

Employees Retirement System of Texas

Annual Actuarial Valuation - Funding
As of August 31, 2021





November 23, 2021

Board of Trustees
Employees Retirement System of Texas
200 East 18th Street
Austin, TX 78701

Re: Actuarial Valuation for Funding Purposes as of August 31, 2021

Members of the Board:

We certify that the information contained in this report is accurate and fairly presents the actuarial position of the Employees Retirement System of Texas (ERS) as of August 31, 2021. This report was prepared at the request of the Board and is intended for use by ERS staff and those designated or approved by the Board. This report may be provided to parties other than ERS only in its entirety and only with the permission of the Board.

Actuarial Valuation

The primary purposes of the actuarial valuation report are to determine the adequacy of the current State and employer contributions, describe the current financial condition of ERS, analyze changes in the condition of ERS, and provide various summaries of the data.

Senate Bill 321 in the 2021 Legislative Session significantly improved the funding of the plan as well as introduced a new benefit structure for new hires on or after September 1, 2022. As a result of these changes, the funded ratio is expected to improve every year until the unfunded actuarial accrued liability is eliminated by 2054.

Plan Provisions

Our actuarial valuation as of August 31, 2021 reflects the benefit and contribution provisions set forth in Chapters 811 through 815 and Chapter 820 of the Texas Government Code. The current plan provisions are outlined in Section E of this report.

Actuarial Assumptions and Methods

The assumptions and methods applied in this actuarial valuation were adopted by the Board of Trustees on May 20, 2020 based on the experience investigation that covered the five-year period from September 1, 2014 through August 31, 2019. Additionally, this actuarial valuation incorporates the notable across-the-board pay increases budgeted by the State Legislature when they are granted for the current biennium. The current actuarial assumptions and methods are outlined in Section F of this report.

Data

This valuation was based upon information as of August 31, 2021, furnished by ERS staff, concerning system benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by ERS staff.

Certification

All of our work conforms with generally accepted actuarial principles and practices, and to the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of, where applicable, the Internal Revenue Code and ERISA.

The signing actuaries are independent of the plan sponsor. Mr. Falls, Mr. Newton and Ms. Woolfrey are Enrolled Actuaries and Fellows of the Society of Actuaries, and all of the undersigned are Members of the American Academy of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries. Finally, each of the undersigned are experienced in performing valuations for large public retirement systems.

Respectfully submitted,
Gabriel, Roeder, Smith & Company



R. Ryan Falls, FSA, EA, MAAA
Senior Consultant & Actuary



Joseph P. Newton, FSA, EA, MAAA
Pension Market Leader & Actuary



Dana Woolfrey, FSA, EA, MAAA
Senior Consultant & Actuary

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SECTION A

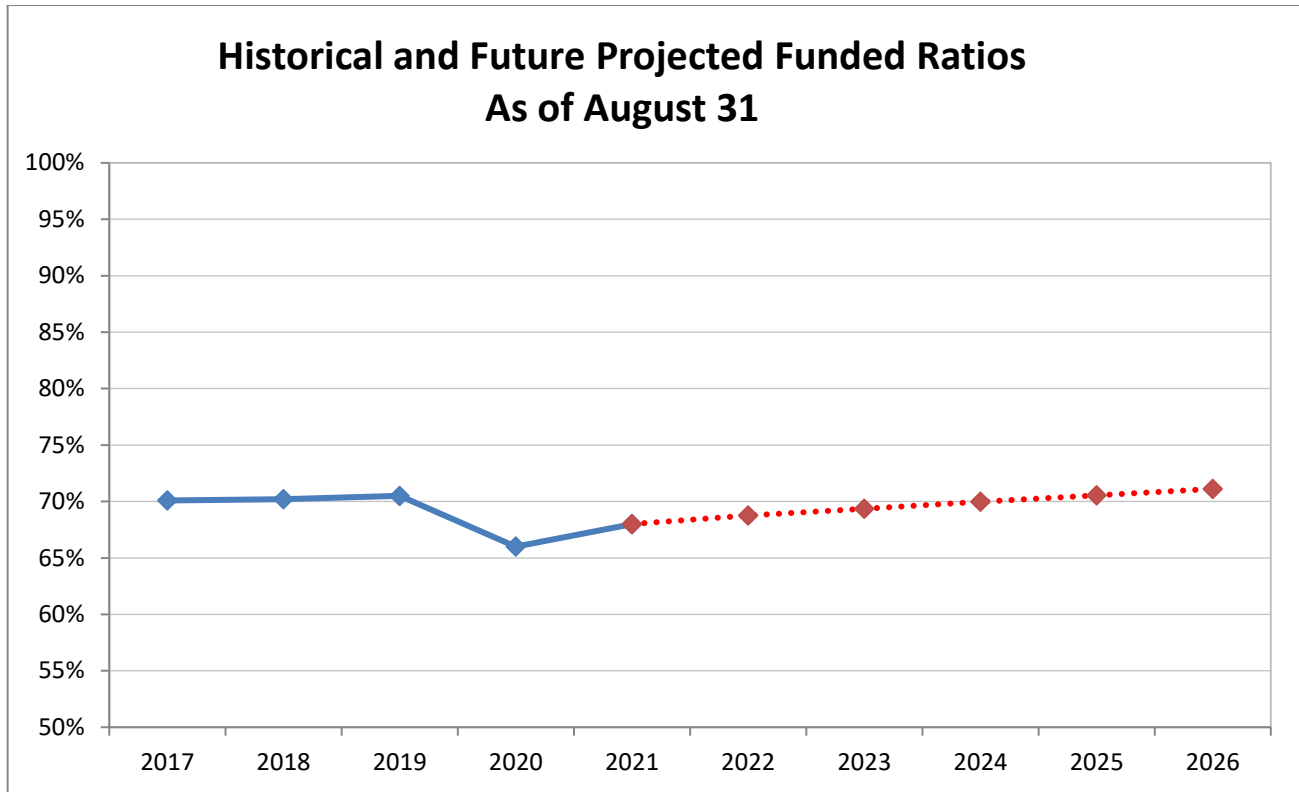
EXECUTIVE SUMMARY

Executive Summary

Item	2021	2020
Membership <ul style="list-style-type: none"> • Number of <ul style="list-style-type: none"> - Active members - Retirees and beneficiaries - Inactive, vested - Inactive, nonvested - Total • Valuation Payroll 	136,726 120,294 14,867 130,183 402,070 \$ 7,144,623,435	142,062 117,996 15,109 119,800 394,967 \$ 7,221,558,595
Statutory contribution rates <ul style="list-style-type: none"> • Members • Employers • State • Total 	FY 2022 9.50% 0.50% 9.50% 19.50%	FY 2021 9.50% 0.50% 9.50% 19.50%
Annual Legacy Contributions Budgeted for 2022-2023 Biennium Per Section 815.407	\$510,000,000	NA
Assets <ul style="list-style-type: none"> • Market value (MVA) • Actuarial value (AVA) • Return on market value (gross) • Return on market value (net) • Return on actuarial value 	\$ 33,608,244,434 \$ 30,065,356,135 25.51% 25.46% 10.0%	\$ 27,946,206,540 \$ 28,543,207,745 6.85% 6.82% 6.1%
Actuarial Information on AVA (smoothed) <ul style="list-style-type: none"> • Normal cost % • Total normal cost • Actuarial accrued liability • Unfunded actuarial accrued liability (UAAL) • Funded ratio • Maximum Amortization Period Per Section 815.407 (ending 2054) • Will payroll contributions and Legacy Payments amortize the UAAL over the Required Period 	14.12% \$ 1,008,820,829 \$ 44,183,687,166 \$ 14,118,331,031 68.0% 33 years Yes	14.16% \$ 1,022,572,697 \$ 43,258,312,073 \$ 14,715,104,328 66.0% Never No
Actuarial Information on MVA <ul style="list-style-type: none"> • Unfunded actuarial accrued liability (UAAL) • Funded ratio 	\$ 10,575,442,732 76.1%	\$ 15,312,105,533 64.6%



The following chart illustrates the recent history and outlook of the funded status of ERS over the next five years:



August 31,	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Funded Ratio	70.1%	70.2%	70.5%	66.0%	68.0%	68.7%	69.4%	70.0%	70.5%	71.1%
UAAL (in billions)	\$11.3	\$11.6	\$11.7	\$14.7	\$14.1	\$14.2	\$14.2	\$14.3	\$14.3	\$14.3

The projections beyond 2021 are based on the same assumptions, methods and provisions used for the August 31, 2021 valuation, which include the State continuing the Legacy Payments and the notable across-the-board pay increases budgeted by the State Legislature when they are granted. Additionally, the actuarial (smoothed) value of assets is expected to earn 7.00% per year.

This is remarkable improvement compared to last year’s projections, which had a projected fund depletion date of 2061, with a 37% probability of being depleted by 2050. With the new commitment from the State to make consistent adequate contributions and the strong investment performance from fiscal year 2021, the sustainability of ERS has been materially improved. Please also note, the above projections do not recognize any of the current \$3.5 billion in deferred asset gains that will be recognized in future valuations unless offset by future adverse experience. Given the size of the currently deferred gains, it is likely the funded ratio projection will exceed the above projection over the short term.

However, there are good reasons that the investment performance is smoothed on a year to year basis and the financing of a retirement system like ERS is a long-term arrangement. It is important to put strong, reliable policies in place and then have the discipline to keep a longer-term perspective without overreacting to short term positive, or negative, experience. The policies adopted by the 2021 Legislature are strong long-term policies.



SECTION B

DISCUSSION

Discussion

Introduction

This report presents the results of the August 31, 2021 actuarial valuation of the Employees Retirement System of Texas (ERS).

The primary purposes of this actuarial valuation report are to determine the adequacy of the current State and employer contributions, describe the current financial condition of ERS, analyze the changes in condition of ERS, and provide various summaries of the data.

All of the tables referenced in the following discussion appear in Section C of this report.

Funding Adequacy

Senate Bill 321, enacted during the 2021 Regular Legislative Session, introduced a new level dollar contribution structure in Texas Government Code Section 815.407, called Legacy Payments. These amounts are calculated for each biennium to fully amortize the Unfunded Actuarial Accrued Liability (UAAL) as required before the end of fiscal year 2054. The 2021 Legislature appropriated \$510 million per year for fiscal years 2022 and 2023. The target date of 2054 produces an amortization period of 33 years as of this 2021 valuation. Senate Bill 321 changed the funding structure of ERS from a fixed contribution rate structure to an actuarially determined structure. Each year during the actuarial valuation process a Legacy Payment account will be determined to meet the requirements of Section 815.407. This valuation finds the \$510 million annual Legacy Payments fulfill these requirements.

The ERS Board of Trustees approved the Pension Funding Priorities and Guidelines on May 23, 2018 and adopted updates in August 2020. For the Board, adoption of this policy is intended to:

- enhance communications and provide transparency to the Legislature and plan members and retirees regarding Board of Trustees' positions on plan funding strategy;
- provide policy guidance to current and future Boards;
- ensure that legislators, elected officials and other stakeholders have clear and accurate information about the Trust's funding goals and the needs of the Board in supporting sound fiduciary investment decisions in accordance with Texas Government Code Section 815.106; and
- identify a recommended plan for the state of Texas, as the plan sponsor, to achieve a 100% funded ratio while following funding best practices and sound actuarial principles, in accordance with Texas Government Code Section 802.2011.

The policy states that the main objective of ERS' retirement programs is to fully fund the long-term cost of benefits provided by statute, through disciplined and timely accumulation of contributions and prudent investment of assets to deliver earned benefits on a continuing basis. In support of this objective, the policy laid out a multi-level funding period goal to gradually achieve funding on sound actuarial principles:

1. Fund normal costs;
2. Avoid trust fund depletion of the pre-funded plans;
3. Meet current statutory standard of a 31-year funding period for unfunded liabilities, per Texas Government Code Sections 811.006 and 840.106; and



4. Match funding period to the average years of service at retirement once a 31-year funding period is achieved, and closed.

With the passage of SB 321 and the introduction of the Legacy Payment structure, every objective of this policy should eventually be met. This valuation finds ERS now meets the first and second levels of the policy. In addition, since the new policy has a closed amortization structure, actuarial projections indicate the third level funding goal will be met within a couple of years and the fourth level will be met within approximately 10 years.

The unfunded actuarial accrued liability (UAAL) decreased from \$14.7 billion as of August 31, 2020 to \$14.1 billion as of August 31, 2021. **This is the first year to year decrease in the UAAL since 2007. Combined with the new Legacy Payment contribution structure, and assuming all other assumptions are met, it is likely the UAAL will continue to decline year over year going forward.**

Additionally, the funded ratio—actuarial value of assets divided by the actuarial accrued liability—increased from 66.0% to 68.0%, as of August 31, 2021. This increase in the funded ratio was primarily due to the strong investment performance from fiscal year 2021. The funded status is one of many metrics used to show trends and develop future expectations about the health of a retirement 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.

Plan Provisions

SB 321 created a new defined benefit structure for state employees who began work on or after September 1, 2022. The new structure is a cash balance retirement benefit with meaningful cost and risk sharing mechanisms. The overall average value provided by the State is not meaningfully different from the previous benefit structure. As no current members are in the new benefit structure and the value is similar, the change to the benefit structure had minimal impact to this valuation and forward-looking projections. However, the new structure is designed to mitigate unexpected future increases in the UAAL. The impact will be realized in the future if experience deviates from the assumptions.

In addition, Section 814.604 provides for a one-time limited group of retirees to receive a permanent monthly annuity increase once the funding period will remain under the 31-year requirement after the increase is reflected. This statutory requirement is incorporated into the actuarial accrued liability in this valuation now that the plan is expected to be in a position to pay this increase in the future. The current plan provisions are outlined in Section E of this report.

Actuarial Assumptions and Methods

The assumptions and methods applied in this actuarial valuation were adopted by the Board of Trustees on May 20, 2020 based on the experience investigation that covered the five-year period from September 1, 2014 through August 31, 2019. We believe the assumptions are internally consistent and are reasonable, based on the actual experience of ERS.

This actuarial valuation adjusts for any notable across-the-board pay increases budgeted by the State Legislature for the current biennium. Specifically, regular State employees did not receive an across-the-board increase effective September 1, 2021 nor September 1, 2022. Additionally, commissioned law



enforcement positions were assumed to receive the scheduled increases to State Salary Schedule C on September 1, 2021. There were no other changes to the assumptions.

The results of the actuarial valuation are dependent upon 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. A review of the impact of a different set of assumptions on the funded status of ERS is outside the scope of this actuarial valuation.

The current actuarial assumptions and methods are outlined in Section F of this report.

System Assets

This report contains several tables that summarize key information with respect to the ERS assets.

The total market value of assets increased from \$27.9 billion to \$33.6 billion as of August 31, 2021. Table 5 reconciles the changes in the fund during the year. Total contributions increased slightly from \$1,450 million to \$1,458 million.

Table 6 shows the development of the Actuarial Value of Assets (AVA). The current AVA method recognizes each year's gain or loss over a closed five-year period and allows for direct offsetting of gains and losses. The AVA increased from \$28.5 billion to \$30.1 billion, as of August 31, 2021.

When measured on a market value, the gross investment return for the fiscal year ending August 31, 2021 was 25.51%, and the return net of investment expenses was 25.46% as reported by the ERS Master Trust Custodian. When measured on an actuarial value, the net investment return was 10.0%. Table 7 shows a history of return rates. The ERS ten-year average gross market return, as reported by the ERS Master Trust Custodian, is 9.40%. The ten-year average return net of investment expenses is 9.32%.

Table 8 provides a history of the contributions paid into ERS and the administrative expenses and benefit payments paid out of ERS. ERS paid administrative expenses and benefit payments, in excess of contributions received, of \$1,196 million (or 4.3% of assets) in fiscal year 2020 and \$1,275 million (or 3.8% of assets) in fiscal year 2021. ERS should continue to monitor this deficit as it could impact future liquidity needs. Table 11 provides a history of contribution rates, as a percent of payroll, paid into the trust by the State, agencies, and members. This table also shows a history of the total normal cost and the Actuarially Sound Contribution (ASC).

Data

This valuation was based upon information as of August 31, 2021, furnished by ERS staff, concerning system benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by ERS staff.

The tables in Section G show key census statistics for the various groups included in the valuation.



SECTION C

TABLES

Table 1

Development of Employer Cost

	<u>August 31, 2021</u>	<u>August 31, 2020</u>
1. Payroll		
a. Reported Payroll (August Payroll of Active Members)	\$ 7,097,447,703	\$ 7,221,558,595
b. Valuation Payroll (Expected Covered Payroll for Following Plan Year)	7,144,623,435	7,221,558,595
2. Total Normal Cost Rate		
a. Gross normal cost rate	13.79%	13.83%
b. Administrative expenses	<u>0.33%</u>	<u>0.33%</u>
c. Total (Item 2a + Item 2b)	14.12%	14.16%
3. Actuarial Accrued Liability for Active Members		
a. Present value of future benefits for active members	\$ 22,424,684,449	\$ 22,732,816,061
b. Less: present value of future normal costs	<u>(6,835,029,659)</u>	<u>(7,023,939,828)</u>
c. Actuarial accrued liability	\$ 15,589,654,790	\$ 15,708,876,233
4. Total Actuarial Accrued Liability for:		
a. Retirees and beneficiaries	\$ 26,547,208,800	\$ 25,604,780,179
b. Inactive members	2,046,823,576	1,944,655,661
c. Active members (Item 3c)	<u>15,589,654,790</u>	<u>15,708,876,233</u>
d. Total	\$ 44,183,687,166	\$ 43,258,312,073
5. Actuarial Value of Assets	\$ 30,065,356,135	\$ 28,543,207,745
6. Unfunded Actuarial Accrued Liability (UAAL) (Item 4d - Item 5)	\$ 14,118,331,031	\$ 14,715,104,328
7. Annual Legacy Contribution Budgeted for 2022-2023 Biennium	\$510,000,000	NA
8. Allocation of Contribution Rate in Addition to Legacy Contribution		
a. Combined State and employer rates	10.00%	10.00%
b. Member rate	<u>9.50%</u>	<u>9.50%</u>
c. Total contribution rate	19.50%	19.50%
d. Total normal cost rate	14.12%	14.16%
e. Available contribution rate to amortize UAAL	<u>5.38%</u>	<u>5.34%</u>
f. Total contribution rate	19.50%	19.50%
9. Maximum Amortization Period Per Section 815.407 (ending 2054)	33 years	Never

Table 2

Actuarial Present Value of Future Benefits

	August 31, 2021	August 31, 2020
1. Active Members		
a. Service Retirement	\$ 20,249,302,685	\$ 20,518,535,700
b. Disability Benefits	176,796,812	173,006,886
c. Death Before Retirement	177,623,914	176,360,290
d. Termination	1,820,961,038	1,864,913,185
e. Total	\$ 22,424,684,449	\$ 22,732,816,061
2. Inactive Members	\$ 2,046,823,576	\$ 1,944,655,661
3. Annuitants*	\$ 26,547,208,800	\$ 25,604,780,179
4. Total Actuarial Present Value of Future Benefits	\$ 51,018,716,825	\$ 50,282,251,901

* The Present Value of Future Benefits as of August 31, 2021 includes \$26,448,263,074 for the current annuitant benefits and \$98,945,726 for the one-time permanent monthly annuity increase payable to a limited group of retirees described in Section 814.604 of the Texas Government Code which will be paid once the funding period is less than 31 years after the COLA is granted.

Table 3

Analysis of Normal Cost

	<u>August 31, 2021</u>	<u>August 31, 2020</u>
1. Gross Normal Cost Rate		
a. Service Retirement	9.74%	9.78%
b. Disability Benefits	0.15%	0.14%
c. Death Before Retirement	0.13%	0.13%
d. Termination	3.77%	3.78%
e. Total	13.79%	13.83%
2. Administrative Expenses	0.33%	0.33%
3. Total Normal Cost	14.12%	14.16%
4. Less: Member Rate	9.50%	9.50%
5. Employer Normal Cost Rate	4.62%	4.66%

Table 4
Historical Summary of Active Member Data

Valuation as of August 31,	Active Members		Covered Payroll		Average Salary		Average Age	Average Service
	Number	Percent Increase	Amount in \$ Millions	Percent Increase	\$ Amount	Percent Increase		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2008	134,626	N/A	5,313	N/A	39,468	N/A	43.7	9.4
2009	141,223	4.9%	5,677	6.8%	40,202	1.9%	43.6	9.2
2010	142,490	0.9%	5,845	3.0%	41,022	2.0%	43.8	9.2
2011	137,293	-3.6%	5,714	-2.2%	41,620	1.5%	44.1	9.5
2012	132,669	-3.4%	5,597	-2.0%	42,188	1.4%	44.3	9.7
2013	133,669	0.8%	5,689	1.7%	42,564	0.9%	44.3	9.6
2014	134,162	0.4%	5,953	4.6%	44,374	4.3%	44.3	9.4
2015	142,409	6.1%	6,407	7.6%	44,990	1.4%	43.6	8.8
2016	146,390	2.8%	6,806	6.2%	46,495	3.3%	43.3	8.5
2017	141,629	-3.3%	6,796	-0.2%	47,986	3.2%	43.6	8.7
2018	141,535	-0.1%	6,876	1.2%	48,581	1.2%	43.6	8.6
2019	141,865	0.2%	6,983	1.6%	49,220	1.3%	43.5	8.4
2020	142,062	0.1%	7,222	3.4%	50,834	3.3%	43.6	8.3
2021	136,726	-3.8%	7,097	-1.7%	51,910	2.1%	44.0	8.6

Table 5 Reconciliation of Plan Net Assets

	Year Ending	
	August 31, 2021 (1)	August 31, 2020 (2)
1. Market value of assets at beginning of year	\$ 27,946,206,540	\$ 27,351,224,157
2. Revenue for the year		
a. Contributions for the year		
i. State (including membership fees)	\$ 739,572,907	\$ 735,855,712
ii. Member (including penalty interest)	718,357,239	713,985,036
iii. Total	<u>\$ 1,457,930,146</u>	<u>\$ 1,449,840,748</u>
b. Net investment income	\$ 6,937,214,844	\$ 1,791,061,478
c. Total revenue	\$ 8,395,144,990	\$ 3,240,902,226
3. Disbursements for the year		
a. Benefit payments and refunds	2,794,250,855	\$ 2,701,976,920
b. Net transfers from TRS	(82,994,484)	(80,239,510)
c. Administrative expenses	21,850,725	24,182,433
d. Total expenditures	<u>2,733,107,096</u>	<u>2,645,919,843</u>
4. Increase in net assets (Item 2c - Item 3d)	\$ 5,662,037,894	\$ 594,982,383
5. Market value of assets at end of year (Item 1 + Item 4)	\$ 33,608,244,434	\$ 27,946,206,540

Table 6

Development of Actuarial Value of Assets

	Year Ending August 31, 2021																																																								
1. Market value of assets at beginning of year	\$ 27,946,206,540																																																								
2. Net new investments																																																									
a. Contributions for the year (Table 5)	\$ 1,457,930,146																																																								
b. Disbursements for the year (Table 5)	(2,733,107,096)																																																								
c. Subtotal	(1,275,176,950)																																																								
3. Market value of assets at end of year	\$ 33,608,244,434																																																								
4. Net earnings (Item 3 - Item 1 - Item 2)	\$ 6,937,214,844																																																								
5. Assumed investment return rate for fiscal year	7.00%																																																								
6. Expected return	\$ 1,911,603,265																																																								
7. Excess return (Item 4 - Item 6)	\$ 5,025,611,579																																																								
8. Development of amounts to be recognized as of August 31, 2021:																																																									
<table style="width: 100%; border-collapse: collapse; margin-left: 20px;"> <thead> <tr> <th style="text-align: left;">Fiscal Year End</th> <th style="text-align: center;">Remaining Deferrals of Excess (Shortfall) of Investment Income</th> <th style="text-align: center;">Offsetting of Gains/(Losses)</th> <th style="text-align: center;">Net Deferrals Remaining</th> <th style="text-align: center;">Years Remaining</th> <th style="text-align: center;">Recognized for this valuation</th> <th style="text-align: center;">Remaining after this valuation</th> </tr> <tr> <th></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>2017</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>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;">2</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;">(531,672,049)</td> <td style="text-align: right;">531,672,049</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>2020</td> <td style="text-align: right;">(65,329,156)</td> <td style="text-align: right;">65,329,156</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>2021</td> <td style="text-align: right; border-bottom: 1px solid black;">5,025,611,579</td> <td style="text-align: right; border-bottom: 1px solid black;">(597,001,205)</td> <td style="text-align: right; border-bottom: 1px solid black;">4,428,610,374</td> <td style="text-align: center;">5</td> <td style="text-align: right; border-bottom: 1px solid black;">885,722,075</td> <td style="text-align: right; border-bottom: 1px solid black;">3,542,888,299</td> </tr> <tr> <td>Total</td> <td style="text-align: right;">\$ 4,428,610,374</td> <td style="text-align: right;">\$ 0</td> <td style="text-align: right;">\$ 4,428,610,374</td> <td></td> <td style="text-align: right;">\$ 885,722,075</td> <td style="text-align: right;">\$ 3,542,888,299</td> </tr> </tbody> </table>	Fiscal Year End	Remaining Deferrals of Excess (Shortfall) of Investment Income	Offsetting of Gains/(Losses)	Net Deferrals Remaining	Years Remaining	Recognized for this valuation	Remaining after this valuation		(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)	2017	\$ 0	\$ 0	\$ 0	1	\$ 0	\$ 0	2018	0	0	0	2	0	0	2019	(531,672,049)	531,672,049	0	3	0	0	2020	(65,329,156)	65,329,156	0	4	0	0	2021	5,025,611,579	(597,001,205)	4,428,610,374	5	885,722,075	3,542,888,299	Total	\$ 4,428,610,374	\$ 0	\$ 4,428,610,374		\$ 885,722,075	\$ 3,542,888,299	
Fiscal Year End	Remaining Deferrals of Excess (Shortfall) of Investment Income	Offsetting of Gains/(Losses)	Net Deferrals Remaining	Years Remaining	Recognized for this valuation	Remaining after this valuation																																																			
	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)																																																			
2017	\$ 0	\$ 0	\$ 0	1	\$ 0	\$ 0																																																			
2018	0	0	0	2	0	0																																																			
2019	(531,672,049)	531,672,049	0	3	0	0																																																			
2020	(65,329,156)	65,329,156	0	4	0	0																																																			
2021	5,025,611,579	(597,001,205)	4,428,610,374	5	885,722,075	3,542,888,299																																																			
Total	\$ 4,428,610,374	\$ 0	\$ 4,428,610,374		\$ 885,722,075	\$ 3,542,888,299																																																			
9. Actuarial value of assets as of August 31, 2021 (Item 3 - Item 8, Column 6)	\$ 30,065,356,135																																																								
10. Ratio of actuarial value to market value	89.5%																																																								



Table 7
History of Investment Return Rates

Year Ending August 31 of	Market Returns (Gross)	Market Returns (Net)	Actuarial
(1)	(2)	(3)	(4)
1998	8.30%	8.23%	11.5%
1999	16.26%	16.46%	12.5%
2000	9.43%	9.40%	11.8%
2001	-6.91%	-6.93%	7.6%
2002	-7.17%	-7.21%	4.7%
2003	9.20%	9.14%	5.4%
2004	11.69%	11.64%	6.4%
2005	12.71%	12.62%	7.5%
2006	8.83%	8.76%	7.7%
2007	13.88%	13.76%	8.6%
2008	-4.58%	-4.69%	5.7%
2009	-6.60%	-6.71%	3.2%
2010	6.65%	6.48%	3.6%
2011	12.58%	12.36%	5.0%
2012	8.22%	8.04%	5.4%
2013	10.07%	9.87%	6.1%
2014	14.70%	14.58%	7.6%
2015	0.49%	0.44%	6.1%
2016	5.32%	5.28%	5.9%
2017	12.15%	12.11%	2.8%
2018	9.58%	9.54%	7.9%
2019	3.04%	3.00%	6.9%
2020	6.85%	6.82%	6.1%
2021	25.51%	25.46%	10.0%
Average Returns			
Last Five Years:	11.17%	11.13%	6.7%
Last Ten Years:	9.40%	9.32%	6.5%
Last Fifteen Years:	7.58%	7.48%	6.0%
Last Twenty Years:	7.38%	7.29%	6.1%

Market returns provided by ERS Master Trust Custodian.

Rates in Column (2) represent the market returns gross of all expenses.

Rates in Column (3) represent the market returns net of investment expenses.

Net returns may exceed gross returns in years where adjustments are made to fee expenses.



Table 8
History of Cash Flow

Year Ending August 31,	Distributions and Expenditures				External Cash Flow for the Year	Market Value of Assets	External Cash Flow as Percent of Market Value
	Contributions	Benefit Payments and Refunds	Administrative Expenses	Total			
(1)	(2)	(3)	(5)	(6)	(7)	(8)	(9)
2007	\$ 657.7	\$ (1,333.2)	\$ (16.0)	\$ (1,349.2)	\$ (691.5)	\$ 23,480	-2.9%
2008	678.8	(1,383.9)	(16.2)	(1,400.1)	(721.3)	21,464	-3.4%
2009	716.1	(1,449.0)	(17.3)	(1,466.3)	(750.2)	19,098	-3.9%
2010	810.4	(1,512.4)	(19.0)	(1,531.4)	(721.0)	19,581	-3.7%
2011	839.9	(1,612.5)	(18.8)	(1,631.3)	(791.4)	21,204	-3.7%
2012	758.1	(1,733.7)	(17.8)	(1,751.5)	(993.4)	21,826	-4.6%
2013	798.3	(1,834.4)	(18.7)	(1,853.1)	(1,054.8)	22,869	-4.6%
2014	912.8	(1,963.5)	(20.2)	(1,983.7)	(1,070.9)	25,050	-4.3%
2015	962.6	(2,049.3)	(21.8)	(2,071.1)	(1,108.5)	23,998	-4.6%
2016	1,361.4	(2,147.3)	(20.4)	(2,167.7)	(806.3)	24,466	-3.3%
2017	1,385.5	(2,288.8)	(23.1)	(2,311.9)	(926.4)	26,372	-3.5%
2018	1,381.1	(2,406.4)	(23.5)	(2,429.9)	(1,048.8)	27,753	-3.8%
2019	1,407.4	(2,540.3)	(27.7)	(2,568.0)	(1,160.6)	27,351	-4.2%
2020	1,449.8	(2,621.7)	(24.2)	(2,645.9)	(1,196.1)	27,946	-4.3%
2021	1,457.9	(2,711.2)	(21.9)	(2,733.1)	(1,275.2)	33,608	-3.8%

Dollar amounts in millions



Table 9

Total Experience Gain or Loss

Item (1)	Year Ending August 31, 2021 (2)	Year Ending August 31, 2020 (3)
A. Calculation of total actuarial gain or loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	\$ 14,715,104,328	\$ 11,741,238,455
2. Assumption/Method changes - Liability Only	\$ 0	\$ 1,907,916,019
3. UAAL, previous year, after assumption changes (Item 1 + Item 2)	\$ 14,715,104,328	\$ 13,649,154,474
4. Normal cost for the year (excluding administrative expenses)	998,741,554	971,554,619
5. Actual administrative expenses	21,850,725	24,182,433
6. Contributions for the year (excluding service purchases)	(1,422,458,567)	(1,415,880,179)
7. Interest at 7.00%		
a. On UAAL	\$ 1,030,057,303	\$ 955,440,813
b. On normal cost and administrative expenses	35,720,730	34,850,797
c. On contributions	(49,786,050)	(49,555,806)
d. Total	<u>\$ 1,015,991,983</u>	<u>\$ 940,735,804</u>
8. Legislative actions*		
a. Across-the-board pay increases budgeted for upcoming biennium by the State Legislature	(410,126,083)	0
b. Section 814.604 Impact	98,945,726	0
9. Expected UAAL (Sum of Items 3 through 8)	15,018,049,666	14,169,747,151
10. Actual UAAL	14,118,331,031	14,715,104,328
11. Total (gain)/loss for the year (Item 10 - Item 9)	\$ (899,718,635)	\$ 545,357,177
B. Source of gains and losses		
	<u>% of AAL</u>	
12. Asset (Gain)/Loss for the year	1.91%	(843,931,991) 243,179,030
13. Pay Increases (Less)/Greater than Expected	0.15%	65,368,927 284,709,391
14. Non-Retired Demographic (Gains)/Losses	0.11%	(48,402,938) 16,675,583
15. Post-Retirement Mortality (Gains)/Losses	0.19%	(85,211,212) (45,484,219)
16. Other Demographic (Gains)/Losses	<u>0.03%</u>	<u>12,458,579</u> <u>46,277,392</u>
17. Total (Sum of Items 12 through 16)	2.04%	\$ (899,718,635) \$ 545,357,177

* The plan experiences a (gain)/loss when across-the-board pay increases budgeted by the State Legislature are (less)/greater than assumed.



Table 10 Solvency Test

Actuarial Accrued Liability and Percent of Active Member Payroll for:

August 31,	Accumulated Member Contributions Including Interest		Retirees and Beneficiaries Currently Receiving Benefits		Employer Financed Portion of Vested and Nonvested Benefits		Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Assets		
	(1)	% of Payroll	(2)	% of Payroll	(3)	% of Payroll		(1)	(2)	(3)
2007	\$ 4,059.7	77%	\$ 11,519.9	219%	\$ 8,407.5	160%	\$ 22,938.9	100%	100%	88%
2008	4,256.2	79%	12,195.8	227%	8,951.2	166%	23,511.9	100%	100%	79%
2009	4,460.6	77%	12,648.2	218%	9,799.0	169%	23,509.6	100%	100%	65%
2010	4,719.7	80%	13,407.8	226%	10,284.3	173%	23,628.6	100%	100%	54%
2011	4,943.7	85%	14,325.2	247%	9,781.3	169%	23,997.4	100%	100%	48%
2012	5,075.2	89%	15,244.0	269%	9,658.0	170%	24,272.5	100%	100%	41%
2013	5,201.0	91%	16,148.2	284%	10,536.8	185%	24,667.6	100%	100%	31%
2014	5,213.6	88%	17,113.9	287%	10,597.2	178%	25,431.9	100%	100%	29%
2015	5,235.1	82%	18,080.0	282%	10,553.3	165%	25,850.5	100%	100%	24%
2016	5,509.4	81%	19,018.0	279%	10,775.8	158%	26,557.1	100%	100%	19%
2017	5,709.1	84%	21,378.8	315%	10,541.9	155%	26,371.8	100%	97%	0%
2018	5,897.5	86%	22,528.0	328%	10,563.8	154%	27,359.9	100%	95%	0%
2019	6,044.4	87%	23,686.0	339%	10,070.9	144%	28,060.1	100%	93%	0%
2020	6,279.0	87%	25,604.8	355%	11,374.5	158%	28,543.2	100%	87%	0%
2021	6,524.1	92%	26,547.2	374%	11,112.4	157%	30,065.4	100%	89%	0%

Note : Dollar amounts in millions



Table 11
Historical Contribution Rates

Actuarial Valuation as of August 31,	Contributions from:				Legacy Payments (millions)	Total Normal Cost Rate	ASC **
	State	Agency	Members	Total			
1998	6.00%	0.00%	6.00%	12.00%		11.86%	Not calculated
1999	6.00%	0.00%	6.00%	12.00%		12.33%	Not calculated
2000	6.00%	0.00%	6.00%	12.00%		12.41%	Not calculated
2001	6.00%	0.00%	6.00%	12.00%		12.67%	Not calculated
2002	6.00%	0.00%	6.00%	12.00%		12.71%	Not calculated
2003	6.00%	0.00%	6.00%	12.00%		12.26%	12.82%
2004	6.00%	0.00%	6.00%	12.00%		12.45%	13.12%
2005	6.45%	0.00%	6.00%	12.45%		12.28%	13.59%
2006	6.45%	0.00%	6.00%	12.45%		11.98%	13.20%
2007	6.45%	0.00%	6.00%	12.45%		11.98%	13.10%
2008	6.45%	0.00%	6.00%	12.45%		13.37%	15.45%
2009 *	6.78%	0.00%	6.48%	13.26%		12.38%	15.84%
2010	6.95%	0.00%	6.50%	13.45%		12.30%	17.07%
2011	6.00%	0.00%	6.50%	12.50%		12.31%	17.47%
2012	6.50%	0.00%	6.50%	13.00%		12.31%	18.25%
2013	7.50%	0.50%	6.60%	14.60%		11.57%	18.73%
2014	7.50%	0.50%	6.90%	14.90%		11.58%	18.76%
2015	9.50%	0.50%	9.50%	19.50%		12.27%	19.62%
2016	9.50%	0.50%	9.50%	19.50%		12.28%	19.88%
2017	9.50%	0.50%	9.50%	19.50%		13.95%	23.21%
2018	9.50%	0.50%	9.50%	19.50%		13.86%	23.12%
2019	9.50%	0.50%	9.50%	19.50%		13.76%	23.26%
2020	9.50%	0.50%	9.50%	19.50%		14.16%	25.48%
2021	9.50%	0.50%	9.50%	19.50%	\$510	14.12%	***

* For Fiscal Year 2010, members contributed 6.45% from September through December and 6.50% from January through August. Similarly, the State contributed 6.45% from September through December and 6.95% from January through August.

** Prior to 2021, the Actuarially Sound Contribution Rate (ASC) was the rate determined as of the valuation date to fund the normal cost and amortize the UAAL over a 31 year period.

*** Beginning with the 2022-2023 biennium, the legislature will appropriate an amount each biennium that is expected to eliminate the unfunded liability by no later than 2054 in accordance with Section 815.407 of the Texas Government Code.

SECTION D

RISKS ASSOCIATED WITH MEASURING THE ACCRUED LIABILITY AND ACTUARIALLY DETERMINED CONTRIBUTION

Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

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

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the 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.

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 actuarially sound contribution rate may be considered as a minimum contribution rate that complies with State statute. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Currently, this, and other Board funding policy objectives are not being met. Users of this report should be aware that even contributions made at the actuarially sound contribution 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. Generally accepted plan maturity measures include the following:

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Ratio of the market value of assets to total payroll	4.7	3.9	3.9	4.0	3.9	3.6	3.6	4.1	3.8	3.8
Ratio of actuarial accrued liability to payroll	6.2	6.0	5.7	5.7	5.5	5.2	5.1	5.3	5.4	5.3
Ratio of actives to retirees and beneficiaries	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.5	1.5
Ratio of net cash flow to market value of assets	-3.8%	-4.3%	-4.2%	-3.8%	-3.5%	-3.3%	-4.6%	-4.3%	-4.6%	-4.6%
Duration of the actuarial accrued liability*	12.0	12.1	11.6	11.7						

*Duration measure not available before 2018

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.

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, a change in liability 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 actuarial accrued liability would increase approximately 10% if the assumed rate of return were lowered 1%.

Additional Risk Assessment

Additional risk assessment is outside the scope of the annual actuarial valuation. 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.

SECTION E

SUMMARY OF PLAN PROVISIONS

Summary of Plan Provisions for Employees Retirement System of Texas

Classes of Membership

1. Elected Class Membership:
 - a. Membership is optional and limited to:
 - i. Elected State officials not covered by either of the Judicial Retirement Systems;
 - ii. Members of the Legislature; and
 - iii. District and Criminal District Attorneys paid by the State general revenue fund.
2. Employee Class Membership:
 - a. Membership is mandatory for all employees and appointed officers of every department, commission, board, agency, or institution of the State except for:
 - i. Independent contractors;
 - ii. Persons covered by the Teacher Retirement System or either of the Judicial Retirement Systems; and
 - iii. Employee Class Members already receiving retirement benefits under the System.
 - b. Includes two types of Employee Class service:
 - i. CPO/CO: Certified Peace Officer / Custodial Officer – in general, service rendered while a law enforcement officer, custodial officer, parole officer or caseworker (collectively referred to as “LECOs”); and
 - ii. Regular: Non-CPO/CO service.
 - c. Prior to September 1, 2015, membership begins after a 90-day waiting period. Effective September 1, 2015, membership begins immediately.

Member Contributions

1. Elected Class (for all members hired before September 1, 2022):
 - a. *Legislators*:
 - i. *Fiscal year 2015*: 8.00% of compensation
 - ii. *Fiscal year 2016 and beyond*: 9.50% of compensation
 - b. *Non-legislators*:
 - ii. *Fiscal year 2015*: 6.90% of compensation
 - iii. *Fiscal year 2016 and beyond*: 9.50% of compensation. Beginning in fiscal year 2018, the 9.50% will be reduced one-tenth of one percent for each one-tenth of one percent that the State contribution rate for the fiscal year to which the service relates is less than the State contribution rate established for the 2017 fiscal year.



2. Employee Class (for all members hired before September 1, 2022):
 - a. *Fiscal year 2015*: 6.90% of compensation
 - b. *Fiscal year 2016 and beyond*: 9.50% of compensation. Beginning in fiscal year 2018, the 9.50% will be reduced one-tenth of one percent for each one-tenth of one percent that the State contribution rate for the fiscal year to which the service relates is less than the State contribution rate established for the 2017 fiscal year.
 - c. Additional member contributions may be allowable for service purchases.
3. Member contributions cease when a member's benefit accrual has reached 100% of Average Monthly Compensation.
4. Member contributions accumulate interest at 5.00% per year through December 31, 2013 and 2.00% interest per year, thereafter.
5. For all members hired on or after September 1, 2022: 6.00% of compensation.

State of Texas and Employer Contributions

State and employer contributions are set biennially by the legislature. The current projected contribution rates, as a percentage of compensation, are shown below. In addition, the State makes contributions for lump-sum death benefits, establishing service not previously established, and annual membership fees. State payroll contributions cease when a member's benefit accrual has reached 100% of Average Monthly Compensation.

	FY2015	FY2016 and beyond
Employer (agency appropriations)	0.50%	0.50%
State (statewide appropriations)	7.50%	9.50%

Additionally, Texas Government Code Section 815.407 provides for Legacy Payments that are actuarially determined State contributions necessary to eliminate the UAAL by no later than August 31, 2054. For the 2022-2023 biennium, the Legacy Payments were budgeted at \$510 million annually.

Return to Work Surcharge

For members who, on or after September 1, 2009, retire from the employee class and are rehired as a retiree into a position that would otherwise include membership in the employee class, the department or agency that employs the member must remit to the retirement system an amount equal to the amount of the State contribution that the department or agency would remit for an active member employed in the person's position.

Compensation

Compensation includes base salary, longevity and hazardous duty pay and excludes overtime pay. This amount is limited by Section 401(a)(17) of the Internal Revenue Code for members hired after August 31, 1996.

Average Monthly Compensation (AMC)

1. Elected Class Service:
 - a. *Elected class members other than district attorneys or criminal district attorneys*: The State base salary, excluding longevity pay, of a district judge, as adjusted from time to time.



- b. *District attorneys and criminal district attorneys:* The State salary, excluding longevity pay, of a district judge of the same number of years of service credit as the member on the member's last day of service as a district or criminal district attorney, as adjusted from time to time.

2. Employee Class Service:

- a. *Members hired prior to September 1, 2009:* Average of the 36 highest months of compensation for service in the employee class of membership
- b. *Members hired on or after September 1, 2009 and prior to September 1, 2013:* Average of the 48 highest months of compensation for service in the employee class of membership
- c. *Members hired on or after September 1, 2013 and prior to September 1, 2022:* Average of the 60 highest months of compensation for service in the employee class of membership

Creditable Service

The types of service creditable in ERS are membership service, military service and equivalent membership service. Equivalent membership service includes: previously cancelled service, service not previously established, waiting period service, and Additional Service Credit.

Unused Sick and Annual Leave

In many cases, unused sick and annual leave can be used to establish Creditable Service. Members hired prior to September 1, 2009 can use unused sick and annual leave to satisfy service requirements for Retirement and Death Benefit Plan eligibility as well as to calculate plan benefits. Members hired on or after September 1, 2009 can only use unused sick and annual leave to calculate plan benefits. However, members hired on or after September 1, 2013 cannot use unused annual leave to calculate plan benefits if the member opts to receive the unused annual leave as a lump-sum payment. Creditable Service in the Elected Class is not granted for unused sick and annual leave.

Cash Balance Benefit for Members hired on or after September 1, 2022

Members hired on or after September 1, 2022 will be eligible for the cash balance benefit. Members eligible for the cash balance benefit will contribute 6% of compensation on an ongoing basis. The member's contribution balance will be accumulated each year with the member's contributions plus an Annual Interest Adjustment and, if applicable, a Gain Sharing Interest Adjustment. The Annual Interest Adjustment is equal to 4% of the member's accumulated account balance.

In years when the five-year average of ERS' total Trust Fund investment returns exceeds 4%, the member's accumulated account balance will also receive a Gain Sharing Interest Adjustment equal to 50% of the return in excess of 4%—up to 3% additional per year. The gain sharing amount will not be less than 0% nor greater than 3% in a given year.

At retirement, the member's accumulated account balance (contributions plus Annual Interest Adjustments plus Gain Sharing Interest Adjustments) will be matched by 150% from the State. The member will receive a cash balance annuity equal to this total amount annuitized over the life expectancy of the member as of the effective date of the member's retirement. The annuity factors will be based on 4% interest and mortality tables adopted by the ERS Board.

Members that leave active employment before retirement but leave their contributions on account with ERS will continue to receive Annual Interest Adjustments and Gain Sharing Interest Adjustments each year. The member can annuitize their accumulated account balance, along with the State match, once they are eligible to commence their annuity.



Once retired, the member's cash balance annuity will also be eligible for the Gain Sharing Interest Adjustment in the form of an increase in their benefit equal to the same percentage of gain-sharing interest credited to non-retired member's accounts.

Standard Service Retirement Annuity

1. Elected Class:

a. *Eligibility:*

- i. Age 60 and eight years of elected class service; or
- ii. Age 50 and 12 years of elected class service.

b. *Benefits:*

- i. *Members hired prior to September 1, 2022:* 2.3% of AMC times years of Creditable Service, adjusted automatically based on the State base salary of a district judge. Alternatively, an elected class member may elect to transfer their elected class service to the employee class in order to have their AMC based on actual compensation. However, if the elected service is transferred to the employee class, the member forfeits increases based on changes in the State base salary of a district judge unless the service is transferred back to the elected class.
- ii. *Members hired on or after September 1, 2022:* Cash balance benefit.

2. Employee Class:

a. *Eligibility:*

- i. *Members hired prior to September 1, 2009:* Age 60 with five years of employee class service
- ii. *Members hired on or after September 1, 2009 and prior to September 1, 2022:* Age 65 with 10 years of employee class service
- iii. Five years of service and age plus employee class service is at least 80 (Rule of 80)
- iv. Age 55 with 10 years of CPO/CO service
- v. Any age with 20 years of CPO/CO service
- vi. *Members hired on or after September 1, 2022:* Age 65 with 5 years of employee class service

b. *Benefits:*

- i. *Members hired prior to September 1, 2022:* 2.3% of AMC times years of Creditable Service
- ii. *Members hired on or after September 1, 2022:* Cash balance benefit.

c. *Applicable Reductions for eligibilities 2.a.iii. and 2.a.iv.:*

- i. For members hired prior to September 1, 2009, none.
- ii. For members hired on or after September 1, 2009, but prior to September 1, 2013, reduced five percent for each year the member retires prior to age 60, with a maximum possible reduction of 25 percent.

- iii. For members hired on or after September 1, 2013, but prior to September 1, 2022, reduced five percent for each year the member retires prior to age 62, with no maximum possible reduction.
 - iv. For members hired on or after September 1, 2022, none.
- d. *Applicable Reductions for eligibility 2.a.v.:*
- i. For members hired prior to September 1, 2009, retiring after attaining age 50 or after attaining Rule of 80, there is no reduction. Otherwise, the member receives the percentage of the benefit stated in the following table:

Attained Age at Retirement	Reduction Percentage	Attained Age at Retirement	Reduction Percentage
36	31.2%	43	55.3%
37	33.9%	44	60.1%
38	36.7%	45	65.3%
39	39.8%	46	71.1%
40	43.2%	47	77.3%
41	46.9%	48	84.2%
42	50.9%	49	91.7%

- ii. For members hired after on or after September 1, 2009, but prior to September 1, 2013, reduced five percent for each year the member retires prior to age 55, with a maximum possible reduction of 25 percent.
 - iii. For members hired on or after September 1, 2013 but prior to September 1, 2022, reduced five percent for each year the member retires prior to age 57, with no maximum possible reduction.
 - iv. For members hired on or after September 1, 2022, none.
3. Normal Form of Payment: Payable for the life of the member with any remaining member account balance paid at time of death. Survivorship options and partial lump-sum option are available on an actuarially equivalent basis.

Standard Non-Occupational Disability Annuity

1. Elected Class:

a. *Eligibility*:

- i. 8 years of elected class service; or
- ii. 6 years of elected class service plus 2 years of pre-1978 military service; and
- iii. Not eligible for a Standard Service Retirement Annuity.

b. *Benefits*:

- i. *Members hired prior to September 1, 2022*: 2.3% of AMC times years of Creditable Service, adjusted automatically based on the State base salary of a district judge.
- ii. *Members hired on or after September 1, 2022*: Cash balance benefit. The ERS Board may also enter into agreements to provide additional disability benefits.

2. Employee Class:

a. *Eligibility:*

- i. 10 years of employee class service; and
- ii. Not eligible for a Standard Service Retirement Annuity on the basis of Rule of 80 or age 55 and 10 years of CPO/CO Service.

b. *Benefits:*

- i. *Members hired prior to September 1, 2022:* 2.3% of AMC times years of Creditable Service
- ii. *Members hired on or after September 1, 2022:* Cash balance benefit. The ERS Board may also enter into agreements to provide additional disability benefits.

c. *Applicable Reductions:* Actuarially reduced from the age that the member would have been eligible for Standard Service Retirement Annuity

3. Normal Form of Payment: Annuity payable for life or until member is no longer incapacitated for the performance of duty. Any remaining member account balance paid at time of death. Survivorship options and partial lump-sum option are available on an actuarially equivalent basis.

Standard Occupational Disability Annuity

1. Elected Class:

a. *Eligibility:* Disability as a direct result of some risk or hazard inherent to employment

b. *Benefits:*

- i. *Members hired prior to September 1, 2022:* 2.3% of AMC times years of Creditable Service, but not less than 18.4% of AMC, adjusted automatically based on the State base salary of a district judge.
- ii. *Members hired on or after September 1, 2022:* Cash balance benefit. The ERS Board may also enter into agreements to provide additional disability benefits.

2. Employee Class (Regular State Employees):

a. *Eligibility:* Disability as a direct result of some risk or hazard inherent to employment

b. *Benefits:*

- i. *Members hired prior to September 1, 2022:* 2.3% of AMC times years of Creditable Service, but not less than 35% of AMC
- ii. *Members hired on or after September 1, 2022:* Cash balance benefit. The ERS Board may also enter into agreements to provide additional disability benefits.

3. Employee Class (LECO Members):

a. *Eligibility:* Disability as a direct result of some risk or hazard inherent to law enforcement or custodial duties

- i. Total: Incapable of substantial gainful activity and eligible for Social Security disability benefits
- ii. Non-total: Does not satisfy definition of Total Disability



- b. *Benefits for Members hired prior to September 1, 2022:*
 - i. Non-total with less than 20 years of CPO/CO Service: 2.3% of AMC times years of Creditable Service, but not less than 50% of AMC. 15% of AMC payable from LECOSRF and the remaining 35% of AMC is payable from the ERS trust
 - ii. Non-total with 20 years of CPO/CO Service: 2.3% of AMC times years of Creditable Service
 - iii. Total: 2.3% of AMC times years of Creditable Service, but not less than 35% of AMC
- c. *Benefits for Members hired on or after September 1, 2022:* Cash balance benefit. The ERS Board may also enter into agreements to provide additional disability benefits.

- 4. Normal Form of Payment: Annuity payable for life or until member is no longer incapacitated for the performance of duty. Any remaining member account balance paid at time of death. Survivorship options and partial lump-sum option are available on an actuarially equivalent basis.

Occupational Disability Lump-Sum Death Benefit

If a member receiving an occupational disability retirement annuity dies and it is determined that the death was an occupational death, a lump-sum death benefit is payable in an amount equal to one year's salary, computed on the basis of the retiree's rate of compensation at the time of disability retirement, and payable to a surviving spouse or dependent minor child.

Death Benefit Plan (DBP) Annuity

- 1. Eligibility:
 - a. 10 years of employee class service; or
 - b. Eligible for Standard Service Retirement Annuity at time of death.
- 2. Benefits:
 - a. *Members hired prior to September 1, 2022:* Benefits are calculated as if the member had elected an optional form of payment, received a standard service retirement annuity, and died immediately thereafter. If the member dies before becoming eligible for the Standard Service Retirement Annuity, the benefit is reduced for early retirement as follows:
 - i. With 12 years of elected class service, the benefit is actuarially reduced from the member's age 50,
 - ii. With 10 years of CPO/CO service, the benefit is actuarially reduced from the member's age 55,
 - iii. With five years of employee class service for members hired before September 1, 2009 or eight years of elected class service, the benefit is actuarially reduced from the member's age 60, and
 - iv. With 10 years of employee class service for members hired on or after September 1, 2009, the benefit is actuarially reduced from the member's age 65.
 - b. *Members hired on or after September 1, 2022:* Cash balance benefit. The ERS Board may also enter into agreements to provide additional death benefits.



Pre-Retirement Death Refund Alternative

A refund of accumulated contributions is payable in cases of pre-retirement death where the member did not meet the eligibility requirements for a Death Benefit Plan Annuity, or the eligible beneficiary chooses to receive a refund of the member account balance in lieu of an annuity. For members hired prior to September 1, 2022, this amount is increased by 5% of the member's account balance at death, times full years of service credit at death, to a maximum of 100%.

Occupational Death Lump-Sum Benefit

If an active member dies and it is determined that the death was an occupational death, a lump-sum death benefit is payable to members hired prior to September 1, 2022 in an amount equal to one year's salary, computed on the basis of the member's rate of compensation at the time of death and payable to a surviving spouse or dependent minor child in addition to any other death benefits.

Post-Retirement Death General Lump-Sum Benefit

\$5,000 upon the death of a retired member. This amount is funded separately by the State and not reflected in this valuation.

Deferred Service Retirement Annuity

1. Elected Class:

- a. *Eligibility:* Eight years of elected class service
- b. *Benefits:*
 - i. *Members hired prior to September 1, 2022:* Standard Service Retirement Annuity payable at age 60 (or 50 with 12 years of elected class service)
 - ii. *Members hired on or after September 1, 2022:* Cash balance benefit.

2. Employee Class:

- a. *Eligibility:*
 - i. *Members hired prior to September 1, 2009:* Five years of employee class service
 - ii. *Members hired on or after September 1, 2009, but prior to September 1, 2022:* 10 years of employee class service
 - iii. *Members hired on or after September 1, 2022:* Five years of employee class service
- b. *Benefits:*
 - i. *Members hired prior to September 1, 2009:* Standard Service Retirement Annuity payable at age 60
 - ii. *Members hired on or after September 1, 2009, but prior to September 1, 2022:* Standard Service Retirement Annuity payable at age 65
 - iii. *Members hired on or after September 1, 2022:* Cash balance benefit.
 - iv. *Members with 10 years of CPO/CO service:* Standard Service Retirement Annuity payable at age 55

3. Normal Form of Payment: Payable for the life of the member with any remaining member account balance paid at time of death. Survivorship options and partial lump-sum option are available on an actuarially equivalent basis.

Refund of Accumulated Contributions

A refund of accumulated contributions is payable in cases where a terminated member did not meet the eligibility requirements for an annuity, or a terminated member chooses to receive a refund of his or her account balance in lieu of an annuity.

Maximum Benefits

Annuity benefits are limited to 100% of Average Monthly Compensation. For members with CPO/CO service, this benefit limitation includes benefits from all sources (ERS and the Law Enforcement and Custodial Officer Supplemental Retirement Fund).

Limit on Plan Modifications

According to Section 811.006 of the Texas Government Code – a rate of member or State contributions to or a rate of interest required for the establishment of credit in the retirement system may not be reduced or eliminated, a type of service may not be made creditable in the retirement system, a limit on the maximum permissible amount of a type of creditable service may not be removed or raised, a new monetary benefit payable by the retirement system may not be established, and the determination of the amount of a monetary benefit from the system may not be increased, if, as a result of the particular action, the time, as determined by an actuarial valuation, required to amortize the UAAL of the retirement system would be increased to a period that exceeds 30 years by one or more years.

SECTION F

ACTUARIAL ASSUMPTIONS AND METHODS

Summary of Actuarial Assumptions and Methods

The assumptions and methods applied in this actuarial valuation were adopted by the Board of Trustees on May 20, 2020 based on the experience investigation that covered the five-year period from September 1, 2014 through August 31, 2019.

I. Valuation Date

The valuation date is August 31 of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

II. Actuarial Cost Method

The actuarial valuation is used to determine the adequacy of the State contribution rate (established by Legislative appropriation) and employer contribution rate (established by statute) and to describe the current financial condition of ERS.

The actuarial valuation uses the Entry Age Normal actuarial cost method. Under this method, the first step is to determine the contribution rate (level as a percentage of pay) required to provide the benefits to each member, or the normal cost rate. The normal cost rate consists of two pieces: (i) the member's contribution rate, and (ii) the remaining portion of the normal cost rate which is the employer's normal cost rate. The total normal cost rate is based on the benefits payable to each individual active member.

The Unfunded Actuarial Accrued Liability (UAAL) is the liability for future benefits which is in excess of (i) the actuarial value of assets, and (ii) the present value of future normal costs. The employer contribution provided in excess of the employer normal cost is applied to amortize the UAAL.

The funding period is calculated as the number of years required to fully amortize the UAAL, and is calculated with the use of an open group projection that takes into account: (a) future market earnings, net of investment-related expenses, will equal 7.00% per year, (b) there will be no changes in assumptions, (c) the number of active members will remain unchanged, (d) active members who leave employment will be replaced by new entrants each year, and (e) State and employer contributions will remain the same percentage of payroll as described in Section E of the valuation report.

The Entry Age actuarial cost method is an "immediate gain" method (i.e., experience gains and losses are separately identified as part of the UAAL). However, they are amortized over the same period applied to all other components of the UAAL.

III. Actuarial Value of Assets

The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment return in excess of (less than) expected investment income. Offsetting unrecognized gains and losses are immediately recognized, with the shortest remaining bases recognized first and the net remaining bases continue to be recognized on their original timeframe. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of investment-related expenses.

IV. Actuarial Assumptions

Investment Return: 7.00% per year, net of investment-related expenses (composed of an assumed 2.30% inflation rate and a 4.70% real rate of return)

Administrative Expenses: 0.33% of valuation payroll per year

Salary Increases: Inflationary pay increases are assumed to occur at the beginning of the year and the remaining pay increases associated with merit, promotion and longevity are assumed to occur at the middle of the valuation year and vary by employee group. The components of the annual increases are:

Employee Group	Inflation ***	Real Wage Growth (Productivity)	Merit, Promotion and Longevity
Elected Class: Legislators	0%	0%	0%
Elected Class: District Attorneys	2.30%	0%	See salary structure below
Elected Class: Other than Legislators and District Attorneys	2.30%	0%	0%
Employee Class	2.30%	included in Merit, Promotion and Longevity Increases	See sample rates
State Base Salary of a District Judge*	2.30%	0%	0%
Inactive members who transfer to TRS**	2.30%	0%	2.50%

* Retirees from the Elected Class are assumed to receive post-retirement increases in accordance with changes in the State base salary of a district judge.

** Assumed in estimating benefits of former members who transfer to the Teacher Retirement System of Texas (TRS).

*** Total liabilities for this valuation reflect the notable across-the-board pay increases appropriated by the State legislature for the current biennium compared to the assumed rate of inflation.

Sample Rates:

Annual Salary Increases for Merit, Promotion and Longevity Male and Female Regular State Employees							
Age	Years of Eligibility Service						
	0	1	2 - 4	5 - 9	10 - 14	15 - 19	20+
20	6.50 %	4.95 %	4.45 %	4.00 %			
25	6.10	4.95	4.45	3.20	2.20 %		
30	5.60	4.95	4.45	2.70	2.20	1.70 %	
35	5.10	4.45	3.70	2.70	2.20	1.70	1.60 %
40	4.60	4.45	3.70	2.70	2.20	1.60	1.50
45	4.10	3.95	3.45	2.70	2.10	1.60	1.40
50	3.60	3.40	2.90	2.40	1.90	1.40	1.30
55	3.10	2.90	2.50	2.10	1.60	1.30	1.20
60+	2.60	2.40	2.00	1.70	1.30	1.10	1.00

Annual Salary Increases for Merit, Promotion and Longevity Male and Female LECO Members						
Age	Years of Eligibility Service					
	0	1	2 - 4	5 - 8	9 - 17	18+
All	6.45 %	4.45 %	2.95 %	1.95 %	1.70 %	1.45 %

District attorneys in the Elected Class are assumed to follow the judicial salary schedule of a district judge as prescribed in Section 659.012 of the Texas Government Code. The salary structure is illustrated below:

Annual Salary Increases for Merit, Promotion and Longevity Male and Female District Attorneys in the Elected Class			
Age	Years of Eligibility Service as a District Attorney		
	Less than 4	4 or more, but less than 8	8 or more
All	State base salary of a district judge	110% of base salary	120% of base salary

Payroll Growth: 2.70% per year, compounded annually. No increase for the first year due to no budgeted across-the-board increases as of September 1, 2022.

New Entrant Wage Growth: 2.70% per year, compounded annually (for increasing new hire salary in open group projection).

New Entrant Profile: The average new hire is determined based on a new entrant profile, which is created from the valuation data by determining the entry age and entry pay for anyone with greater than or equal to three but less than eight years of service as of the valuation date. Each group of new hires' salaries is assumed to grow at the New Entrant Wage Growth of 2.70% over the salaries of the previous year's group.

Post-Retirement Increases for Elected Class Members: If benefits are based on the State base salary of a district judge, the benefits are assumed to increase 2.30% per year during retirement (each September 1), compounded annually, consistent with the assumed salary increase for a district judge. Increases are assumed to also occur during deferral periods (if any). Otherwise, no increases are assumed.

Post-Retirement Increase in Accordance with Section 814.604: Section 814.604 of the Texas Government Code provides for a one-time limited group of retirees to receive a permanent monthly annuity increase once the funding period will remain under the 31-year requirement after the increase is reflected. This timing of this COLA is assumed to be in January, 2025.

Age and Service Assumptions and Methods:

Eligibility Service:

Eligibility Service is considered to be all service eligible for vesting purposes, which includes service earned as a regular State employee, a LECO member, a member of the Elected Class, as State Judge, and service earned in the Teacher Retirement System of Texas (“TRS”).

Benefit Service:

Current Benefit Service in years and months as of the valuation date was provided by ERS. This service plus Future Earned Service, Service Credit at Retirement, and Eligibility Service at Retirement were used to project benefit amounts.

Future Earned Service:

Active members were assumed to earn one additional year of service credit in each future year employed based on their current class of membership (but not beyond the amount of credit needed to provide a 100% of average monthly compensation standard service retirement annuity).

Service Credit at Retirement:

For regular State employees, Benefit Service when eligible for service retirement is assumed to be increased by:

- 1.0 years if age plus service, prior to adjustment, is greater than or equal to 80; and
- 0.5 years if age plus service, prior to adjustment, is less than 80.
(but not beyond the amount of credit needed to provide a 100% of average monthly compensation standard service retirement annuity).

For LECO members, Benefit Service when eligible for service retirement is assumed to be increased by:

- 1.0 years if CPO/CO service, prior to adjustment, is at least 20 years; and
- 0.5 years if CPO/CO service, prior to adjustment, is less than 20 years.
(but not beyond the amount of credit needed to provide a 100% of average monthly compensation standard service retirement annuity).

For the Elected Class members, there is no assumed increase in service credit when eligible for service retirement.

Entry Age:

Entry age is calculated as the age at the valuation date minus Eligibility Service (excluding TRS service).



Decrement Timing: All decrements – mortality, service retirement, disability retirement, and termination of employment for reasons other than death or retirement – are assumed to occur at the middle of the valuation year.

Mortality Decrements:

Service Retirees, Beneficiaries, and Inactive Members

2020 State Retirees of Texas (SRT) mortality table. Generational mortality improvements in accordance with the ultimate rates from the scales published through 2019 by Retirement Plans Experience Committee of the Society of Actuaries (“Ultimate MP”) and projected from the year 2020. Rates for male LECO members are set forward one year. Sample rates for the base mortality table included below.

Annual Mortality Rates per 100 Individuals		
Age	Males	Females
40	0.0585	0.0369
45	0.1028	0.0667
50	0.1771	0.1179
55	0.3052	0.2086
60	0.5260	0.3691
65	0.9066	0.6530
70	1.5627	1.1554
75	2.6933	2.0443
80	4.6421	3.6170
85	8.0010	6.3997
90	13.8587	11.3793

Active Members

Pub-2010 General Employees Active Member Mortality table for non-LECO members. Pub-2010 Public Safety Active Member Mortality table for LECO members. Generational mortality improvements in accordance with the Ultimate MP scales are projected from the year 2010.

Disability Retirees

2020 State Retirees of Texas (SRT) mortality table, set forward three years for males and females. Minimum rates at all ages of 3.0% and 2.5% for males and females, respectively. Generational mortality improvements in accordance with the Ultimate MP scales are projected from the year 2020.

Occupational Death

1.0% of male and female active member deaths are assumed to be occupational.

Service Retirement Decrements: Graded Tables Based on ERS Experience

Active Regular State Employees

Service retirement rates are determined by the first set of eligibility requirements satisfied:

- Eligibility A: Age plus eligibility service is greater than or equal to 80 (“Rule of 80”)
- Eligibility B: Retirement eligibility other than Rule of 80

Adjustments to the base rates are made to account for age at first eligibility or reduced retirement benefits, based on date of hire (described below sample table).

Base rates for eligible members:

Annual Service Retirement Rates Regular State Employees (Males & Females)		
Age	Eligibility A	Eligibility B
	Rule of 80	Other Age/Service
<50	0.50	
50	0.40	
51	0.35	
52	0.30	
53	0.28	
54	0.27	
55	0.26	
56	0.25	
57	0.24	
58	0.23	
59	0.22	
60	0.21	0.18
61	0.20	0.12
62	0.33	0.20
63	0.27	0.18
64	0.27	0.18
65 - 74	0.27	0.27
75	1.00	1.00

Adjustments for members hired before September 1, 2009:

- Eligibility A: Add 0.30 at age of 1st eligibility

Adjustments for members hired on or after September 1, 2009, but prior to September 1, 2013:

- Eligibility A: Add 0.30 at age 60

Adjustments for members hired on or after September 1, 2013, but prior to September 1, 2022:

- Eligibility A: If age of 1st eligibility is before age 62, then
 - rates prior to age 62 are multiplied by 75% for each year prior to age 62
 - the rate at age 62 is the base table rate plus 0.20 plus 0.06 times the number of years the age at 1st eligibility was before age 62

Adjustments for members hired on or after September 1, 2022:

- Eligibility A: rates prior to age 62 are multiplied by 75% for each year prior to age 62

Active LECO Members

Service retirement rates are determined by the first set of eligibility requirements satisfied:

- Eligibility A: 20 years of CPO/CO service
- Eligibility B: Age 55 and 10 years of CPO/CO service
- Eligibility C: Any eligibility pertaining to regular State employees (see rates and adjustments for regular State employees)

Adjustments to the base rates are made to account for age at first eligibility or reduced retirement benefits, based on date of hire (described below sample table).

Base rates for eligible members:

Annual Service Retirement Rates LECO Members (Males & Females)			
Eligibility A		Eligibility B	
Age	20 yrs CPO/CO	Age	Age 55 & 10 yrs CPO/CO
<48	0.03		
48	0.04	55	0.20
49	0.05	56	0.18
50	0.60	57	0.16
51 - 61	0.33	58 - 61	0.14
62 - 74	0.50	62 - 74	0.27
75	1.00	75	1.00

Adjustments for members hired before September 1, 2013:

- Eligibility A and B: Rate set to zero if member has 18 or 19 years of CPO/CO service. Rate is doubled if member has 20 years of CPO/CO service. Adjustments only apply to members that attain 20 years of CPO/CO service prior to age 65.

Adjustments for members hired on or after September 1, 2013 but prior to September 1, 2022:

- Eligibility A: If age of 1st eligibility is before age 57, then
 - rates prior to age 57 are multiplied by 75% for each year prior to age 57
 - the rate at age 57 is 100%
- Eligibility B: If member will attain 20 years of CPO/CO service at or before age 62, rates are zero prior to age 62 and 80% when member attains 20 years of CPO/CO service.
- Eligibility B: If member will attain 20 years of CPO/CO service after age 62, then
 - rates prior to age 62 are multiplied by 75% for each year prior to age 62
 - the rate at age 62 is the base table rate plus 0.06 times the number of years the age at 1st eligibility was before age 62

Adjustments for members hired on or after September 1, 2022:

- Eligibility A: If age of 1st eligibility is before age 57, then
 - rates prior to age 57 are multiplied by 75% for each year prior to age 57
 - the rate at age 57 is 100%

- Eligibility B: If member will attain 20 years of CPO/CO service at or before age 62, rates are zero prior to age 62 and 80% when member attains 20 years of CPO/CO service.
- Eligibility B: If member will attain 20 years of CPO/CO service after age 62, then rates prior to age 62 are multiplied by 75% for each year prior to age 62

Active Elected Class Members

Annual Service Retirement Rates Elected Class Members	
Age	Male and Female
50 - 61	0.10
62 - 74	0.20
75+	1.00

Disability Retirement Decrements: Graded Tables Based on ERS Experience

Active Regular State Employees

- The rates do not apply before someone is eligible for the benefit.
- 10 years of service is required for non-occupational disability retirement.
- Non-occupational disability rates are assumed to be zero once the sum of the member's age and eligibility service is greater than or equal to 80.

Active Elected Class Members

- The rates do not apply before someone is eligible for the benefit.
- No occupational disabilities are assumed for the elected class or judges.
- Eight years of service is required for non-occupational disability retirement.
- Non-occupational disability rates are assumed to be zero once the member has attained service retirement eligibility.

Sample rates for eligible regular State employees and elected class members:

Annual Disability Rates per 100 Participants		
Age	Regular State Employees and Elected Class	
	Males	Females
30	0.0275	0.0135
35	0.0650	0.0442
40	0.0749	0.0896
45	0.1027	0.1455
50	0.1484	0.2072
55	0.2477	0.3488
60	0.3740	0.5583

99% of the disability rates stated above are assumed to be attributable to non-occupational disabilities and 1% are assumed to be attributable to occupational disabilities. No occupational disabilities are assumed for the elected class.

Active LECO Members

- The rates do not apply before a member is eligible for the benefit.
- Service greater than zero is required for occupational disability retirement.
- 10 years of service is required for non-occupational disability retirement.
- Non-occupational disability rates are assumed to be zero once the sum of the member's age and eligibility service is greater than or equal to 80, or the member has attained age 55 with 10 or more years of CPO/CO service.

Sample rates for members:

Annual Disability Rates per 100 Participants LECO Members	
Age	Males and Females
30	0.0092
35	0.0314
40	0.0586
45	0.0980
50	0.1774
55	0.2460
60	0.3150

95% of the disability rates stated above are assumed to be attributable to non-occupational disabilities, 4.5% are assumed to be attributable to non-total occupational disabilities, and 0.5% are assumed to be attributable to total occupational disabilities.

Termination Decrements for Reasons Other Than Death or Retirement: Graded Tables Based on ERS Experience.

Rates of termination are zero for members eligible for service retirement. To account for active regular State employees and LECO members that accumulate additional eligibility service at retirement through converting sick/annual leave or other types of service purchases, termination rates are also set to zero in the year prior to first retirement eligibility.

Rates for members not eligible for service retirement:

Active Regular State Employees

Annual Rates of Termination per 100 Participants Regular State Employees		
Eligibility Service	Male and Female	
	Entry age 35 or younger	Entry age over 35
0	25.25	19.63
1	21.24	16.07
2	17.88	13.26
3	15.07	11.08
4	12.76	9.42
5	10.86	8.16
6	9.33	7.21
7	8.09	6.49
8	7.10	5.94
9	6.31	5.50
10	5.67	5.11
11	5.15	4.75
12	4.71	4.39
13	4.32	4.03
14	3.97	3.66
15	3.64	3.29
16	3.30	2.95
17	2.97	2.69
18	2.62	2.53
19	2.27	1.00
20	1.92	1.00
21	1.59	1.00
22	1.29	1.00
23	1.05	1.00
24	0.89	1.00
25+	0.85	1.00

Active LECO Members

Annual Rates of Termination per 100 Participants LECO Members	
Eligibility Service	Male and Female
0	26.45
1	22.10
2	17.66
3	14.35
4	11.91
5	10.13
6	8.82
7	7.83
8	7.03
9	6.35
10	5.70
11	5.08
12	4.49
13	3.94
14	3.53
15	3.34
16	2.88
17	1.15
18	1.15
19+	0.00

Elected Class Members: 4 per 100 participants for members not eligible for service retirement

Withdrawal of Employee Contributions: Members that terminate with a vested benefit are assumed to choose the most valuable option available to them at the time of termination: withdrawal of contributions or deferred annuity.

Percentage of Members Electing Various Benefit Options:

Sex / Benefit	Standard Life Annuity	Option 1	Option 4
Male Member			
Disability	50%	50%	0%
Service Retirement			
Non-LECO	100%	0%	0%
LECO	60%	40%	0%
Death Benefit Plan	0%	85%	15%
Female Member			
Disability	75%	25%	0%
Service Retirement	100%	0%	0%
Death Benefit Plan	0%	70%	30%

The value of the Standard Service Retirement Life Annuity reflects the return of excess contributions payable as a lump sum death benefit in cases the annuity benefits paid are less than the member account balance at the time of retirement.

Beneficiary Characteristics: Males are assumed to be two years older than females.

Transfers from ERS to TRS:

Contributing ERS members:

It is assumed that 10% of regular State employees and LECO members who cease contributing to ERS and do not withdraw employee contributions will transfer ERS service credit to TRS at retirement.

Noncontributing ERS Members:

Records of ERS and TRS are matched by ERS staff to determine former ERS members who are currently contributing under TRS.

TRS Retirement Age:

Former ERS members who are, or are assumed to become, contributing TRS members are assumed to continue to earn service credit under TRS until first eligible for unreduced service retirement benefits, retire at that time, and transfer ERS service credit to TRS.

Cash Balance Assumptions for New Entrants:

Interest Crediting

Members account balances are assumed to earn 5.50% per year through the 4.00% Annual Interest Adjustments plus 1.50% from the Gain Sharing Interest Adjustments.

Annuity Factors for Annuitizing Cash Balance Benefits

Members account balances are annuitized using factors with a 4% discount rate and valuation mortality, including generational projections.

Post-retirement Annuity Increase

Cash balance annuity benefits increase 1.50% from the Gain Sharing Interest Adjustments.



Benefits

The actuarial valuation anticipates clarifications to the cash balance benefits that are currently described in State statute. Specifically, these include:

- Standard Non-Occupational Disability Annuity incorporates a minimum benefit equal to 25% of the members salary,
- Standard Occupational Disability Annuity incorporates a minimum benefit equal to 35% of the members salary, and

Census Data and Assets

- The valuation was based on members of ERS as of August 31, 2021 and does not take into account future members, with the exception of determining the funding period.
- All census data was supplied by ERS and was subject to reasonable consistency checks.
- There were data elements that were modified for some members as part of the valuation in order to make the data complete. However, the number of missing data items was immaterial.
- Asset data was supplied by ERS.

Other Actuarial Valuation Procedures

- No provision was made in this actuarial valuation for the limitations of Internal Revenue Code Sections 415 or 401(a)17.
- Valuation payroll (earnings applied to the current valuation year) is the expected payroll for the fiscal year following the valuation date. It is based on reported payroll determined from August member contributions increased to reflect the across-the-board salary increases appropriated by the State legislature, effective on or after September 1, and projected according to the actuarial assumptions for the upcoming fiscal year.
- No liability was included for benefits which are funded by special State appropriations.
- State appropriations for membership fees are currently immaterial in relation to the overall payroll contributions and have been ignored.

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. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

SECTION G

DETAILED SUMMARIES OF MEMBERSHIP DATA

Detailed Summaries of Membership Data

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B	G-3		Active Members: Distribution by Age and Service (All Members)
C	G-4		Active Members: Distribution by Age and Service (Regular State Employees)
D	G-5		Active Members: Distribution by Age and Service (LECO Members)
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F	G-7		Retired and Beneficiary Members: Distribution by Age and Category (Excluding ERS Reimbursing TRS Annuitants)
G	G-8		Retired and Beneficiary Members: Distribution by Age and Category (Annuitants where ERS is Reimbursing TRS)

Table A

Summary of Membership Data

Active Members

Item	Male	Female	Regular State Employees	Elected Class	LECO Members	Total
Number of Members	57,657	79,069	103,893	335	32,498	136,726
Average Annual Salaries	\$ 55,253	\$ 49,472	\$ 53,442	\$ 75,658	\$ 46,768	\$ 51,910
Average Age	44.1	43.9	44.7	54.1	41.7	44.0
Average Entry Age	35.4	35.5	36.0	45.1	33.6	35.4
Average Service	8.7	8.4	8.7	9.0	8.1	8.6

Annuitants

Item	Number	Annual Annuities	Average Annuities	Average Age
Service Retirees*	108,948	\$ 2,398,690,020	\$ 22,017	69.7
Beneficiaries	9,279	\$ 143,415,132	\$ 15,456	74.6
Disability Retirees	2,067	\$ 19,148,208	\$ 9,264	68.3
Total	120,294	\$ 2,561,253,360	\$ 21,292	70.0

* Average Age and Service at Retirement for Service Retirees are 59.1 and 21.1, respectively

Inactive Members Assumed Eligible for Deferred Annuities

Item	Number	Annual Annuities	Average Annuities	Average Age
Vested Members who are not Active at TRS	11,946	\$ 145,459,560	\$ 12,176	50.9
Vested Members who are Active at TRS	2,921	\$ 59,185,404	\$ 20,262	51.6
Total	14,867	\$ 204,644,964	\$ 13,765	51.0
Non-vested Members who are Active at TRS	14,298	\$ 46,698,396	\$ 3,266	45.0

Non-vested Inactive Members

Item	Number	Account Balances	Average Account Balance	Average Age
Non-vested Members who are not Active at TRS	115,885	\$ 417,307,934	\$ 3,601	40.9
Non-vested Members who are Active at TRS (this group assumed eligible for deferred annuities)	14,298	\$ 72,114,319	\$ 5,044	45.0
Total	130,183	\$ 489,422,253	\$ 3,759	41.4

Table B
Active Members – All Members
Distribution by Age and Service

Age	Years of Service									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
Under 25	7,494 \$ 31,434	68 \$ 37,328								7,562 \$ 31,487
25 - 29	10,836 \$ 41,179	2,201 \$ 48,829	16 \$ 45,070							13,053 \$ 42,474
30 - 34	8,996 \$ 43,742	5,778 \$ 54,642	1,004 \$ 52,656	30 \$ 54,182						15,808 \$ 48,312
35 - 39	7,455 \$ 45,496	5,322 \$ 55,379	3,605 \$ 60,917	981 \$ 62,540	73 \$ 63,319					17,436 \$ 52,734
40 - 44	6,372 \$ 45,612	4,369 \$ 54,671	3,261 \$ 61,025	2,277 \$ 68,712	1,240 \$ 66,003	60 \$ 68,205				17,579 \$ 55,230
45 - 49	5,604 \$ 45,431	3,877 \$ 53,801	2,884 \$ 57,249	2,147 \$ 66,035	2,745 \$ 68,391	1,226 \$ 68,485	49 \$ 71,270			18,532 \$ 56,403
50 - 54	4,968 \$ 45,831	3,617 \$ 52,886	2,826 \$ 55,643	2,090 \$ 62,134	2,402 \$ 66,162	1,803 \$ 75,438	361 \$ 80,716	18 \$ 70,872		18,085 \$ 57,033
55 - 59	3,949 \$ 44,861	3,217 \$ 51,474	2,467 \$ 52,667	1,803 \$ 59,332	1,544 \$ 64,246	912 \$ 69,923	505 \$ 82,250	119 \$ 80,297	6 \$ 81,043	14,522 \$ 54,689
60 - 64	2,193 \$ 45,072	2,378 \$ 51,990	1,916 \$ 53,539	1,266 \$ 58,778	783 \$ 63,784	530 \$ 71,495	308 \$ 78,451	157 \$ 84,366	36 \$ 69,432	9,567 \$ 55,107
Over 64	923 \$ 46,723	1,304 \$ 50,590	965 \$ 55,803	519 \$ 59,530	371 \$ 61,326	252 \$ 71,842	129 \$ 70,744	71 \$ 73,806	48 \$ 76,656	4,582 \$ 55,160
Total	58,790 \$ 42,635	32,131 \$ 53,356	18,944 \$ 57,058	11,113 \$ 63,291	9,158 \$ 66,064	4,783 \$ 71,887	1,352 \$ 79,479	365 \$ 80,320	90 \$ 74,059	136,726 \$ 51,910

Table C
Active Members – Regular State Employees
Distribution by Age and Service

Age	Years of Service									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
Under 25	4,453 \$ 30,434	32 \$ 35,049								4,485 \$ 30,467
25 - 29	8,046 \$ 42,037	1,300 \$ 47,757	9 \$ 39,864							9,355 \$ 42,830
30 - 34	6,976 \$ 44,893	4,206 \$ 55,134	576 \$ 53,044	21 \$ 54,452						11,779 \$ 48,966
35 - 39	5,865 \$ 47,158	4,187 \$ 56,791	2,646 \$ 61,416	599 \$ 65,619	48 \$ 61,681					13,345 \$ 53,888
40 - 44	4,983 \$ 47,472	3,402 \$ 56,695	2,511 \$ 62,758	1,545 \$ 70,174	781 \$ 67,706	37 \$ 67,185				13,259 \$ 56,625
45 - 49	4,383 \$ 47,111	3,013 \$ 55,739	2,257 \$ 58,639	1,511 \$ 68,459	1,938 \$ 69,454	683 \$ 70,162	33 \$ 70,701			13,818 \$ 57,539
50 - 54	3,889 \$ 47,498	2,857 \$ 54,521	2,185 \$ 57,460	1,537 \$ 64,738	2,043 \$ 66,229	1,487 \$ 74,519	298 \$ 77,769	17 \$ 70,125		14,313 \$ 58,410
55 - 59	3,137 \$ 46,332	2,538 \$ 53,371	1,930 \$ 53,924	1,438 \$ 61,510	1,395 \$ 64,508	816 \$ 70,095	462 \$ 81,331	105 \$ 77,273	6 \$ 81,043	11,827 \$ 56,370
60 - 64	1,747 \$ 46,898	1,893 \$ 53,961	1,587 \$ 54,908	1,019 \$ 60,788	712 \$ 64,935	490 \$ 72,136	297 \$ 78,703	150 \$ 83,549	36 \$ 69,432	7,931 \$ 57,136
Over 64	693 \$ 49,387	1,014 \$ 52,520	814 \$ 57,274	459 \$ 60,057	334 \$ 63,246	234 \$ 72,884	122 \$ 72,549	65 \$ 75,728	46 \$ 79,676	3,781 \$ 57,468
Total	44,172 \$ 44,208	24,442 \$ 54,837	14,515 \$ 58,335	8,129 \$ 65,171	7,251 \$ 66,625	3,747 \$ 72,275	1,212 \$ 78,637	337 \$ 79,408	88 \$ 75,579	103,893 \$ 53,442

Table D
Active Members – LECO Members
Distribution by Age and Service

Age	Years of Service									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
Under 25	3,041 \$ 32,900	36 \$ 39,354								3,077 \$ 32,975
25 - 29	2,790 \$ 38,707	901 \$ 50,375	7 \$ 51,762							3,698 \$ 41,575
30 - 34	2,012 \$ 39,494	1,572 \$ 53,325	428 \$ 52,135	9 \$ 53,550						4,021 \$ 46,278
35 - 39	1,572 \$ 39,035	1,128 \$ 50,020	958 \$ 59,594	382 \$ 57,713	25 \$ 66,463					4,065 \$ 48,853
40 - 44	1,373 \$ 38,293	956 \$ 47,527	744 \$ 55,178	730 \$ 65,788	459 \$ 63,106	23 \$ 69,846				4,285 \$ 50,796
45 - 49	1,205 \$ 38,825	842 \$ 46,148	619 \$ 51,790	634 \$ 60,192	806 \$ 65,910	543 \$ 66,375	16 \$ 72,445			4,665 \$ 52,773
50 - 54	1,051 \$ 38,619	744 \$ 45,542	626 \$ 48,539	546 \$ 54,650	356 \$ 66,273	316 \$ 79,765	63 \$ 94,657	1 \$ 83,571		3,703 \$ 51,186
55 - 59	789 \$ 38,201	669 \$ 44,267	523 \$ 46,908	359 \$ 49,377	144 \$ 59,216	96 \$ 68,461	42 \$ 94,155	14 \$ 102,975		2,636 \$ 46,476
60 - 64	435 \$ 37,272	476 \$ 43,455	327 \$ 47,178	242 \$ 49,014	71 \$ 52,240	39 \$ 65,083	11 \$ 71,656	7 \$ 101,889		1,608 \$ 44,736
Over 64	218 \$ 38,538	278 \$ 42,780	142 \$ 45,924	50 \$ 49,620	29 \$ 49,526	14 \$ 61,413	5 \$ 52,136	4 \$ 75,878		740 \$ 43,455
Total	14,486 \$ 37,524	7,602 \$ 48,332	4,374 \$ 52,525	2,952 \$ 57,799	1,890 \$ 64,030	1,031 \$ 70,634	137 \$ 88,510	26 \$ 97,768		32,498 \$ 46,768

Table E
Active Members – Elected Class Members
Distribution by Age and Service

Age	Years of Service									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
Under 25										
25 - 29										
30 - 34	8 \$108,550									8 \$108,550
35 - 39	18 \$ 67,927	7 \$ 74,114	1 \$ 7,200							26 \$ 67,257
40 - 44	16 \$ 94,336	11 \$ 49,782	6 \$ 60,800	2 \$ 7,200						35 \$ 69,605
45 - 49	16 \$ 82,775	22 \$ 81,235	8 \$ 87,600	2 \$ 87,600	1 \$ 7,200					49 \$ 81,526
50 - 54	28 \$ 85,086	16 \$102,509	15 \$ 87,493	7 \$ 74,079	3 \$ 7,200					69 \$ 85,146
55 - 59	23 \$ 72,580	10 \$ 51,890	14 \$ 94,555	6 \$132,740	5 #####			1 \$ 7,200		59 \$ 84,658
60 - 64	11 \$ 63,392	9 \$ 88,756	2 \$ 7,200	5 \$121,690			1 \$ 7,200			28 \$ 75,934
Over 64	12 \$ 41,567	12 \$ 68,454	9 \$ 78,667	10 \$ 84,894	8 \$ 23,917	4 \$ 47,400	2 \$ 7,200	2 \$ 7,200	2 \$ 7,200	61 \$ 54,120
Total	132 \$ 77,066	87 \$ 76,240	55 \$ 80,570	32 \$ 92,562	17 \$ 52,902	5 \$ 39,360	3 \$ 7,200	2 \$ 7,200	2 \$ 7,200	335 \$ 75,658

Table F

**Retired and Beneficiary Members – Excluding
ERS Reimbursing TRS Annuitants
Distribution by Age and Category**

Age Last Birthday	Number	Annual Benefit	Average Annual Benefit
Service Retirees			
Under 60	14,703	476,722,524	32,423
60 - 64	17,701	479,811,312	27,106
65 - 69	22,680	510,925,392	22,528
70 - 74	21,940	441,062,496	20,103
75 - 79	13,367	242,401,728	18,134
Over 79	12,779	219,618,576	17,186
Total	103,170	2,370,542,028	22,977
Beneficiaries			
Under 60	1,014	13,555,476	13,368
60 - 64	653	9,845,040	15,077
65 - 69	1,092	17,019,696	15,586
70 - 74	1,495	22,154,148	14,819
75 - 79	1,605	24,246,744	15,107
Over 79	3,326	56,072,304	16,859
Total	9,185	142,893,408	15,557
Disabled Retirees			
Under 60	362	3,045,828	8,414
60 - 64	323	2,966,712	9,185
65 - 69	330	3,497,316	10,598
70 - 74	425	4,529,208	10,657
75 - 79	240	2,389,512	9,956
Over 79	219	2,196,600	10,030
Total	1,899	18,625,176	9,808
Grand Total	114,254	2,532,060,612	22,162

Table G

Retired and Beneficiary Members – Annuitants where ERS is Reimbursing TRS Distribution by Age and Category

Age Last Birthday	Number	Annual Benefit	Average Annual Benefit
Service Retirees and Beneficiaries			
Under 60	417	3,008,160	7,214
60 - 64	758	4,415,676	5,825
65 - 69	1,510	8,775,840	5,812
70 - 74	1,602	7,009,428	4,375
75 - 79	934	3,597,888	3,852
Over 79	651	1,862,724	2,861
Total	5,872	28,669,716	4,882
Disabled Retirees			
Under 60	37	160,680	4,343
60 - 64	41	155,424	3,791
65 - 69	39	102,528	2,629
70 - 74	32	75,336	2,354
75 - 79	16	25,044	1,565
Over 79	3	4,020	1,340
Total	168	523,032	3,113
Grand Total	6,040	29,192,748	4,833

SECTION H

GLOSSARY

Glossary

Actuarial Accrued Liability (AAL): That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

Actuarial Assumptions: Assumptions as to future experience under the Fund. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

Actuarial Cost Method or Funding Method: A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ADC.

Actuarial Gain or Actuarial Loss: A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the Fund's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

- a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.),
- b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and
- c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB.

Actuarial Value of Assets or Valuation Assets: The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.

Actuarially Determined: Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

Amortization Method: A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

Amortization Payment: That portion of the pension plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC): A calculated contribution for a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the calculated contribution has a normal cost payment and an amortization payment.

Closed Amortization Period: A specific number of years that is counted down by one each year and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

Decrements: Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

Defined Benefit Plan: An employer-sponsored retirement benefit that provides workers, upon attainment of designated age and service thresholds, with a monthly benefit based on the employee's salary and length of service. The value of a benefit from a defined benefit plan is generally not affected by the return on the assets that are invested to fund the benefit.



Defined Contribution Plan: A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

Employer Normal Cost: The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

Experience Study: A periodic review and analysis of the actual experience of the Fund which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.

Funding Period or Amortization Period: The term "Funding Period" is used in two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ADC. This funding period is chosen by the Board of Trustees. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on the statutory employer contribution rate, and assuming no future actuarial gains or losses.

GASB: The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.

Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

Open Amortization Period: An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.

Unfunded Actuarial Accrued Liability: The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

Valuation Date or Actuarial Valuation Date: The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date

