rate to the Healthy Retiree rate at age 100. Mortality rates for nondisabled annuitants below age 50 were extended using a constant exponential rate to the Juvenile rates.



Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2022) (Continued)

3. Retirement Rates: (adopted effective December 31, 2019)
The following rates of retirement are assumed for members eligible for normal retirement.

<u>Age</u>	<u>Rates of Retirement</u>	
	<u>Males</u>	<u>Females</u>
44 & under	22.0%	25.0%
45	20.0%	20.0%
46	20.0%	20.0%
47	20.0%	20.0%
48	20.0%	20.0%
49	20.0%	20.0%
50	22.0%	24.0%
51	22.0%	24.0%
52	22.0%	24.0%
53	22.0%	24.0%
54	22.0%	24.0%
55	21.0%	26.0%
56	21.0%	26.0%
57	21.0%	26.0%
58	21.0%	26.0%
59	21.0%	26.0%
60	22.0%	21.0%
61	22.0%	21.0%
62	27.0%	24.0%
63	18.0%	16.0%
64	18.0%	16.0%
65	18.0%	24.0%
66	30.0%	24.0%
67	30.0%	26.0%
68	22.0%	26.0%
69	22.0%	26.0%
70	30.0%	26.0%
71	22.0%	24.0%
72	22.0%	24.0%
73	22.0%	24.0%
74 & older	100.0%	100.0%

Group B members are assumed to retire at twice the applicable rate upon the first year they attain eligibility for normal retirement. Early retirement rates (of 1% at age 55 increasing by 1% every two years to 5% at ages 63 and 64) apply for Group B members.



Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2022) (Continued)

4. Rates of Decrement Due to Withdrawal (adopted effective December 31, 2019)

Rates of withdrawal are comprised of a select period for the first 5 years of employment and ultimate rates based on years of service from retirement after the end of the select period. The following rates during the select period apply at all ages during the applicable year of employment:

Years of Employment	Males	Females
1	0.1100	0.1600
2	0.1050	0.1500
3	0.0925	0.1275
4	0.0675	0.1000
5	0.0600	0.0850

After the select period ends, rates of withdrawal are based on the number of years from retirement. The rates are shown below for males and females:

Years from Eligibility for Unreduced Retirement	Rates of Withdrawal After Select Period	
	<u>Males</u>	<u>Females</u>
1	0.0120	0.0080
2	0.0120	0.0175
3	0.0120	0.0175
4	0.0120	0.0200
5	0.0150	0.0200
6	0.0200	0.0200
7	0.0200	0.0250
8	0.0200	0.0250
9	0.0200	0.0250
10	0.0250	0.0300
11	0.0300	0.0350
12	0.0350	0.0375
13	0.0400	0.0400
14	0.0450	0.0700
15+	0.0560	0.0825

Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2022) (Continued)

5. Disability Rates* (adopted effective December 31, 2015)

Sample rates are shown below:

Age	Rates of Decrement Due to Disability Males and Females
20	0.000004
25	0.000025
30	0.000099
35	0.000259
40	0.000494
45	0.000804
50	0.001188
55	0.001647
60	0.002180

* Rates are for disability due to all causes. Occupational disability rates are assumed to be 10% of all causes.

6. Rates of Salary Increase (adopted effective December 31, 2019)

Years of Service	Promotional Rate of Increase	Total Annual Rate of Increase Including 2.50% Inflation Component and 1.00% Productivity Component
1 - 3	2.25%	5.75%
4 - 5	2.00%	5.50%
6	1.75%	5.25%
7	1.50%	5.00%
8	1.25%	4.75%
9 - 10	1.00%	4.50%
11 - 12	0.75%	4.25%
13 - 14	0.50%	4.00%
15 - 16	0.25%	3.75%
17 or more	0.00%	3.50%

7. DROP Participation: (adopted effective December 31, 2019)

It was assumed that 15% of retiring active members with at least 20 years of service would elect a "Backward" DROP. Additionally, it was assumed that all members who Back Drop would elect to DROP back to the date that would provide the greatest actuarial value to the member.

Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2022) (Continued)

8. Married Percentage: (adopted effective December 31, 1997)

100% of the active members are assumed to be married.

9. There will be no recoveries once disabled: (adopted effective December 31, 1997)

10. Spousal Age Difference: (adopted effective December 31, 2012)

Males are assumed to be three years older than females.

11. Normal Form of Payment: (adopted effective December 31, 1997)

It is assumed that all retiring members will elect the Life only form of payment with a guaranteed return of accumulated employee contributions.

12. Crediting Rate on Employee Contributions: (adopted effective December 31, 2002)

It is assumed that the interest credit rate on employee contributions will be 6.0%.

13. Individual salaries used to project benefits: (adopted effective December 31, 1997)

Rates of pay as of the valuation date are reported for all employees.

14. Pay increase timing: (adopted effective December 31, 1997)

Middle of calendar year.

15. Decrement timing: (adopted effective December 31, 1997)

Decrements of all types are assumed to occur mid-year.

16. Eligibility testing: (adopted effective December 31, 2002)

Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur

17. Decrement relativity: (adopted effective December 31, 2002)

Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2022) (Continued)

18. Incidence of Contributions: (adopted effective December 31, 2002)

Contributions are assumed to be received continuously throughout the year based upon the contribution rates as a percent of payroll (established in statute or agreed upon under the Supplemental Funding Plan) shown in this report and the actual payroll payable at the time contributions are made.

19. Benefit Service: (adopted December 31, 1997)

All members are assumed to accrue one year of eligibility service each year.

20. Service Purchases (military, permissive, and sick leave conversion):

No service purchases of any type are assumed. Any gains or losses due to these purchases are recognized in the valuation following the purchase.

21. Cost of Living Adjustments and One-time Payments:

No future cost of living adjustments are assumed. In addition, no one-time payments (13th checks) are assumed.

B. ACTUARIAL VALUE OF ASSETS

The actuarial value of assets is equal to the market value of assets less a five-year phase in of the Excess (Shortfall) between expected investment return and actual income. The expected investment return each year is calculated based on the market value of assets with the difference from actual income smoothed in over five years in 20% increments. If the current year's difference is opposite sign of the prior years' deferred excesses/(shortfalls), then the prior years' bases (starting with the oldest) are reduced dollar for dollar along with the current year's base. Any remaining bases are then recognized over five years (20% per year) from their initial creation. This can and will result in some bases being recognized in a period shorter than five years.

If the resulting preliminary asset value is less than 80% or more than 120% of the market value of assets, then 1/3 of the amount outside of the 80% to 120% corridor is recognized in the final actuarial value of assets. In extreme market conditions, this could result in an actuarial value of assets outside of the 80% to 120% market value of assets corridor.

Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2022) (Continued)

C. ACTUARIAL FUNDING METHOD

The actuarial accrued liability is determined using the Individual Entry Age Normal actuarial cost method. This method assigns the System's total actuarial present value of future benefits to various periods. The actuarial accrued liability is assigned to years prior to the valuation and the normal cost is assigned to the year following the valuation. The remaining costs are assigned to future years.

The normal cost is determined on an individual basis using the Individual Entry Age Normal Cost method. The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs where future normal costs are based on the benefit provisions that are applicable to each individual member. The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of assets.

D. FUNDING PERIOD

The funding period is determined using an open group projection. In the open group projection, the demographic assumptions are applied to the current active employees and any employees that are assumed to leave employment are replaced one for one with a new employee. Over time this results in the change of the employee group from mostly Group A members to Group B members. The projection is built to assume no gains or losses on the actuarial accrued liability or the actuarial value of assets. The funding period is the length of time it takes in the open group projection for the actuarial value of assets to exceed the actuarial accrued liability.

In the projection, new members' pay are assumed to increase at 3.50% year over year (i.e. a new employee in 2022 is assumed to be hired at a salary that is 3.50% greater than a new employee hired in 2021). The 3.50% growth rate is equal to our wage inflation assumption of 3.50% (ultimate salary increase assumption shown in Item A.6.). Note that this is not an assumption that payroll will grow at 3.50% per year. Payroll could grow more slowly in the near-term due to membership demographics.

E. ACTUARIAL MODEL

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

F. CHANGES IN ASSUMPTIONS AND METHODS

No changes in the actuarial assumptions and methods since the prior valuation.



SECTION F

SUMMARY OF BENEFIT PROVISIONS

Summary of Benefit Provisions of the Retirement Plan as of December 31, 2022

A. EFFECTIVE DATE

January 1, 1941.

B. ELIGIBILITY AND PARTICIPATION

Any regular and permanent employee of the City of Austin, excluding all civil service commissioned police officers and firefighters, the Mayor and members of the City Council and all part-time employees who work less than 75 percent of a normal work week.

Members originally hired prior to January 1, 2012 are classified as Group A members and members hired on or after January 1, 2012 are classified as Group B members.

Unless noted otherwise, the provisions for Group A and Group B are the same.

C. MEMBERSHIP SERVICE

The period of time during which an eligible employee pays into and keeps on deposit the contribution prescribed to be paid by the employee into the System.

D. AVERAGE FINAL COMPENSATION

The average of the monthly compensation for the 36 calendar months of highest compensation during the last 120 months prior to termination. The compensation used in the determination of benefits cannot exceed the compensation limits of Internal Revenue Code §401(a)(17) for the applicable period. The limit for 2020 is up to \$285,000 for persons who first become members after 1995 (members hired prior to 1996 have no limit on their compensation).

E. CITY AND MEMBER CONTRIBUTION RATES

The City currently contributes a base rate of 8.00% of pay for each active member. Under the Amended Supplemental Funding Plan, the City is providing an additional contribution for each active member. Beginning January 1, 2021, this additional contribution increased to 11% of pay, for a total City contribution rate of 19% of pay. Each active member contributes 8.00% of pay. The member contributions are made under a pre-tax 401(h) pick-up arrangement.



Summary of Benefit Provisions of the Retirement Plan as of December 31, 2022 (Continued)

F. RETIREMENT BENEFITS

1. Normal Retirement

a. Eligibility:

Group A – A participant may retire upon attaining age 62, or any age with 23 years of service, or attaining age 55 with 20 years of service.

Group B – A participant may retire upon attaining age 62 with 30 years of service, or at age 65 with 5 years of service.

b. Monthly Benefit:

Group A – 3.00% of average final compensation times years of service.

Group B – 2.50% of average final compensation times years of service.

c. Payment Form: Benefits are paid as a monthly life annuity to the participant, with a provision that should the participant die prior to receiving monthly payments whose sum is greater than or equal to the participant's accumulated employee contributions, then the participant's beneficiary shall receive a lump-sum equal to the excess of the participant's accumulated employee contributions with interest over the sum of the monthly payments received.

d. Optional Forms of Payment:

- i) Joint and contingent annuity with either 100%, 66 2/3%, or 50% of the reduced retirement income payable for the life of the contingent annuitant upon the death of the retiring participant, with the provision that, should the contingent annuitant predecease the participant, the monthly annuity will revert to the amount that would have been payable under the normal form of payment,
- ii) Joint and 66 2/3% last survivor provides a reduced retirement income payable as long as both the member and the joint annuitant are alive, and upon the death of either the member or the joint annuitant, the benefit reduces to 2/3 of such amount for the remainder of the life of the last survivor,
- iii) Period certain and life annuity with 15 years of payments guaranteed, or



Summary of Benefit Provisions of the Retirement Plan as of December 31, 2022 (Continued)

- e. Deferred Retirement Option Program (DROP): A member may elect to retroactively participate in the System's DROP (i.e. a Backward DROP). The member would receive a lump-sum payment equal to 90% of the sum of the monthly annuities the participant would have received if the member had retired at the DROP entry date. No COLAs are included but changes in the benefit multiplier are reflected. The maximum period a member may retroactively elect under the DROP is 60 months.

2. Early Retirement:

a. Eligibility:

Group A – Currently there are no reduced retirement benefits under the plan.

Group B – A participant may retire with a reduced benefit upon attaining age 55 with 10 years of service.

b. Monthly Benefit:

Group A – Not applicable.

Group B – the same formula benefit as determined under normal retirement multiplied by an actuarial equivalent early retirement reduction factor.

G. DISABILITY RETIREMENT

- 1. Eligibility: If the employee is terminated by reason of a total and permanent disability which prevents the employee from engaging in any employment duties. If the employee has less than five years of service, the disability must be job related.
- 2. Monthly Benefit: Same as Normal Retirement benefit using pay and service at date of disability.
- 3. Form of Payment: The normal form of payment that is available to a member taking normal retirement and the optional forms of payments described in F.1.d.i) and F.1.d.ii) above.

Summary of Benefit Provisions of the Retirement Plan as of December 31, 2022 (Continued)

H. VESTING OF BENEFITS

1. Vesting

An employee is vested according to the following schedule:

<u>Years of Vesting Service</u>	<u>Vested Percentage</u>
Less than 5	0%
5 or more	100%

Benefits Upon Vesting

A vested participant is entitled to the retirement benefit payable at normal retirement earned to the date of participant's termination multiplied by his/her vested percentage, or a refund of the employee's accumulated employee contributions with interest.

I. DEATH IN SERVICE

1. Eligibility: All active members.
2. Benefit: The amount of the benefit payable to the beneficiary is:

- a. Employee eligible for retirement at date of death:

The surviving spouse if any may elect to receive an annuity equal to the monthly benefit as if the member had retired under any retirement option that would have been available to the member at the end of the month in which the member died. If there is no surviving spouse, then the beneficiary may elect to receive a 15 years certain and life annuity. The surviving spouse or beneficiary instead of electing the annuity may elect to receive a death benefit equal to twice the member's accumulated employee contributions with interest.

- b. Employee not eligible for retirement at date of death:

A refund of the member's accumulated deposits (with interest) plus a death benefit from COAERS equal to the member's accumulated deposits (with interest), but excluding any purchases for Non-contributory time, prior military service purchases, or Supplementary Service Credit.



Summary of Benefit Provisions of the Retirement Plan as of December 31, 2022 (Continued)

J. RETIREE LUMP-SUM DEATH BENEFIT

Upon death of a retired member, a \$10,000 lump-sum death benefit is payable. This benefit is also payable upon the death of an active member eligible for retirement whose surviving spouse or beneficiary elects to receive an annuity.

K. COST-OF-LIVING ADJUSTMENT (COLA)

On January 1 of each year the Board may approve a cost-of-living adjustment for those retirees who retired on or before December 31 of the previous year. The maximum adjustment which can be approved is 6%. The amount of the adjustment is set by the Board upon recommendation by the System's actuary that such an adjustment will not make the Fund financially unsound, and the adjustment is not inconsistent with the Code. The adjustment is prorated for any benefit which has been in effect for less than a year, with the proration being 1/12 for each monthly payment received during the prior year.

L. LUMP-SUM ADDITIONAL BENEFIT PAYMENT

Once each year the Board may approve a lump-sum additional benefit payment to be paid to those members and beneficiaries currently in payment status. The additional payment would be equal to a percentage of the member's monthly annuity with a maximum percentage of 100%.

M. LEGISLATED PLAN CHANGES ENACTED BY 1995 LEGISLATURE

1. 2.3% Multiplier

The benefit multiplier was increased from 2.2% per year of service to 2.3% per year of service effective October 1995.

2. 2.3% Retiree Gross-up

Effective October 1995, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.3% multiplier.

Summary of Benefit Provisions of the Retirement Plan as of December 31, 2022 (Continued)

3. \$10,000 Retiree Lump-Sum Death Benefit

The lump-sum death benefit payable upon the death of a retiree was increased from \$2,000 to \$10,000.

4. Plan Participation Begins at Date of Hire

The six-month service requirement for participation was eliminated. Current active members were granted service for the period between their date of hire and their date of participation, up to six months.

N. LEGISLATED PLAN CHANGES ENACTED BY 1997 LEGISLATURE

1. 2.6% Multiplier

The benefit multiplier was increased from 2.3% per year of service to 2.6% per year of service effective October 1997.

2. 2.6% Retiree Gross-up

Effective October 1997, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.6% multiplier.

3. Military Service Purchase

Increased the number of months of military service that may be purchased from 24 to 48.

4. Noncontributory Service Purchase

Allowed an employee to purchase noncontributory service for the following periods of time: (1) while employee was on workers' compensation leave, (2) while employee was on an authorized leave of absence, and (3) while employee performed service for the employer in a position for which the service was not otherwise creditable. The employee pays the full actuarial cost of the service purchase.

Summary of Benefit Provisions of the Retirement Plan as of December 31, 2022 (Continued)

5. Employer Purchase of Creditable Service

Allowed the employer to purchase the amount of service required to qualify an employee for an unreduced retirement benefit at age 55. To be eligible for the purchase, the employee must never have been a highly compensated employee within the meaning of IRC Section 414(q). The cost of the service purchase is the full actuarial cost of both the benefit and the retirement eligibility.

O. LEGISLATED PLAN CHANGES ENACTED BY 1999 LEGISLATURE

1. 2.7% Multiplier

The benefit multiplier was increased from 2.6% per year of service to 2.7% per year of service effective October 1999.

2. 2.7% Retiree Gross-up

Effective October 1999, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.7% multiplier.

3. 23 & Out Provision

The service requirement at which a participant may retire with an unreduced retirement benefit was decreased from 25 years of Creditable Service to 23 years of Creditable Service.

4. Pop-Up Provisions for Certain Joint and Survivor Payment Options

Certain optional forms of payment which extend coverage to a joint annuitant (Options I, II, and III) were amended so that, should the contingent annuitant predecease the participant, the monthly annuity will revert to the amount that would have been payable under the normal form of payment.

5. LUMP-SUM ADDITIONAL BENEFIT PAYMENT

The Board was given the ability to make an additional payment to members and beneficiaries in payment status in the form of a lump-sum additional benefit payment. The additional payment would be a percentage of the current monthly payment with a maximum percentage of 100%.

Summary of Benefit Provisions of the Retirement Plan as of December 31, 2022 (Continued)

6. EMPLOYER PURCHASE OF CREDITABLE SERVICE

Limitations on employer purchases of Creditable Service for a Member before actual retirement were removed.

P. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2000

1. “415 Restoration of Retirement Income Plan”

Certain highly compensated members may have their retirement annuity limited because of Section 415(b)(1) of the Internal Revenue Code. A plan amendment effective January 1, 2000, provides for COAERS to pay a benefit payment that exceeds the maximum benefit limitation imposed by the Internal Revenue Code from a separate, non-qualified, pay-as-you-go “Restoration of Retirement Income Plan.”

2. 2.98% Multiplier

The benefit multiplier was increased from 2.7% per year of service to 2.98% per year of service effective April 2000.

3. 2.98% Retiree Gross-up

Effective April 2000, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.98% multiplier.

4. “Pop-up” Benefit Amendment

The “pop-up” benefit is extended to retirees who selected the actuarial equivalent of Life Annuity option with underlying options of I, II, or III.

Q. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2001

None

Summary of Benefit Provisions of the Retirement Plan as of December 31, 2022 (Continued)

R. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2002

1. 3.00% Multiplier

Benefit multiplier was increased from 2.98% per year of service to 3.00% per year of service effective January 2002.

2. 3.00% Retiree Gross-up

Effective January 2002, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 3.00% multiplier.

3. Deferred Retirement Option Program

A “Backward” DROP was added as an optional benefit effective in 2002. The retiring member may elect to retroactively participate in a DROP. The member would receive a lump-sum payment equal to 90% of the sum of the monthly annuities the participant would have received if the member had retired at the DROP entry date. No COLAs are included but changes in the benefit multiplier are reflected.

4. Purchase of Permissive Time

A member may purchase up to five years of Permissive Time. The purchase price charged to the member is the anticipated actuarial cost to the System for the additional service. Minimum purchase is one month with a maximum of 60 months (5 years) or the number of months needed to reach first eligibility for retirement whichever is less.

5. Conversion of Unused Sick Leave

At retirement an employee may elect to purchase Creditable Service for unused sick leave. The Board requires payment by the Member, and then by the City of the equivalent amount of retirement contributions that would have been made had the sick hours been exercised as sick hours. An employee must already be eligible for retirement to purchase the service.

Summary of Benefit Provisions of the Retirement Plan as of December 31, 2022 (Continued)

S. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2003

1. “Pop-up” Benefit Amendment

“Pop-up” benefit was extended to any Joint and Survivor option (including level income options), other than Joint and Last Survivor.

2. Permissive Time Amendment

Permissive Time resolution was amended removing the provision that restricts members from purchasing Permissive Time in excess of the amount needed to reach first retirement eligibility.

T. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2004

None

U. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2005

None

V. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2006

None

W. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2007

None

X. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2008

None

Y. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2009

None

Z. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2010

None



Summary of Benefit Provisions of the Retirement Plan as of December 31, 2022 (Continued)

AA. LEGISLATED PLAN CHANGES ENACTED BY THE 2011 LEGISLATURE

1. Retirement Provisions

For members hired on after January 1, 2012 (Group B members), changed the eligibility for normal retirement to age 65 with 5 years of service, or age 62 with 30 years of service. Also for members hired on or after January 1, 2012, added an eligibility for early retirement upon age 55 with 10 years of service.

2. Benefit Multiplier

For members hired on after January 1, 2012, the benefit multiplier was changed to 2.5% per year of service. Early retirement benefits would be reduced on an actuarially equivalent basis.

BB. BENEFIT ENHANCEMENTS ENACTED IN 2012-2022

There have been no changes to the benefit provisions of the Plan since January 1, 2012.

SECTION G

DEFINITION OF TERMS

Definition of Terms

1. ***Actuarial Cost Method***

A method for determining the actuarial present value of future benefits and allocating such value to time periods in the form of a normal cost and an actuarial accrued liability.

2. ***Present Value of Future Benefits***

This is computed by projecting the total future benefit cash flow from the System, using actuarial assumptions, and then discounting the cash flow to the valuation date.

3. ***Normal Cost***

Computed differently under different actuarial cost methods, the normal cost generally represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued during a year.

4. ***Actuarial Accrued Liability***

Computed differently under different actuarial cost methods. Generally actuarial accrued liability represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued as of the valuation date.

5. ***Entry Age Actuarial Cost Method***

A method under which a participant's actuarial present value of future benefits is allocated on a level basis over the earnings of the participant between his/her entry into the System and his/her assumed exit.

6. ***Unfunded Actuarial Accrued Liability***

The difference between total actuarial present value of future benefits over the sum of the tangible assets of the System and the actuarial present value of the members' future normal costs. The System is underfunded if the difference is positive and overfunded if the difference is negative.

7. ***Actuarial Value of Assets***

The value of cash, investments, and other property belonging to the System, as valued by the actuary for purposes of the actuarial valuation.

Definition of Terms (Continued)

8. *Actuarial Gain or Loss*

From one valuation to the next, if the experience of the plan differs from that anticipated by the actuarial assumptions, an actuarial gain or loss occurs. For example, an actuarial gain would occur if the assets in the trust had a yield of 12% based on actuarial value, while the assumed yield on the actuarial value of assets was 7.50%.