Arkansas Teacher Retirement System

Annual Actuarial Valuation of
Active and Inactive Members
June 30, 2022

Report of the June 30, 2022 Actuarial Valuation

Outline of Contents

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December 9, 2022

Board of Trustees
Arkansas Teacher Retirement System
Little Rock, Arkansas

Dear Board Members:

Presented in this report are the results of the ***Annual Actuarial Valuation of active and inactive members as of June 30, 2022.*** The June 30th annual valuation of retired lives receiving monthly benefits indicates the liabilities for future benefit payments to existing retirees. These liabilities are covered in detail in a separate report. They are also covered briefly in this report on page B-4.

The purposes of the valuation are to measure the System's funding progress and to determine the amortization period that results from the statutory employer and employee rates and the actuarial assumptions that the Board has adopted. This report should not be relied on for any purpose other than the purposes described herein. Financial results associated with the benefits described in this report that are developed for purposes other than those identified above may be significantly different than those in this report.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the Retirement System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

This valuation was based upon census data and financial information provided by the System's administrative staff. Preparation of this data requires considerable staff time. The helpful cooperation of the Arkansas Teacher Retirement System (ATRS) staff in furnishing the data is acknowledged with appreciation. 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 any data provided by ATRS.

This report was prepared using certain assumptions approved by the Board. The actuarial assumptions used for valuation purposes are summarized in Section G. These assumptions reflect expectations of future experience under the plan. They were developed in connection with an experience study covering the period July 1, 2015 to June 30, 2020.

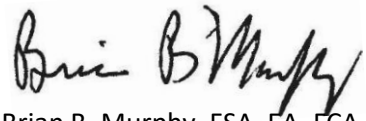
This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that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

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; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. The scope of an actuarial valuation does not contain an analysis of the potential range of such future measurements.

To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the Arkansas Teacher Retirement System as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. The actuarial assumptions used for the valuation produce results which, individually and in the aggregate, are reasonable.

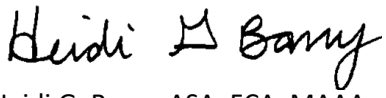
This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. Brian B. Murphy, Judith A. Kermans and Heidi G. Barry are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The individuals submitting this report are independent of the plan sponsor.

Respectfully submitted,
Gabriel, Roeder, Smith & Company



Brian B. Murphy, FSA, EA, FCA, MAAA, PhD

Judith A. Kermans, EA, FCA, MAAA



Heidi G. Barry, ASA, FCA, MAAA

BBM/JAK/HGB:bd

SECTION A

EXECUTIVE SUMMARY

Executive Summary

General Financial Objective. Section 24-7-401 (a) of the Arkansas Code provides as follows (emphasis added):

(1) The financial objective of the Arkansas Teacher Retirement System is to establish and receive contributions that expressed as percentages of active member payroll will **remain approximately level from generation to generation of Arkansas citizens.**
(2) Contributions received each year shall be sufficient:
  (A) To **fully cover the costs of benefit commitments** being made to members for their service being rendered **in that year**; and
  (B) To **make a level payment** that if paid annually over a reasonable period of future years will **fully cover the unfunded costs** of benefit commitments for service previously rendered.

Arkansas Teacher Retirement System Status: Based upon the results of the June 30, 2022 actuarial valuations, ***ATRS is satisfying the financial objective of level-contribution-percent financing.***

This report contains the results of the June 30, 2022 valuation. The table below shows a summary of the data used in the valuation. This data was the basis for determining valuation results.

	Number	Average	Type of Average
Active not in T-DROP	68,127	$43,758	Pay
Active in T-DROP	3,251	66,887	Pay
Deferred Vested	13,986	5,758	Annual Projected Benefit
Retired	52,748	24,527	Annual Current Benefit
Total Members	**138,112**		

Included in the 2022 valuation were 3,643 reemployed retirees (included in the Retired data file) with total earnings of $121.8 million. ATRS receives full employer contributions on these individuals per Arkansas Code Section 24-7-708. The actuarial valuation assumes the number of working members will remain constant at the current level. In some recent years the total number of working members has decreased. A decreasing population means less contribution income for the retirement system than expected and can lead to funding difficulty in extreme cases. ATRS receives employer contributions on behalf of all working members.

Actuarial Assumptions: There were no assumption changes in the June 30, 2022 valuation. In our judgement the actuarial assumptions in use, and in particular the 7.25% investment return assumption, are reasonable for the purposes described in this report. However, the assumed rate of return is reviewed every year and it is possible that the 7.25% assumption may not satisfy actuarial standards for purposes of the June 30, 2023 valuation.

Benefit Changes: There were no benefit provision changes reflected in the June 30, 2022 valuation.

Executive Summary (Continued)

Contribution Rate Changes

Employer and employee contributions were scheduled to increase in steps of 0.25% from the 14%/6% rates in effect in Fiscal 2019 to an ultimate level of 15%/7% in Fiscal 2023. That schedule is now complete. The ultimate rates are reflected in this valuation as shown below.

	Contribution Rate	
Fiscal Year	**Member**	**Employer**
2023 and Later	7.00%	15.00%

Results of the Valuation

The amortization period this year is 26 years, a decrease from last year's period of 32 years. On a market value basis, the amortization period is 35 years. The System netted $507.4 million from the settlement of a lawsuit, which helped improve the funded status and lower the amortization period by 6.8 years. While an amortization period of 26 years meets statutory requirements, the ATRS has targeted 18 years in recent legislation. The contribution rate based upon the target amortization period (18 years) would be approximately 17.3% of payroll.

The Arkansas Teacher Retirement System remains stable with an 82.3% funded position as of June 30, 2022. If experience is reasonably in line with expectations in Fiscal Year 2023, the amortization period is likely to increase in the next valuation due to the scheduled phase-in of net investment losses.

The rate of investment return on a market value basis was (7.47)%# this year. As of June 30, 2022, the actuarial value of assets exceeded the market value of assets by approximately $649 million. (Please refer to page D-3 for details.) Investment gains and losses that occur each year are smoothed in over a 4-year period. After considering smoothing, the recognized return this year was 6.12%, compared to an assumed 7.25% return for Fiscal Year 2022.

\# *The actuary calculated this return figure which may not exactly match the investment consultant's figure.*

Executive Summary (Continued)

Other Observations

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.25% on the funding value of assets), it is expected that:

1) The unfunded actuarial accrued liabilities will be fully amortized after 26 years;
2) The funded status of the plan will increase gradually towards a 100% funded ratio; and
3) The unfunded accrued liability will increase for several years before beginning to decline.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the funding value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

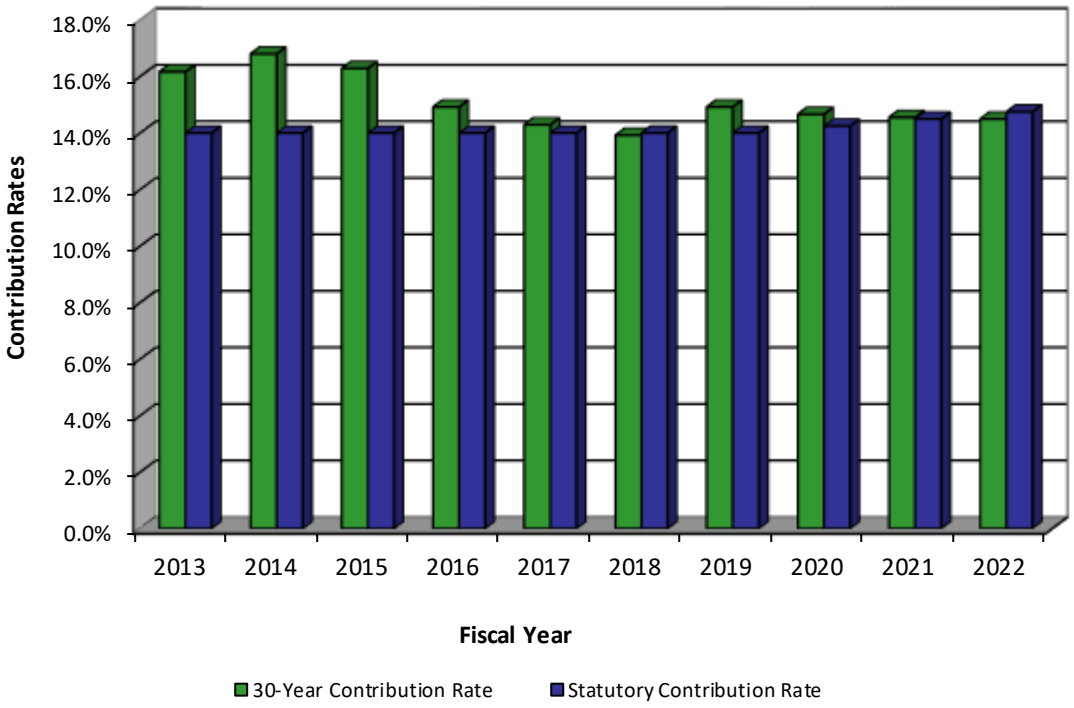
1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction;
2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit); and
3) The measurement would produce a different result if the market value of assets were used instead of the funding value of assets, unless the market value of assets is used in the measurement.

Limitations of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

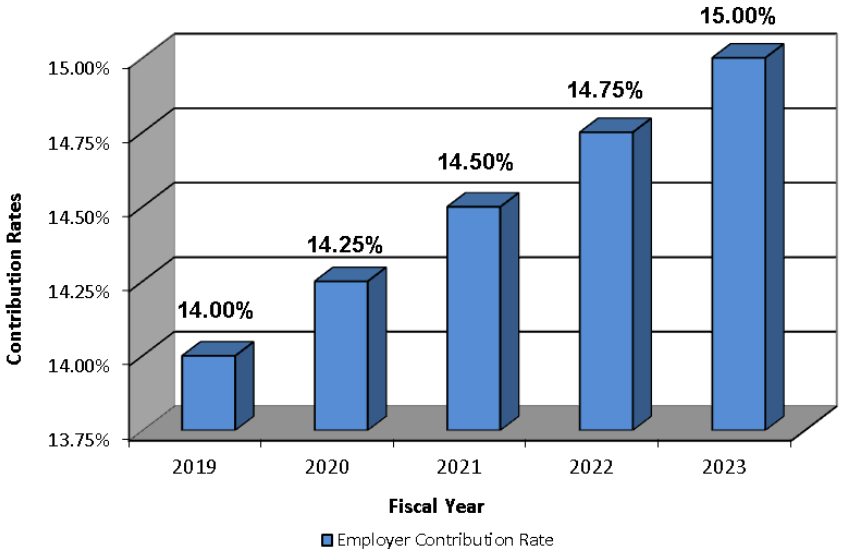
Executive Summary (Concluded)

The following graph shows a history of the amounts contributed vs. the employer contributions based on a maximum amortization period of 30 years. The results would look different if the Employer Contribution were calculated according to the target of 18 years.



The amount contributed is less than the 30-year contribution in FY 2013-2017 and FY 2019-2021. In FY 2018 and FY 2022, the amount contributed exceeded the 30-year contribution.

The following graph also shows a history of the employer amounts contributed.



SECTION B

VALUATION RESULTS

Determination of Amortization Period
Computed as of June 30, 2022 and June 30, 2021

Computed Contributions for	Percents of Active Member Payroll			
	June 30, 2022			June 30, 2021
	Teachers	Support	Combined	Combined
Normal Cost				
Age & Service Annuities	11.23%	7.50%	**10.20%**	10.17%
Deferred Annuities	1.50%	2.32%	**1.73%**	1.73%
Survivor Benefits	0.27%	0.19%	**0.25%**	0.25%
Disability Benefits	0.41%	0.39%	**0.40%**	0.41%
Refunds of Member Contributions	0.48%	1.21%	**0.68%**	0.68%
Total	13.89%	11.61%	**13.26%**	13.24%
Average Member Contributions	6.62%	5.14%	**6.21%**	6.17%
Net Employer Normal Cost	7.27%	6.47%	**7.05%**	7.07%
Unfunded Actuarial Accrued Liabilities			**7.95%**	7.93%
Employer Contribution Rate (FY 2023 and later)			**15.00%**	15.00%
Amortization Years			**26**	32

The calculated amortization period of 26 years is based on anticipated increases in the employer and member contribution rates. The FY 2022 employer and member contribution rates were 14.75% and 6.75%, respectively. The employer and member rates are scheduled to increase to 15% and 7%, respectively, in Fiscal 2023 which is reflected in the above schedule.

The amortization period is the number of years it will take to pay off the unfunded liability of $4.4 billion, assuming contributions remain at the Fiscal 2023 level. Since 2000, the period has varied from a low of 19 years to a high of over 100 years. If experience in FY 2023 is reasonably in line with expectations, the amortization period is likely to increase in the next valuation due to the phase-in of net investment losses. Please see additional comments regarding the amortization period on page A-2.

Employer Contribution Rates
10-Year Comparative Statement

Valuation Date June 30	Active Members in Valuation **		Average Annual Pay		Consumer Price (Inflation) Index	Employer Contributions	
	Number	Annual Payroll ($ Millions)	Amount	% Change	% Change	Computed Financing Period (Years)	Total Employer Rate
2013#	74,925	$ 2,727	$ 36,400	1.4 %	1.8 %	70	14.00 %
2014	74,352	2,758	37,092	1.9 %	2.1 %	39	14.00 %
2015	72,919	2,777	38,088	2.7 %	0.1 %	33	14.00 %
2016	72,232	2,785	38,557	1.2 %	1.0 %	29	14.00 %
2017#*	72,148	2,814	38,997	1.1 %	1.6 %	29	14.00 %
2018#	72,341	2,872	39,702	1.8 %	2.9 %	28	14.00 %
2019#	72,164	2,907	40,285	1.5 %	1.6 %	28	14.00 %
2020#	70,539	2,954	41,884	4.0 %	0.6 %	27	14.25 %
2021#*	70,098	3,086	44,030	5.1 %	5.4 %	32	14.50 %
2022#	71,378	3,199	44,811	1.8 %	9.1 %	26	14.75 %

* *Revised assumptions.*

\# *Legislated benefit or contribution rate changes.*

** *Includes T-DROP members and payroll. ATRS also receives contributions on return to work retirees, but they are not included on this schedule.*

Computed Actuarial Liabilities
as of June 30, 2022

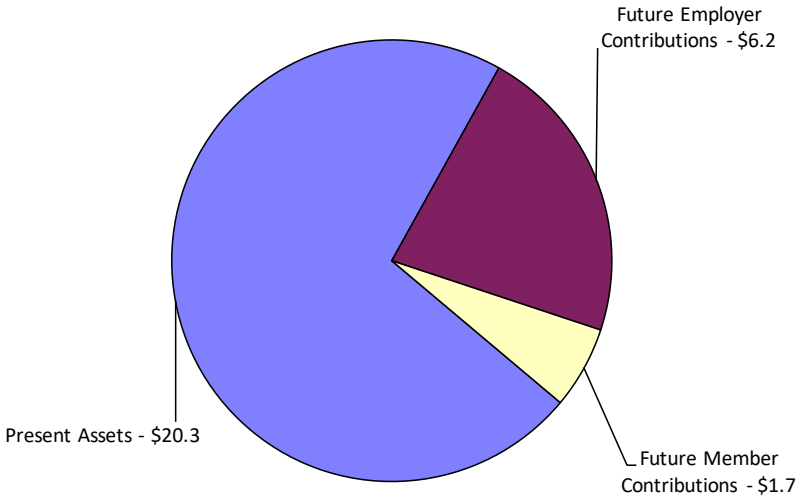
Actuarial Present Value of	(1) Total Present Value	Entry Age Actuarial Cost Method (2) Portion Covered by Future Normal Cost Contributions	Entry Age Actuarial Cost Method (3) Actuarial Accrued Liabilities (1)-(2)
Age and service retirement allowances based on total service likely to be rendered by present active members.	$ 10,375,248,142	$ 2,685,258,911	$ 7,689,989,231
Age and service retirement allowances based on total service likely to be rendered by present T-DROP members.	1,933,785,032	37,580,359	1,896,204,673
Vested deferred benefits likely to be paid present active and inactive members.	1,456,546,022	457,916,167	998,629,855
Survivor benefits expected to be paid on behalf of present active members.	178,518,684	67,840,303	110,678,381
Disability benefits expected to be paid on behalf of present active members.	210,177,310	104,078,605	106,098,705
Refunds of Member contributions expected to be paid on behalf of present active members.	23,835,919	171,800,004	(147,964,085)
Benefits payable to present retirees and beneficiaries.	14,043,822,116	0	14,043,822,116
Total	$28,221,933,225	$ 3,524,474,349	$24,697,458,876
Funding Value of Assets	20,328,281,484	0	20,328,281,484
Liabilities to be Covered by Future Contributions	$ 7,893,651,741	$ 3,524,474,349	$ 4,369,177,392

Liabilities for Retirees July 1, 2022
Tabulated by Type of Benefit Being Paid

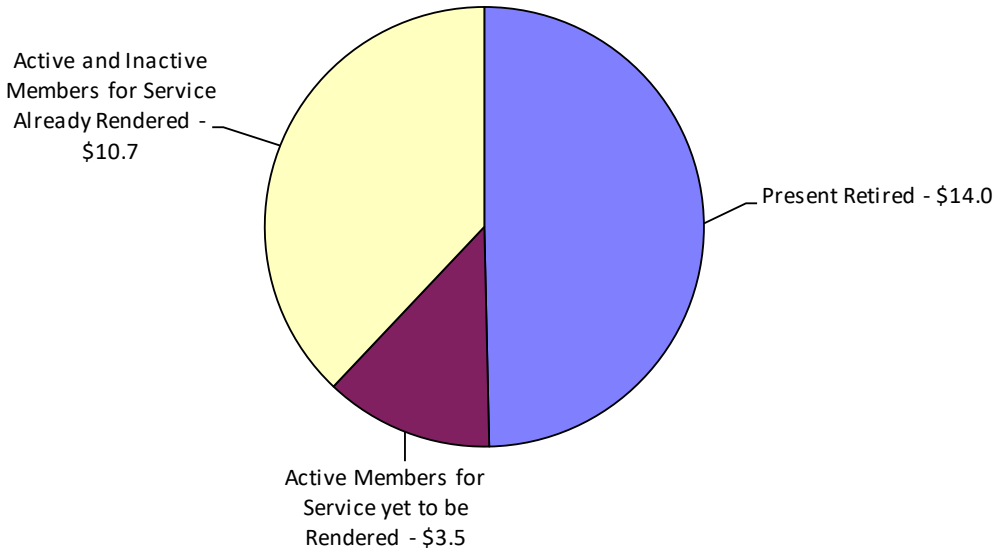
Type of Annuity	Liabilities July 1, 2022		
	Men	Women	Totals
RETIREMENT RESERVE ACCOUNT			
Age & Service Annuities			
Option 1 (Straight Life)	$ 1,637,705,241	$ 7,981,045,530	$ 9,618,750,771
Option A (100% Joint & Survivor)	875,791,144	989,195,008	1,864,986,152
Option B (50% Joint & Survivor)	422,178,320	695,380,303	1,117,558,623
Option C (10 Years Certain & Life)	38,195,176	162,895,015	201,090,191
Beneficiaries	77,843,637	200,841,586	278,685,223
Total Age & Service	3,051,713,518	10,029,357,442	13,081,070,960
Disability Annuities			
Option 1	50,747,633	288,782,704	339,530,337
Option A	27,059,408	47,071,512	74,130,920
Option B	7,018,017	12,490,008	19,508,025
Option C	-	-	-
Beneficiaries	21,246,640	24,885,925	46,132,565
Total Disability	106,071,698	373,230,149	479,301,847
Act 793	7,736,987	4,948,415	12,685,402
Retirement Reserve Account	3,165,522,203	10,407,536,006	13,573,058,209
Act 808 Retirement Reserve Account	5,641,760	1,760,832	7,402,592
Total Retirement Reserve Account	3,171,163,963	10,409,296,838	13,580,460,801
SURVIVORS' BENEFIT ACCOUNT			
Beneficiaries of Deceased Members	$ 54,465,951	$ 61,495,176	$ 115,961,127
RETIREMENT SYSTEM TOTALS			
Total Annuity Liabilities	$ 3,225,629,914	$ 10,470,792,014	$ 13,696,421,928
Cash Benefit Account Liabilities			207,565,576
Liabilities for Lump Sum Death Benefits			139,834,612
Total	$ 3,225,629,914	$ 10,470,792,014	$ 14,043,822,116

Financing $28.2 Billion of Benefit Promises for Present Active and Retired Members June 30, 2022

Sources of Funds
($ Billions)



Uses of Funds



Short Condition Test

ATRS' funding objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the System are level in concept and soundly executed, the System will ***pay all promised benefits when due -- the ultimate test of financial soundness***. Testing for level contribution rates is the long-term test.

A short condition test is one means of checking a system's progress under its funding program. In a short condition test, the plan's present assets (cash and investments) are compared with: 1) Member contributions on deposit; 2) The liabilities for future benefits to present retired lives; and 3) The liabilities for service already rendered by members. In a system that has been following the discipline of level percent-of-payroll financing, the liabilities for member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by members (liability 3) will be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the system. Liability 3 being fully funded is unusual, but highly desired.

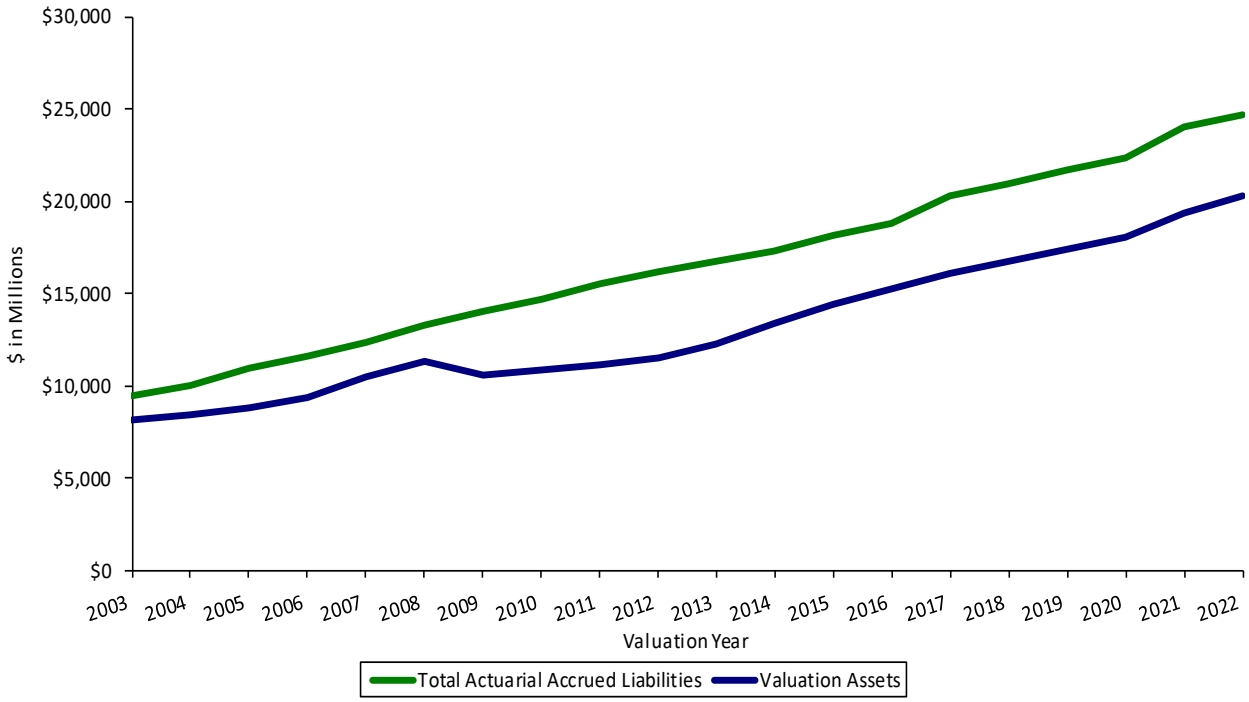
The schedule below illustrates the history of Liability 3 of the System and is indicative of the ATRS' objective of following the discipline of level percent-of-payroll financing.

Val. Date June 30	(1) Member Contrb.	(2) Retirees and Benef.	(3) Active and Inactive Members (Employer Financed Portion)	Present Valuation Assets	Portion of Present Values Covered by Present Assets			
					(1)	(2)	(3)	Total
	----------$ Millions----------							
2012	$ 981	$ 7,649	$ 7,509	$ 11,484	100%	100%	38%	71%
2013#	1,027	8,181	7,510	12,247	100%	100%	40%	73%
2014	1,077	8,777	7,456	13,375	100%	100%	47%	77%
2015	1,128	9,778	7,230	14,434	100%	100%	49%	80%
2016	1,184	10,430	7,198	15,239	100%	100%	50%	81%
2017#*	1,254	11,337	7,707	16,131	100%	100%	46%	79%
2018#	1,312	11,851	7,772	16,756	100%	100%	46%	80%
2019#	1,377	12,460	7,872	17,413	100%	100%	45%	80%
2020#	1,455	12,890	8,007	18,007	100%	100%	46%	81%
2021#*	1,544	13,596	8,847	19,343	100%	100%	48%	81%
2022#	1,648	14,044	9,005	20,328	100%	100%	51%	82%

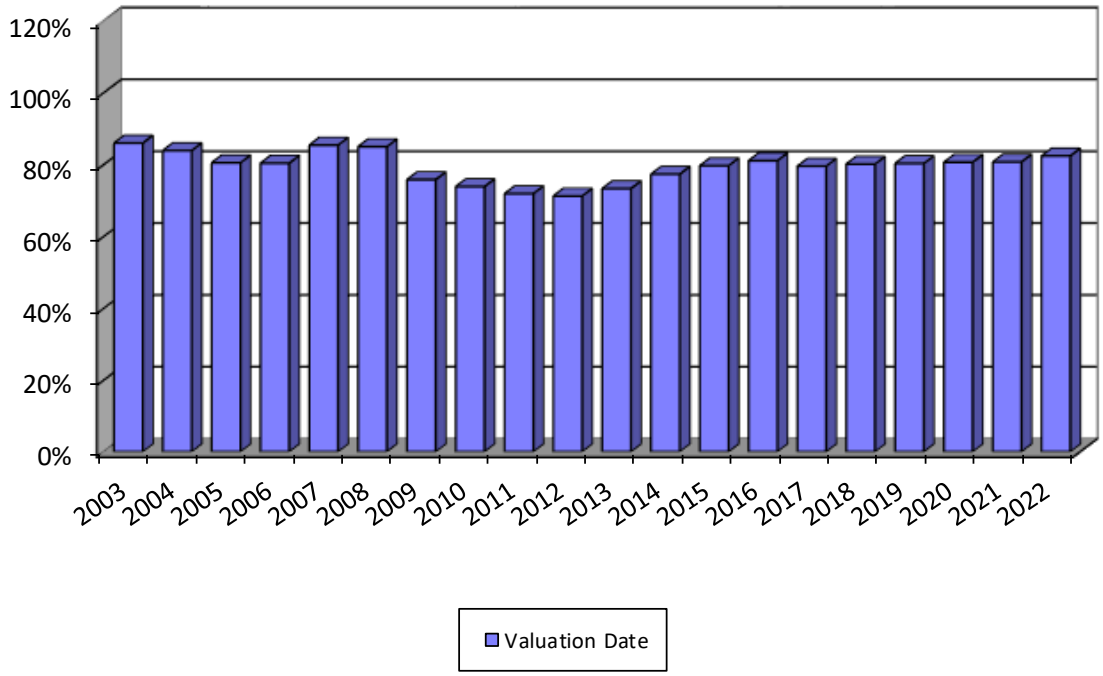
* *Revised actuarial assumptions or methods.*

\# *Legislated benefit or contribution rate changes.*

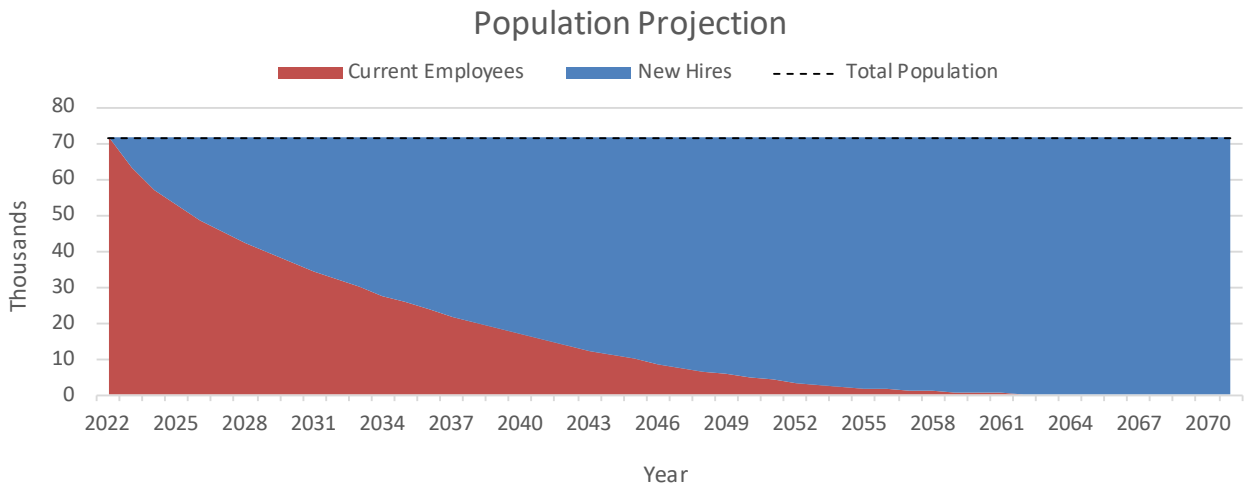
Actuarial Accrued Liabilities and Valuation Assets

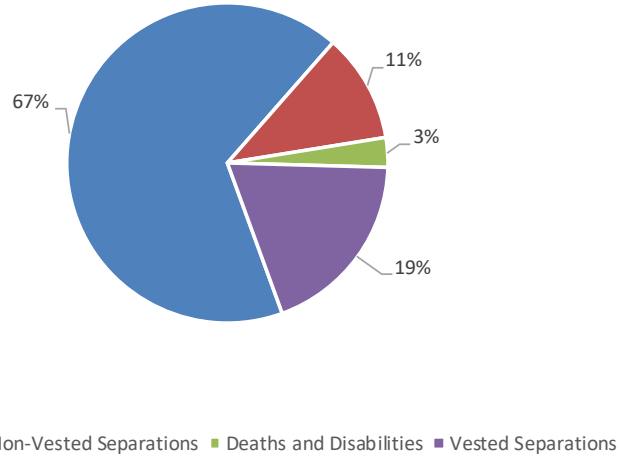


Valuation Assets as a Percent of Accrued Liabilities (Funded Ratio)



Expected Development of Present Population
June 30, 2022 (Excludes Rehired Retirees)





The charts show the expected future development of the present population in simplified terms. The Retirement System presently covers 71,378 active members (includes T-DROP). Eventually, 11% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. Approximately 86% of the present population is expected to receive monthly retirement benefits. Approximately 3% of the present population is expected to become eligible for death-in-service or disability benefits. Within nine years, over half of the covered active membership is expected to consist of new hires.

SECTION C

SUMMARY OF BENEFITS

Summary of Provisions
June 30, 2022

1. **Voluntary Retirement** – **A.C.A. § 24-7-701.** A member may retire at age 60 with 5 or more years of credited service, or after 28 years of credited service regardless of age.

2. **Early Retirement – A.C.A. § 24-7-702.** A member who has more than 25 but less than 28 years of credited service and has not attained age 60 years may retire and receive an immediate early retirement annuity. The early annuity is an age & service annuity reduced by the lesser of (i) and (ii) below:

   (i) 10/12 of 1% multiplied by the number of months by which early retirement precedes completion of 28 years of service, or

   (ii) 10/12 of 1% multiplied by the number of months by which early retirement precedes the attainment of age 60 years.

   The ATRS Board is allowed to set by resolution the early annuity reduction at a rate between 5% and 15% per year, to be prorated monthly if the System's actuary certifies that the amortization period to pay the unfunded liabilities exceeds 18 years. The Board adjusted the reduction to 10% per year beginning August 1, 2017 by Resolution 2017-14 on April 17, 2017.

3. **Deferred Retirement – A.C.A. § 24-7-707.** An inactive member who has 5 or more years of credited ATRS service will be entitled to an age & service annuity beginning at age 60, provided accumulated contributions are on deposit with the retirement system.

4. **Disability Retirement – A.C.A. § 24-7-704.** An active member with 5 or more years of actual and reciprocal service, who becomes totally and permanently disabled may be retired and receive a disability annuity computed in the same manner as an age & service annuity. In order to qualify for disability retirement, the member must exhibit symptoms of physical or mental incapacitation while the member is an active member. A member who is eligible for age and service retirement (age 60 and 5 years of service or 28 years of service at any age) is no longer eligible to apply for disability retirement.

   An ATRS disability retiree is required to obtain a Social Security Administration determination letter finding that the retiree is disabled within 36 months of the effective date of disability retirement. If a member cannot provide the SSA determination letter within the 36-month period, benefits will be terminated, the member will be returned to active service, and all member history will be restored. The requirement to qualify for SSA disability shall not apply to a disability retiree who was age 57 or older before July 1, 2015, because that member would qualify for age & service benefits prior to requiring the SSA determination of disability. The retiree may apply for an extension of the 36-month deadline if the retiree can demonstrate the SSA determination is in progress. There is a rebuttable presumption that if a Teacher Retirement member is qualified for Social Security Administration disability benefits then they would also qualify for ATRS disability retirement benefits.

   A disability retiree may be employed in a position under a covered employer that is less than (80) days of actual service during a fiscal year. The covered employer who employs a disability retiree under this subsection shall remit contributions on all salary paid to the disability retiree in an amount equal

4. **Disability Retirement – A.C.A. § 24-7-704 (Cont.)** to the employer contributions rate. The retiree will continue receiving their annuity from the system and shall not accrue additional service credit. If a retiree tries to return to full time employment, and fails, the suspended disability benefit will be restored to what it would have been had they not tried to return to work, or a recomputed benefit using the additional service, whichever is higher.

5. **Final Average Salary (FAS) – A.C.A. § 24-7-736 and A.C.A. § 24-7-601.** The ATRS Board made changes to the final average salary (FAS) by Resolution 2017-33 on November 13, 2017. Effective July 1, 2018, a member's final average salary is the average of the five (5) highest service year salaries (5-year FAS).

   Members active in ATRS or a reciprocal system as of June 30, 2018 and with at least 3 full years of service in ATRS can use a benchmark 3-year FAS, which is the average of the three (3) highest service year salaries as of June 30, 2018. The three (3) highest service year salaries are adjusted for anti-spiking before being used in the calculation of the benchmark 3-year FAS.

   In calculating the 5-year FAS, if a member has less five (5) years of credited service, the final average salary of the member shall be the total salary paid to the member for his or her years of credited service divided by the member's total credited years of service.

   The Board may adjust the final average salary anti-spiking parameters by board resolution provided that the anti-spiking percentage range is no lower than 105% nor higher than 120% per year; and the anti-spiking amount is no lower than $1,250 nor higher than $5,000. The ATRS Board set the anti-spiking percentage to 110% and the anti-spiking amount to $5,000 by Resolution 2017-13 on April 17, 2017.

   If a member has at least five (5) years of credited service the five (5) highest service year salaries shall be adjusted for anti-spiking and the final average salary will be calculated as follows:

   a. The service year salaries are ranked from lowest to highest.
   b. The lowest service year salary in the ranking shall be the base salary.
   c. The next-highest-ranked service year salary shall be compared to the base salary.
   d. The next-highest service year salary in the calculation of final average salary that is less than eight (8) years from the base salary year, shall not exceed the base salary value plus $5,000 unless the next-highest year's value is less than or equal to 110% of the base salary.
   e. After comparison of the base salary to the next-highest service year salary, a reduction to the next-highest service year salary is made if required to satisfy the conditions of the prior step.
   f. The next-highest service year salary, with any required reduction, becomes the new base salary to compare to the next succeeding highest service year salary in the ranking until all service year salaries in the ranking have been compared.
   g. The total value of the base salaries shall then be divided by the applicable number of years to be used in computing final average salary.

Final Average Salary (FAS) – A.C.A. § 24-7-736 and A.C.A. § 24-7-601 (Cont.) ATRS members with reciprocal service credit will also have a reciprocal FAS calculated. The reciprocal FAS is generally a value calculated by the non-ATRS reciprocal system. Effective March 2, 2021, ATRS will use the value calculated by the non-ATRS reciprocal system only if the member has at least two (2) years of service credit in that system.

The highest of the 5-year FAS, benchmark 3-year FAS, or reciprocal FAS will be used to calculate retirement benefits for the member.

6. **Age & Service Annuity and Disability Annuity – A.C.A. §§ 24-7-705, 24-7-727 (stipend).** The annuity payable will not be less than the total of: years of contributory service times 2.15% of FAS; plus years of noncontributory service times 1.39% of FAS (1.25% for service earned after 2019); plus a stipend for all members with 10 or more years of ATRS actual service. The ATRS Board is allowed to set the contributory multiplier for service credit earned after June 30, 2013, within a range of 1.75% to 2.15%. Also, the noncontributory multiplier for service credit earned after June 30, 2013, may be set within a range of 0.5% and 1.39%. In addition, the Board is allowed to set special multiplier rates for the first 10 years of ATRS service earned after June 30, 2013, for both contributory and noncontributory service. By Board Resolution 2017-31 on November 13, 2017, the noncontributory multiplier was set to 1.25% beginning in FY 2020. By Board Resolution 2017-32 on November 13, 2017, the contributory multiplier and noncontributory multiplier for the first 10 years of service was set to 1.75% and 1.0% respectively beginning July 1, 2018. Once a member accrues 10 years of service, all service including the first 10 years is then credited at the standard multiplier rate in place at the time the service was earned.

7. **T-DROP – A.C.A. §§ 24-7-1301–1316.** A member with 28 or more years of service may participate in the Teacher Deferred Retirement Option Plan (T-DROP). T-DROP participants do not make member contributions. A T-DROP deposit is made monthly to the participant's T-DROP account. The T-DROP deposit is the amount that would have been paid had the member retired, reduced by 1% for each year of contributory, noncontributory, and reciprocal service. Members who enter T-DROP with less than 30 years of service are subject to an additional 6% reduction for each year less than 30 years. T-DROP deposits are increased each year by 3% of the member's initial T-DROP deposit. T-DROP Deposits cease at the earlier of 10 years of T-DROP participation or separation from service. T-DROP participants may continue in covered employment after 10 years of T-DROP participation, but do not accumulate additional T-DROP deposits.

   T-DROP participants receive interest annually on the balance of the T-DROP account. Regular T-DROP interest is credited for 10 or less years of participation. Post 10-year T-DROP interest is credited for more than 10 years of participation.

   Regular T-DROP interest is a combination of a fixed interest rate and an incentive interest rate. An incentive rate may be approved by the Board to encourage continued participation in T-DROP, if the estimated ATRS rate of return is 2% greater than the ATRS actuarial assumed rate of return in the preceding calendar year. Beginning in fiscal year 2019, the Board has set the Regular T-DROP fixed interest rate at 3% and the maximum incentive rate at 3% by Resolution 2017-35 on November 13,

T-DROP – A.C.A. §§ 24-7-1301–1316 (Cont.) 2017. The fixed and incentive interest rates may be adopted by board resolution before the first quarter of the fiscal year and would apply to subsequent fiscal years unless modified by the Board. For fiscal year 2022, the Board set the Regular T-DROP fixed interest rate at 3% and the incentive interest rate at 3%, resulting in a total interest rate of 6%, by Resolution 2021-33 on September 27, 2021.

Post 10-year T-DROP interest has been in effect since July 1, 2010. The Post 10-year T-DROP interest rate can be determined as appropriate by the Board and adopted by the resolution prior to the first quarter of the fiscal year in which the interest rate shall apply. Post 10-year T-DROP interest is a combination of a variable interest rate and an incentive interest rate, to encourage continued participation in T-DROP. The Post 10-year T-DROP variable interest rate formula is based on investment returns and other factors. On November 13, 2017, the ATRS Board by Resolution 2017-36 set the formula for the variable interest rate and the maximum combined variable and incentive interest rate for fiscal year 2019 and beyond. The Post 10-year T-DROP variable interest rate is calculated as 2% less than the system's rate of return, but not less than 4%, nor greater than 6%. The maximum Post 10-year T-DROP combined interest rate including the incentive interest rate is 7.5%. The Post 10-year T-DROP incentive interest rate can be awarded if the estimated ATRS rate of T-DROP – A.C.A. § 24-7-1301-1316 return is 2% greater than the ATRS actuarial assumed rate of return in the preceding calendar year. For fiscal year 2022, the Board set the Post 10-year T-DROP variable interest rate at 6% and the incentive interest rate at 1.5%, resulting in a combined interest rate of 7.5%, by Resolution 2021-35 on September 27, 2021.

Upon actual retirement, the member may receive the T-DROP account balance in the form of a lump sum, a Cash Balance Account (CBA), or as an additional annuity. The T-DROP distribution may be a combination of lump sum, CBA, and additional annuity.

8. **Post-Retirement Increases – A.C.A. §§ 24-7-713, 24-7-727 (compound COLA).** Each July 1, annuities are adjusted to be equal to the base annuity times 100% plus 3% for each full year in the period from the effective date of the base annuity to the current July 1. The base annuity is the amount of the member's annuity on the later of July 1, 2001 or the effective date of retirement. The July 1, 2009 cost of living adjustment for retirees was compounded. The annuity was set to 103% of the June 30, 2009 retirement benefit amount. After it was calculated on July 1, 2009, the base amount was reset to be the July 1, 2009 benefit amount. Future cost of living raises will be established by the new updated base amount. Future cost of living adjustments will be evaluated on an annual basis to determine if a simple or compound cost of living increase will be given, depending on the financial condition of the System.

9. **Survivor Benefits – A.C.A. § 24-7-710.** Upon the death of an active member, who has 5 or more years of actual and reciprocal service, the following annuities are payable:

   (a) The surviving spouse receives an annuity computed in the same manner as if the member had (i) retired the date of his death with entitlement to an annuity, (ii) elected Option A - 100% Survivor Annuity, and (iii) nominated the spouse as joint beneficiary. If the member has attained age 60 and has acquired 5 years of credited service or has acquired 25 years of

Survivor Benefits – A.C.A. § 24-7-710. Cont.

(a) credited service regardless of age, the annuity begins immediately; otherwise the annuity begins the month following the date the member would have attained age 60. Under certain circumstances, a lump sum distribution may be made to the beneficiary(ies) of the deceased member.

(b) A surviving child's benefit is prorated to an amount equal to 1% of the member's highest salary year for each quarter of a year credited as actual service in the system, up to 20% or up to a maximum of $20,000 per year. If there is more than 1 surviving dependent, the benefits are capped to the lesser of 60% of the member highest salary or $60,000 per year to be divided equally among the dependents. A child is dependent until the child's death, marriage, or attainment of age 18 (age 23 if the child is a full-time student).

A child of a deceased member is considered a dependent child and is eligible for the dependent child annuity at eighteen years of age or older, but no older than twenty-three years of age if the dependent child stays continuously enrolled as a full-time student at an accredited school, college, our university.

10. **Lump Sum Death Benefit – A.C.A. § 24-7-720.** Beneficiaries of deceased active members or retirees with 10 or more years of ATRS credited service are eligible to receive a lump sum death benefit of up to $10,000. Resolution 2020-27 on September 28, 2021 set the minimum amount of the lump sum death benefit for all eligible members to six thousand six hundred sixty-seven dollars ($6,667); retired members who retired on or before July 1, 2007 will receive an additional six hundred sixty-six dollars and sixty cents ($666.60) for each contributory year of service credit up to the maximum amount of ten thousand dollars ($10,000); and all other members will receive an additional three hundred thirty-three dollars and thirty cents ($333.30) for each contributory year of service credit up to the maximum amount of ten thousand dollars ($10,000).

11. **Member Contributions – A.C.A. § 24-7-406.** Through FY 2019, contributory members contributed 6% of their salaries. Members that are participating in the T-DROP program or are working retirees do not make member contributions. If a member leaves service prior to becoming eligible to retire, the accumulated member contributions are returned upon request. No interest is credited to a member's contributions for the first year of membership; after 1 year, interest is credited. The ATRS Board set the interest rate on refunded contributions to 0.08% for fiscal year 2017 and beyond by Resolution 2017-17 on April 17, 2017. By Resolution 2017-30 on November 13, 2017, the Board set the member contribution rate to 6.25%, 6.50%, 6.75%, and 7.00% for FY 2020, FY 2021, FY 2022, and FY 2023 respectively and 7.00% thereafter. Effective July 1, 1986, a noncontributory plan was created. Effective July 1, 1999 the default choice for new members is contributory. Effective July 1, 1997, all future member contributions are tax deferred in accordance with §414(h) of the Internal Revenue Code of the United States. Each July 1, members who previously elected to be noncontributory may elect to change to contributory status. The election is irrevocable.

A member, who was reported as non-contributory and should have been contributory, may remain in a non-contributory status for the current fiscal year and will be pended for the next fiscal year as

11. **Member Contributions – A.C.A. § 24-7-406 (Cont.)** contributory. If the member owes contributions, he or she may have the system convert the contributory service to noncontributory service rather than pay the balance due.

    Members who are contracted for 181 days or more in a fiscal year must be contributory. Effective July 1, 2021 the number of contracted days increased to 185.

12. **Act 808 Retirement – A.C.A. § 24-4-732.** Any employee of a state agency who was an active member of the Arkansas Teacher Retirement System on April 8, 1987, and who qualified for retirement before January 1, 1988, could become a member of the Arkansas Public Employees Retirement System and retire from that system. All credited service was transferred to that system but the member's contributions were retained by the Arkansas Teacher Retirement System and the benefit amount is transferred monthly to the Arkansas Public Employees Retirement System. Each July 1, annuities are adjusted by 3% (compound escalator).

13. **Act 793 Retirement – A.C.A. § 24-4-522.** Any employee who was a member of the rehabilitation services in 1977 was permitted to become a member of the Arkansas Public Employees Retirement System. Liabilities associated with prior service earned through June 30, 1978 remain in the Arkansas Teacher Retirement System. Future service is allocated to the Arkansas Public Employees Retirement System. Each July 1, annuities are adjusted by 3% (compound escalator).

14. **Retiree Benefit Stipend – A.C.A. § 24-7-713.** Each retired member as of June 30, 2008, with 5 or more years of ATRS credited service receives a $75 per month stipend. Members in T-DROP do not receive the $75 per month stipend until actual retirement. For all members retiring on or after July 1, 2008, a minimum of 10 years of ATRS credited service is required to receive the $75 per month stipend. The ATRS Board is allowed to set the stipend to a minimum of $1 per month and a maximum of $75 per month. By Board Resolution 2017-34 on November 13, 2017 the benefit stipend is removed from the base amount for all retirees and beneficiaries beginning in fiscal year 2019 and the benefit stipend will be reduced to $50.00 for fiscal year 2020 and beyond. The Resolution contains a "hold harmless" provision that prevents the lowering of the stipend if it would actually reduce the total monthly benefit. This would only affect retirees when the COLA is less than $25 per month.

15. **Optional Forms of Benefits – A.C.A. § 24-7-706:**

    Option 1 ***(Straight Life Annuity)***

    A member will receive the maximum monthly benefit for which he/she qualifies, throughout his/her lifetime. No monthly benefits will be paid to his/her beneficiary after the member's death. Should a member die before he/she has drawn in benefits an amount equal to his/her contributions plus earned interest, the balance will be paid to a designated beneficiary. The designated beneficiary may be anyone chosen by the member.

    Option A ***(100% Survivor Annuity)***

    Under this option a member will receive a reduced annuity throughout his/her lifetime. Upon the member's death, the designated beneficiary will receive the same annuity for the balance of his/her lifetime.

Option B *(50% Survivor Annuity)*

Under this option a member will receive a reduced annuity throughout his/her lifetime. Upon the member's death, the designated beneficiary will receive one-half (1/2) of this annuity for the balance of his/her lifetime.

Option C (*Annuity for Ten Years Certain and Life Thereafter*)

A reduced monthly benefit payable for 120 months. After that time, a member's monthly allowance will revert to the amount he/she would have received under the regular plan and continue for life. If the member dies before receiving 120 payments, the designated beneficiary will receive a monthly benefit in the same amount until monthly benefits to both the member and the beneficiary equal 120 monthly payments. No further benefits are then payable to the beneficiary.

Pop-Up Election

Following the death of or a divorce from the member's designated beneficiary, his or her benefit reverts (pops-up) to the straight life annuity amount from the elected optional annuity amount. The member may then elect new beneficiaries in accordance with Arkansas Code and rules adopted by the ATRS board.

Option Factors are based upon a 5.0% interest rate and the RP-2014/MP2017 tables (static projection to 2022) adjusted with a 50% unisex mix.

16. **Refund of Member Contributions – A.C.A. § 24-7-711.** Any termination refund made to a member or a lump sum payout made to a surviving spouse after July 1, 2011, cancels all service credit, including noncontributory service credit; any repurchase of refunded service will be as contributory years at actuarial cost. All membership rights (including noncontributory service credit) and beneficiary designations to the ATRS are cancelled when a member gets a refund of his or her contributions.

17. **Contract Buyout – A.C.A. § 24-7-735.** During periods of contract buyout/litigation/termination, members will not receive service credit if no on-call service or on-site work is performed. ATRS will not allow the purchase of the time between actual work and the settlement unless the settlement was made to resolve a claim of wrongful termination.

18. **Actuarial Cost of Service – A.C.A. §§ 24-1-107, 24-2-502, 24-7-202, 24-7-406, 24-7-501, 24-7-502, 24-7-612, 24-7-602, 24-7-603, 24-7-604, 24-7-606, 24-7-607, 24-7-610, 24-7-611.** Effective July 1, 2011, all service purchases will be at actuarial cost. The system will allow inactive members to purchase service at actuarial cost before monthly retirement benefits or T-DROP deposits begin.

19. **Deceased Member Refund of Contributions – § 24-7-711.** Effective July 1, 2011, if a beneficiary is not eligible for survivor benefits, or if a surviving spouse is eligible and chooses a contribution refund, the interest on the refund stops the July 1 following the member's death.

20. **Look-back Period – A.C.A. §§ 24-7-202, 24-7-205.** Effective July 1, 2011, absent intentional nondisclosure, fraud, misrepresentation, criminal act, or obvious/documented error by an employer of ATRS members can no longer establish old service previously unreported unless such service is acquired by purchase at actuarial cost. ATRS is allowed to correct an understated service credit error

Look-back Period – A.C.A. §§ 24-7-202, 24-7-205 (Cont.) upon which all required contributions have been paid or when understated service credit is well documented and undisputed, even if beyond the 5-year look-back period.

21. **Service Credit Requirements – A.C.A. §§ 24-7-501, 24-7-502, 24-7-601, 24-7-603, 24-7-604, 24-7-606, 24-7-607, 24-7-611.** Effective July 1, 2011, members must receive 160 days of service to be credited with a year of service credit.

22. **T-DROP Cash Balance Account.** Effective July 1, 2012, a T-DROP cash balance account was established that allows members exiting (retiring) from T-DROP to place all or a portion of their T-DROP proceeds into a Cash Balance Account (CBA) at ATRS. On November 13, 2017, by Resolution 2017-38 the Board set the CBA interest rate schedule based on years of participation as follows: 2.50% for year one, 2.75% for year two, 3.00% for year three, 3.25% for year four, 3.50% for year five, and 4.00% for year six and beyond. Each fiscal year, the Board can grant an incentive interest rate to encourage continued participation in the CBA program. For fiscal year 2022, the Board granted CBA participants an incentive rate of 1.0%, by Resolution 2021-36 on September 27, 2021.

23. **Purchase of "Air Time" as a Result of Wrongful Termination – A.C.A. §§ 24-7-702, 24-7-735, 6-17-413.** A member is allowed to purchase service credit under a settlement agreement or court order to resolve a claim of wrong termination if the service credit is purchased from the date of termination by an ATRS employer to the date of the resolution of the dispute. This service credit would be purchased at actuarial cost.

24. **Buyout of Inactive Members—A.C.A. § 24-7-505.** The ATRS Board created a voluntary "buyout plan" for inactive vested members. The System will make a one-time lump sum payment to a member, a surviving spouse, or an alternate payee in exchange for a member, surviving spouse, or alternate payee's cancellation of membership and retirement benefit rights. The buyout plan will be established by Board rules. Rule is 16 Cash and Savings Help Program for Members (CASH) defines the terms of the "buyout plan". Depending upon the success of the plan, it may be extended by the Board. The ATRS Board expanded the CASH program to include all inactive vested members, regardless of service type by Resolution 2017-18 on May 10, 2017. The ATRS Board offered the FY 2022 CASH program for all inactive vested members to end on June 30, 2022 by Resolution 2021-37 on September 27, 2021.

25. **Private School Service—A.C.A. § 24-7-607.** Prior to 2015, private school service had to be recognized by the Arkansas Department of Education as positions that required the issuance of teaching licenses. The certification of this service credit was performed by one employee of the Arkansas Department of Education, and that one employee retired. Upon that employee's retirement, the Arkansas Department of Education no longer certified private school service credit. No certifications occurred for approximately a year until legislation could be passed to allow ATRS to make this determination. In addition, a distinction was made between certified and noncertified private school service credit. Certified private school service (basically administrative and teaching) could be purchased at actuarial cost, up to 15 years. Noncertified private school service could be purchased at actuarial cost, up to 5 years.

26. **Military Service Credit—A.C.A. § 24-7-602.** Act 301 of 2015 made technical corrections to the ATRS laws. In the military service credit section, ATRS was not in compliance with a state law that was passed in 2009, Act 295, which repealed the requirement for free military service credit to be granted only if the service was not credited under any other plan except Social Security and the requirement that receipt of a pension from the federal military retirement system paid solely for disability shall not be considered as having service with another retirement plan. The military technical corrections bill raised questions by some of the legislators, and Act 558 of 2015 was passed to further clarify military service credit. Compulsory military service was changed throughout the law to read: "federal military draft". The word "honorable" was inserted before discharge in order for the member to obtain free military service credit throughout the law.

27. **Pension Advance Prohibition – A.C.A. § 24-7-715. Prohibits a pension advance company from** obtaining a retiree's benefit to repay a loan.

28. **Accrued Sick Leave – A.C.A. § 24-7-601.** Unused accrued sick leave, whether paid or unpaid, is allowed to count as service credit to determine retirement eligibility for survivor benefits and lump sum death benefits. One day of service shall be added to the service credit for the fiscal year of the member's death for each day of unused sick leave. This does not include catastrophic leave and other unused donated leave.

29. **Spousal Survivor Benefit – A.C.A. § 24-7-710.** Members may direct an alternative residual beneficiary to receive a lump sum payment of the member's residue amount or T-DROP balance. No spousal survivor benefits will be payable if an alternative beneficiary who is not the surviving spouse is designated by the member.

30. **Settlement Agreements – A.C.A. § 24-7-202, § 24-7-735.** Salary or service credit may be purchased as part of a settlement agreement between a member and their employer. Salary will be added to the salary at the time of purchase and will be determined using the same factors used to calculate an additional monthly benefit in the annuitization of a T-DROP distribution. It is assumed the member would have retired immediately at the time of the purchase.

31. **Outsourcing – A.C.A. § 24-7-506.** Outsourcing is defined to mean employment for an ATRS covered employer through a third party, private employer, independent contractor, or other contractual relationship. A person who performs services that are necessary for the normal daily operation for an ATRS covered employer is considered an Embedded Employee. The ATRS covered employer has a one-time decision to choose between two options for handling their Embedded Employees. The first option for the ATRS covered employer is to become a participating employer and make embedded employees participating members of ATRS. The second option for the ATRS covered employer is to become a Surcharge Employer and opt to pay a surcharge on the Embedded Employee's salary to ATRS to help cover the actuarial cost. The surcharge starts at ½% the first year and slowly rises to 3% over 4 years with a hard cap of 4%. The Embedded Employees of a Surcharge Employer will not be members of ATRS. The services necessary for normal daily operations include: substitute teaching, teacher's aides, food service, transportation service, custodial service, security services, and school nursing. Only those working on the premises are subject to the surcharge. The surcharge is ONLY on

Outsourcing – A.C.A. § 24-7-506 (Cont.) SALARY of embedded employees. All salary is reported in the aggregate with the contractor's salary amount being the final word unless it is clearly in error. The Division of Youth Services shall be a participating Employer and may designate any or all Embedded Employees as members of ATRS. The law does not apply to post-secondary higher education institutions.

32. **Concurrent Reciprocal Service Credit – A.C.A. § 24-7-601.** ATRS members have the option of waiving their ATRS service in the event the member had concurrent service in two (2) state supported retirement systems. The member has the option to surrender either ATRS service or the reciprocal plan service. If a member worked full-time under a reciprocal retirement system and only part-time under ATRS, the member can to waive the ATRS service to obtain a higher benefit based upon the full-time service in the other system. Concurrent reciprocal members have the option to voluntarily elect to waive service in ATRS.

33. **Employer Contribution Rate – A.C.A. § 24-7-401.** Employer contributions are collected on active members, T-DROP participants (even those who work beyond the 10-year participation period), and working retirees. Through fiscal year 2019, the employer contribution rate is 14%. For the fiscal year beginning July 1, 2018, the Board may modify the employer contribution rate for future fiscal years above 14% in increments of 0.25% per fiscal year provided the system has a greater than 18-year amortization period to pay unfunded liabilities without an employer contribution rate of more than 14% limited to a maximum employer contribution rate of 15%. ,By Resolution 2017-40 on November 13, 2017, the Board set the employer contribution rate to 14.25%, 14.50%, 14.75%, and 15.00% for FY 2020, FY 2021, FY 2022, and FY 2023 respectively and 15.00% thereafter.

34. **Forfeiture of Benefits by Certain Persons – A.C.A. §§ 24-1-301, 302, 303, 304, 305.** A beneficiary's benefits under a public retirement system can be forfeited when the beneficiary unlawfully kills a member or retiree.

35. **Socially responsible investments – A.C.A. § 24-7-105.** A decision on whether to invest, not invest, or withdraw from investment the funds of the Arkansas Teacher Retirement System or an alternate retirement plan of the system shall not be based on a consideration that the location of the investment, fund, company, or any other type of investment vehicle is in the State of Israel.

36. **Normal Retirement Age & Separation Period – A.C.A. §§ 24-7-202, 24-7-502.** In order for a member to start drawing retirement benefits the IRS requires them to have a bona fide termination of employment or have attained the “normal retirement age”. ATRS ensures the bona fide termination of employment by requiring a member stay separated from covered employment for six (6) months before returning to work for an ATRS covered employer. Effective September 1, 2021, the ATRS "normal retirement age" is defined to be age 65 with 5 years of actual service OR at least age 60 with 38 total years of actual service, T-DROP service and reciprocal service. A member that has attained the normal retirement age is able to draw full retirement benefits and remain employed without separating from employment.

Sample Benefit Computations for a Member Retiring June 30, 2022

The data for the Example member is shown below:

A.	$35,000	Final Average Compensation
B.	32	Total Service Credit
C.	27	Contributory Service Credit
D.	60	Age of Retiree
E.	55	Age of Spouse
F.	100%	Percentage of Retirement Allowance to Continue to Spouse after Retiree's Death (Retiree Chooses this Percentage)

The computations that would be made for this case are:

		Annual
G.	Non-Contributory Base: 1.39% x A x B	$15,568
H.	Extra for Contributory: 0.76% x A x C	7,182
I.	Subtotal Benefit: G + H	22,750
J.	Health Stipend	600
K.	Total Benefit: I + J	23,350
L.	Adjustment for Line F election: (1 - 0.78571) x I	4,875
M.	Annual Amount Payable	$18,475

Projected Benefits, taking into account increases after retirement would be:

Year Ended June 30	Annual Amount
2023	$18,475
2024	19,011
2025	19,547
2026	20,083
2027	20,619

Thereafter, the amount would increase by $536 annually for life.

Sample T-DROP Benefit Computations for a Member Entering T-DROP June 30, 2022

The data for the Example member is shown below:

A.	$35,000	Final Average Compensation
B.	28	Total Service Credit
C.	28	Contributory Service Credit
D.	55	Age of Retiree

The computations that would be made for this case are:

			Annual Amount
E.	Non-Contributory Base:	1.39% x A x B	$13,622
F.	Extra for Contributory:	0.76% x A x C	7,448
G.	Reduction for T-DROP Plan: (1% for each year of service) 0.28 x (E+F)		5,900
H.	Reduction for Entering T-DROP with less than 30 years of service (6% for each year less than 30): 0.12 x (E + F - G)		1,820
I.	Annual Deposit E + F – G – H		$13,350

Projected Deposits, taking into account increases after DROP, and 5 years duration would be:

Year Ended June 30	Amount Deposited
2023	$13,350
2024	13,751
2025	14,151
2026	14,552
2027	14,952
Total	$70,756

The amount deposited, plus credited interest, can be paid as a lump sum or as an annuity. A portion of the deposits can also be placed into a Cash Balance account.

SECTION D

FINANCIAL INFORMATION

This information is presented in draft form for review by the System's auditor. Please let us know if there are any items the auditor changes so that we may maintain consistency with the System's financial statements.

Asset Valuation Method

An essential step in the valuation process is comparing valuation assets with computed liabilities. Valuation assets are those assets that are recognized for funding purposes.

Asset valuation methods are distinguished by the timing of the recognition of investment income. Total investment income is the sum of ordinary income and capital value changes. Under a pure market value approach, ordinary investment income and all capital value changes would be recognized immediately. Because of market volatility, use of pure market values in retirement funding can result in volatile contribution rates and unstable financial ratios, contrary to ATRS' objectives.

Under the ATRS asset valuation method (see page D-3), assumed investment return is recognized fully each year. Differences between actual and assumed investment return are phased-in over a closed four-year period. During periods when investment performance exceeds the assumed rate, the funding value will tend to be less than the market value. Conversely, during periods when investment performance is less than the assumed rate, funding value will tend to be greater than market value. If assumed rates are exactly realized for three consecutive years, funding value will become equal to market value.

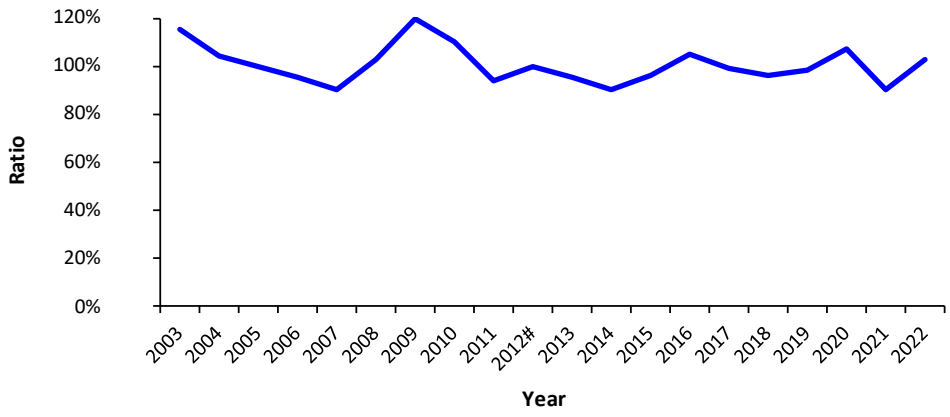
A multi-year comparison of market value to funding (actuarial) value is on the following page.

Asset Valuation Method

Valuation Date June 30	Market Value of Assets (1)	Actuarial Value of Assets (2)	Ratio of AV to MV (2) / (1)
2003	$ 7,050	$ 8,113	115%
2004	8,122	8,424	104%
2005	8,811	8,817	100%
2006	9,868	9,332	95%
2007	11,637	10,519	90%
2008	11,018	11,319	103%
2009	8,847	10,617	120%
2010	9,884	10,845	110%
2011	11,895	11,146	94%
2012#	11,484	11,484	100%
2013	12,830	12,247	95%
2014	14,856	13,375	90%
2015	15,036	14,434	96%
2016	14,559	15,239	105%
2017	16,285	16,131	99%
2018	17,493	16,756	96%
2019	17,742	17,413	98%
2020	16,902	18,007	107%
2021	21,469	19,343	90%
2022	19,679	20,328	103%

 # Funding Value set equal to Market Value.

Ratio of Funding Value to Market Value



This year the market value of assets is less than the funding value (see page A-2 for a more detailed explanation). To prevent unreasonably large differences between market value and funding value, there is a requirement that the recognized assets must always be between 80% and 120% of the market value (see page D-3).

Development of Funding Value of Assets

Year Ended June 30:	2019	2020	2021	2022	2023	2024	2025
A. Funding Value Beginning of Year	$ 16,756,062,928	$ 17,412,534,651	$ 18,007,255,143	$ 19,342,870,512			
B. Market Value End of Year	17,741,621,773	16,902,076,224	21,468,772,872	19,679,467,252			
C. Market Value Beginning of Year	17,492,627,740	17,741,621,773	16,902,076,224	21,468,772,872			
D. Non-Investment Net Cash Flow	(642,256,050)	(665,324,622)	(676,930,006)	(192,363,759)			
E. Investment Return							
E1. Market Total: B - C - D	891,250,083	(174,220,927)	5,243,626,654	(1,596,941,861)			
E2. Assumed Rate	7.50%	7.50%	7.50%	7.25%	7.25%	7.25%	7.25%
E3. Amount for Immediate Recognition	1,232,620,118	1,280,990,426	1,325,159,261	1,395,384,926			
E4. Amount for Phased-In Recognition: E1-E3	(341,370,035)	(1,455,211,353)	3,918,467,393	(2,992,326,787)			
F. Phased-In Recognition of Investment Return							
F1. Current Year: 0.25 x E4	(85,342,509)	(363,802,838)	979,616,848	(748,081,697)	Unknown	Unknown	Unknown
F2. First Prior Year	156,914,612	(85,342,509)	(363,802,838)	979,616,848	$ (748,081,697)	Unknown	Unknown
F3. Second Prior Year	271,285,424	156,914,612	(85,342,509)	(363,802,838)	979,616,848	$ (748,081,697)	Unknown
F4. Third Prior Year	(276,749,872)	271,285,423	156,914,613	(85,342,508)	(363,802,839)	979,616,849	$ (748,081,696)
F5. Total Recognized Investment Gain	**66,107,655**	**(20,945,312)**	**687,386,114**	**(217,610,195)**	(132,267,688)	231,535,152	(748,081,696)
G. Funding Value End of Year:							
G1. Preliminary Funding Value End of Year: A+D+E3+F5	**17,412,534,651**	**18,007,255,143**	**19,342,870,512**	**20,328,281,484**			
G2. Upper Corridor Limit: 120% x B	**21,289,946,128**	**20,282,491,469**	**25,762,527,446**	**23,615,360,702**			
G3. Lower Corridor Limit: 80% x B	**14,193,297,418**	**13,521,660,979**	**17,175,018,297**	**15,743,573,802**			
G4. Funding Value End of Year	**17,412,534,651**	**18,007,255,143**	**19,342,870,512**	**20,328,281,484**			
H. Actual/Projected Difference between Market and Funding Value	329,087,122	(1,105,178,919)	2,125,902,360	(648,814,232)	(516,546,544)	(748,081,696)	-
I. Market Rate of Return	5.19 %	(1.00)%	31.66 %	(7.47)%			
J. Funding Rate of Return	7.90 %	7.38 %	11.39 %	6.12 %			
K. Ratio of Funding Value to Market Value	98.15 %	106.54 %	90.10 %	103.30 %			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased-in over a closed four-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than Market Value. ***The Funding Value of Assets is unbiased with respect to Market Value***. At any time, it may be either greater or less than Market Value. If assumed rates (applied to the funding value of assets) are exactly realized for three consecutive years, it will become equal to Market Value.

The assets of the Retirement System, as of June 30, 2022, were reported to your actuary to be $19,679,467,252. This amount, increased by a funding value adjustment of $648,814,232 this year, is used to finance the Retirement System liability.

Accounts	Assets as of June 30	
	2022	2021
Regular Accounts		
Members' Deposit Accounts		
Contributions	$ 1,619,234,265	$ 1,517,838,030
Interest	10,879,135,880	12,934,857,979
Total	12,498,370,145	14,452,696,009
T-DROP Member Deposit Accounts		
Contributions	28,418,105	25,976,011
Interest	19,012,373	21,070,652
Total	47,430,478	47,046,663
Cash Balance Account	207,565,576	183,336,816
Employer's Accumulation Account	(7,008,787,923)	(6,500,901,628)
Retirement Reserve Account	13,468,111,609	12,792,323,810
Act 808 Retirement Reserve Account	6,840,591	8,234,533
T-Lump Payable	339,803,043	369,188,176
Survivors Benefit Account	110,412,603	107,149,458
Total Regular Accounts	19,669,746,122	21,459,073,837
Other Accounts		
Income Expense Account	9,721,130	9,699,035
Other Special Reserves	-	-
Miscellaneous	-	-
Total Other Accounts	9,721,130	9,699,035
Total Accounting Value of Assets	19,679,467,252	21,468,772,872
Funding Value Adjustment	648,814,232	(2,125,902,360)
Funding Value of Assets	$20,328,281,484	$19,342,870,512

Market Value of Assets

The net market value of assets at year-end was $19,679,467,252 and was invested as shown below:

	Market Value at June 30	
	2022	**2021**
Cash	$ 367,097,595	$ 333,682,820
Receivables		
Unsettled Trades and Accrued Return	50,990,481	50,866,535
Member Contributions	10,473,412	11,588,169
Employer Contributions	32,672,388	36,495,741
Other	668,209	581,924
Total Receivables	94,804,490	99,532,369
Investments		
Public Equity	3,653,122,876	
Fixed Income	1,385,176,472	
Real Estate	203,361,821	*Investments by class were reported differently in 2021*
Pooled	5,411,394,612	
State recycling tax credits	144,000,000	
Derivative	10,632	
Alternative	8,472,390,498	
Other	(580,788)	
Total Investments	19,268,876,123	21,092,661,353
Invested Securities Lending	770,276,668	479,988,268
Net Equipment	191,687	200,341
Deferred Outflows Related to OPEB	685,899	1,034,149
Total Assets	20,501,932,462	22,007,099,300
Liabilities		
Survivor Benefits for Minors	14,149	80,911
Other Payables	6,838,994	10,345,476
Securities Related Payables	43,265,338	47,771,989
Securities Lending Collateral	770,276,667	479,988,268
Deferred Inflows Related to OPEB	2,070,062	139,784
Total Liabilities	822,465,210	538,326,428
Net Market Value	$ 19,679,467,252	$ 21,468,772,872
Change from Prior Year	(1,789,305,620)	4,566,696,648

Market Value Reconciliation

Assets developed during the year as follows:

	Year Ended June 30	
	2022	2021
Net Market Value July 1	$ 21,468,772,872	$ 16,902,076,224
Additions		
Employer Contributions	501,522,604	472,567,147
Employee Contributions	183,315,252	168,129,972
Other (Including Settlement)	507,446,092	-
Appreciation	(1,729,497,003)	5,166,017,302
Interest	30,361,656	26,342,410
Dividends	151,306,900	95,919,865
Real Estate	6,387,875	6,321,144
Other	1,308,741	1,769,200
Securities Lending Activity	3,527,825	2,678,677
Total Additions	(344,320,058)	5,939,745,717
Deductions		
Age & Service Benefits	1,135,131,535	1,092,814,070
Disability Benefits	40,631,115	40,710,587
Option Benefits	36,681,111	34,124,252
Survivor Benefits	12,527,408	12,129,985
Reciprocal Service	64,615,316	61,382,530
Act 808	1,953,045	2,013,072
Refunds	10,426,792	9,463,375
Active Member Death	681,421	487,669
T-DROP Benefits	64,370,804	48,309,780
CBA Benefits	15,630,112	13,978,659
CASH Benefit Program	1,999,048	2,213,146
Investment Expense	53,687,251	48,095,147
Administrative Expense	6,650,604	7,326,801
Total Deductions	1,444,985,562	1,373,049,073
Miscellaneous	-	4
Net Market Value June 30	$ 19,679,467,252	$ 21,468,772,872

Schedule of Funding Progress
(Dollar Amounts in Millions)

Valuation Date June 30	(1) Actuarial Value of Assets	(2) Entry Age AAL	(3) UAAL (2)-(1)	(4) Funding Ratio (1)/(2)	(5) Annual Payroll	Liabilities as a % of Payroll		
						Unfunded (3)/(5)	Funded (1)/(5)	Total (2)/(5)
2002*	$ 8,328	$ 9,062	$ 734	91.9%	$ 1,628	45.1%	511.5%	556.6%
2003+	8,113	9,445	1,332	85.9%	1,683	79.1%	482.1%	561.2%
2004	8,424	10,050	1,626	83.8%	1,748	93.0%	481.9%	574.9%
2005	8,817	10,973	2,156	80.4%	1,962	109.9%	449.4%	559.3%
2006	9,332	11,623	2,291	80.3%	2,080	110.1%	448.7%	558.8%
2007+	10,519	12,329	1,810	85.3%	2,191	82.6%	480.1%	562.7%
2008+	11,319	13,334	2,015	84.9%	2,268	88.8%	499.1%	587.9%
2009	10,617	14,019	3,402	75.7%	2,318	146.8%	458.0%	604.8%
2010+	10,845	14,697	3,852	73.8%	2,381	161.8%	455.5%	617.3%
2011+*	11,146	15,521	4,375	71.8%	2,728	160.4%	408.6%	569.0%
2012	11,484	16,139	4,655	71.2%	2,714	171.5%	423.2%	594.7%
2013+*	12,247	16,718	4,471	73.3%	2,727	164.0%	449.1%	613.1%
2014	13,375	17,310	3,935	77.3%	2,758	142.7%	484.9%	627.6%
2015	14,434	18,136	3,702	79.6%	2,777	133.3%	519.8%	653.1%
2016	15,239	18,812	3,573	81.0%	2,785	128.3%	547.2%	675.5%
2017+*	16,131	20,298	4,167	79.5%	2,814	148.1%	573.2%	721.3%
2018+*	16,756	20,935	4,179	80.0%	2,872	145.5%	583.4%	728.9%
2019+	17,413	21,709	4,296	80.2%	2,907	147.8%	599.0%	746.8%
2020+	18,007	22,352	4,345	80.6%	2,954	147.1%	609.6%	756.7%
2021+*	19,343	23,987	4,644	80.6%	3,086	150.5%	626.8%	777.3%
2022+	20,328	24,697	4,369	82.3%	3,199	136.6%	635.4%	772.0%

+ Legislated benefit or contribution rate changes.

** Revised actuarial assumptions.*

A system with a high ratio of assets or liabilities to payroll will tend to experience more volatility than a system with a lesser ratio, assuming a similar asset allocation.

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, material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base. In a fixed rate plan with unfunded liabilities, a reduction in covered payroll can have a negative effect on the system as actual employer contributions are based on a lower than expected payroll;
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; and
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. Teacher shortages and reductions in school age populations may have an effect on the System other than 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 timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures are discussed below and on the following pages. An additional historical summary of plan maturity measures can be found on page D-11.

	2022	2021	2020	2019	2018
Ratio of the Market Value of Assets to Total Payroll	5.9	6.7	5.7	6.1	6.1
Ratio of Actuarial Accrued Liability to Payroll	7.4	7.5	7.6	7.5	7.3
Ratio of Actives to Retirees and Beneficiaries	1.4	1.4	1.4	1.5	1.5
Ratio of Net Cash Flow to Market Value of Assets	-1.0%	-3.2%	-3.9%	-3.6%	-3.5%
Duration of the Present Value of Future Benefits	14.03	14.02	13.83	13.82	13.86

Ratio of the Market Value of Assets to Payroll

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. The market value of assets is currently 5.9 times the payroll indicating that a return on assets 2% different from assumed would equal approximately 12% of payroll. Such a change could affect the amortization period by approximately five years based on 2022 results. While asset smoothing would reduce the effect, asset gains and losses much larger than 2% are common. An increasing level of this maturity measure generally indicates an increasing volatility in the amortization period.

Ratio of Actuarial Accrued Liability to Payroll

As the ratio of actuarial accrued liability to payroll increases, the amortization period becomes increasingly sensitive to the effects of demographic gains and losses, and assumption changes. For example, a 1% demographic gain or loss would correspond to 7.4% of payroll and would affect the amortization period by three years based on the 2022 results.

Ratio of Actives to Retirees and Beneficiaries

A young plan with many active members and few retirees will have a high ratio of actives 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 benefits and expenses exceed contributions, and existing funds may be 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.

Plan Maturity Measures
(Concluded)

Duration of Present Value of Future Benefits

The modified duration of the present value of future benefits may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, the current duration of 14.0 (which is based on a 7.25% discount rate) indicates that the present value of future benefits would increase approximately 14.0% if the assumed rate of return were lowered 1%. Such a change could affect the amortization period by 20 years or more.

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.

Plan Maturity Measures (Based on Market Value of Assets)

Valuation Date June 30	(1) Accrued Liabilities (AAL)	(2) Market Value of Assets	(3) Unfunded AAL (1)-(2)	(4) Valuation Payroll	(5) % Change in Payroll	(6) Funded Ratio (2)/(1)	(7) Annuitant Liabilities (AnnLiab)	(8) AnnLiab/ AAL (7)/(1)	(9) Liability/ Payroll (1)/(4)	(10) Assets/ Payroll (2)/(4)	(11) Est. Porfolio Std. Dev.	(12) Std. Dev. % of Pay (10)x(11)	(13) Unfunded/ Payroll (3)/(4)	(14) Net External Cash Flow (NECF)	(15) NECF/ Assets (14)/(2)	(16) Portfolio Rate of Return	(17) 10-year Trailing Average
2012	$ 16,139	$ 11,484	$ 4,655	$ 2,803		71.2%	$ 7,649	47.4%	575.8%	409.7%			166.1%	$ (285)	-2.5%	-1.1%	6.6%
2013#	16,718	12,830	3,888	2,819	0.6%	76.7%	8,181	48.9%	593.0%	455.1%			137.9%	(337)	-2.6%	14.9%	8.0%
2014	17,310	14,856	2,454	2,851	1.1%	85.8%	8,777	50.7%	607.2%	521.1%			86.1%	(395)	-2.7%	19.2%	8.2%
2015	18,136	15,036	3,100	2,874	0.8%	82.9%	9,778	53.9%	631.0%	523.1%			107.9%	(445)	-3.0%	4.3%	7.7%
2016	18,812	14,559	4,253	2,888	0.5%	77.4%	10,430	55.4%	651.3%	504.0%			147.3%	(505)	-3.5%	0.2%	6.3%
2017#*	20,298	16,285	4,013	2,922	1.2%	80.2%	11,337	55.9%	694.7%	557.4%			137.3%	(556)	-3.4%	16.0%	6.0%
2018	20,935	17,493	3,442	2,986	2.2%	83.6%	11,851	56.6%	701.1%	585.8%	12.7%	77.3%	115.3%	(607)	-3.5%	11.4%	7.6%
2019	21,709	17,742	3,967	3,027	1.4%	81.7%	12,460	57.4%	717.2%	586.1%	12.5%	76.3%	131.1%	(642)	-3.6%	5.2%	10.4%
2020	22,352	16,902	5,450	3,078	1.7%	75.6%	12,890	57.7%	726.2%	549.1%	12.5%	71.5%	177.1%	(665)	-3.9%	-1.0%	8.8%
2021*	23,987	21,469	2,518	3,205	4.1%	89.5%	13,596	56.7%	748.4%	669.8%	13.8%	92.1%	78.6%	(677)	-3.2%	31.7%	9.6%
2022	24,697	19,679	5,018	3,320	3.6%	79.7%	14,044	56.9%	743.8%	592.7%	13.7%	81.1%	151.1%	(192)	-1.0%	-7.5%	8.9%

(*) ATRS had experience studies in these years leading to a change or "true up" in actuarial assumptions. A pattern of periodic studies is a sign of a well-run system and suggests the extent to which the liability measures the actuary provides are likely to be realistic.

(#) ATRS had benefit changes in these years. Benefit increases cause liabilities to rise; benefit decreases cause liabilities to fall. In either case benefit changes affect the year by year comparability of the measures on this page.

(6). The Funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

(9) and (10) The ratios of liabilities and assets to payroll gives an indication of both maturity and volatility. Many systems have values between 500% and 700%. Values significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll or an increased level of volatility in results.

(13) The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A value above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability within a reasonable time frame.

(14) and (15) The ratio of Net External Cash Flow to assets is an important measure of sustainability. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately -4%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.

(16) and (17) Investment return is probably the largest single risk that most systems face. The year by year return and the 10-year geometric average give an indicator of the past performance of the investment program. Of course, past performance is not a guarantee of future results. Some of the trailing averaged are distorted by the extraordinary events of 2008.

SECTION E

COVERED MEMBER DATA

Active Members in Valuation June 30, 2022
by Attained Age and Years of Service
(Excludes T-DROP and Rehired Retirees)

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	696							696	$ 2,036,955
20-24	2,334	15						2,349	56,340,350
25-29	4,749	1,344	4					6,097	239,385,665
30-34	3,159	3,613	791	9				7,572	319,642,463
35-39	2,797	2,363	2,559	793	8			8,520	379,348,700
40-44	2,358	2,131	1,714	2,579	598	2		9,382	446,570,440
45-49	1,806	1,679	1,529	1,782	2,215	552	2	9,565	486,087,104
50-54	1,502	1,419	1,358	1,717	1,581	1,758	58	9,393	471,436,420
55-59	1,210	1,084	912	1,345	1,311	1,109	86	7,057	310,594,779
60	255	215	162	268	276	179	14	1,369	58,180,882
61	231	191	155	196	210	155	20	1,158	47,163,711
62	201	169	125	169	162	137	20	983	38,846,267
63	179	136	115	132	133	119	11	825	32,097,530
64	144	119	106	128	96	88	16	697	26,675,267
65	133	124	80	76	67	69	22	571	20,568,784
66	120	98	59	34	41	33	7	392	13,288,960
67	119	53	41	23	18	10	6	270	6,950,346
68	91	51	22	18	8	4	5	199	4,845,422
69	92	46	15	13	4	3	7	180	4,709,416
70 & Up	447	262	90	26	13	9	5	852	16,321,734
Totals	**22,623**	**15,112**	**9,837**	**9,308**	**6,741**	**4,227**	**279**	**68,127**	**$2,981,091,195**

Group Averages:

Age: 44.1 years

Service: 10.2 years

FEMALE Active Members in Valuation June 30, 2022
by Attained Age and Years of Service
(Excludes T-DROP and Rehired Retirees)

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	271							271	$ 993,242
20-24	1,753	8						1,761	43,530,601
25-29	3,566	1,051						4,617	177,042,580
30-34	2,486	2,759	600	7				5,852	236,404,122
35-39	2,304	1,874	1,945	640	1			6,764	285,975,523
40-44	1,893	1,754	1,334	2,010	478	1		7,470	340,247,726
45-49	1,434	1,369	1,233	1,437	1,706	424	1	7,604	367,067,599
50-54	1,106	1,096	1,092	1,446	1,294	1,382	41	7,457	359,735,176
55-59	850	779	701	1,113	1,110	905	60	5,518	234,863,623
60	172	156	109	212	247	147	9	1,052	44,460,151
61	160	130	114	155	177	124	13	873	33,721,424
62	142	108	87	126	133	119	14	729	27,257,651
63	100	98	83	107	109	104	9	610	23,467,016
64	79	75	71	98	73	77	15	488	18,631,005
65	83	72	57	57	53	61	17	400	14,133,258
66	64	57	47	28	32	25	7	260	8,700,408
67	69	29	25	20	17	8	5	173	4,497,383
68	61	26	15	13	5	4	3	127	3,132,813
69	53	26	8	9	4	3	4	107	3,013,836
70 & Up	243	112	42	19	7	6	4	433	8,012,682
Totals	**16,889**	**11,579**	**7,563**	**7,497**	**5,446**	**3,390**	**202**	**52,566**	**$ 2,234,887,819**

Group Averages:

Age: 44.0 years

Service: 10.6 years

MALE Active Members in Valuation June 30, 2022
by Attained Age and Years of Service
(Excludes T-DROP and Rehired Retirees)

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	425							425	$ 1,043,713
20-24	581	7						588	12,809,749
25-29	1,183	293	4					1,480	62,343,085
30-34	673	854	191	2				1,720	83,238,341
35-39	493	489	614	153	7			1,756	93,373,177
40-44	465	377	380	569	120	1		1,912	106,322,714
45-49	372	310	296	345	509	128	1	1,961	119,019,505
50-54	396	323	266	271	287	376	17	1,936	111,701,244
55-59	360	305	211	232	201	204	26	1,539	75,731,156
60	83	59	53	56	29	32	5	317	13,720,731
61	71	61	41	41	33	31	7	285	13,442,287
62	59	61	38	43	29	18	6	254	11,588,616
63	79	38	32	25	24	15	2	215	8,630,514
64	65	44	35	30	23	11	1	209	8,044,262
65	50	52	23	19	14	8	5	171	6,435,526
66	56	41	12	6	9	8		132	4,588,552
67	50	24	16	3	1	2	1	97	2,452,963
68	30	25	7	5	3		2	72	1,712,609
69	39	20	7	4			3	73	1,695,580
70 & Up	204	150	48	7	6	3	1	419	8,309,052
Totals	**5,734**	**3,533**	**2,274**	**1,811**	**1,295**	**837**	**77**	**15,561**	**$ 746,203,376**

Group Averages:

Age: 44.2 years

Service: 9.5 years

Summary of Active Members
(Excludes T-DROP and Rehired Retirees)

	Educational		Support		Total Active Members	
	No.	Valuation Payroll	No.	Valuation Payroll	No.	Valuation Payroll
Female	28,856	$ 1,585,376,795	23,710	$ 649,511,024	52,566	$ 2,234,887,819
Male	8,254	512,407,399	7,307	233,795,977	15,561	746,203,376
All	37,110	$ 2,097,784,194	31,017	$ 883,307,001	68,127	$ 2,981,091,195

	Educational	Support	Total
Members Contributing Now	35,280	18,328	53,608
Members Not Contributing	1,830	12,689	14,519
All	37,110	31,017	68,127

June 30	Number	Group Averages			Active Member Payroll ($ Millions)
		Age	Service	Annual Earnings	
2005	65,793	44.2	9.4	$29,826	$1,962
2006	67,710	44.3	9.3	30,714	2,080
2007	69,226	44.4	9.3	31,645	2,191
2008	70,172	44.5	9.4	32,319	2,268
2009	70,655	44.7	9.5	32,804	2,318
2010	72,208	44.7	9.7	32,980	2,381
2011	72,293	44.8	9.9	33,995	2,458
2012	71,195	45.0	10.1	34,362	2,446
2013	70,660	45.0	10.2	34,920	2,467
2014	70,225	44.7	10.2	35,673	2,505
2015	68,945	44.6	10.3	36,717	2,531
2016	68,368	44.4	10.2	37,235	2,546
2017	68,337	44.3	10.2	37,707	2,577
2018	68,645	44.2	10.2	38,477	2,641
2019	68,457	44.1	10.1	39,065	2,674
2020	66,900	44.3	10.3	40,709	2,723
2021	66,633	44.2	10.5	42,901	2,859
2022	68,127	44.1	10.2	43,758	2,981

Deferred Vested Members at June 30, 2022
by Attained Age

Age	Number	Estimated Annual Benefits	Contribution Balance
Below 40	2,021	$ 11,220,315	$ 27,739,211
40	315	2,155,831	5,198,462
41	315	2,329,818	5,583,891
42	366	2,573,541	6,160,893
43	328	2,218,144	5,296,136
44	353	2,461,437	5,817,324
45	331	2,344,620	5,592,136
46	392	2,847,971	6,419,241
47	385	2,805,644	6,498,716
48	446	3,050,793	6,501,143
49	405	2,848,637	6,226,004
50	454	2,907,272	5,828,991
51	523	3,384,381	6,413,364
52	466	3,146,225	6,309,593
53	475	3,088,381	6,179,204
54	539	3,311,169	6,073,403
55	535	3,130,950	5,767,606
56	534	3,500,889	6,610,495
57	636	3,843,874	6,870,815
58	674	3,854,439	7,112,128
59	646	4,190,868	7,637,309
60 & Up	2,799	9,029,988	14,941,001
Future Beneficiaries #	48	287,741	0
Totals	**13,986**	**$ 80,532,928**	**$ 166,777,066**

 # These are beneficiaries of deceased active members who are eligible for a pension at age 62.

An inactive member is no longer actively working in a position covered by ATRS but has sufficient service credit to qualify for a monthly benefit at retirement age.

All Members Participating in T-DROP at June 30, 2022 by Attained Age

Age	Number	Current T-DROP Contribution	Original T-DROP Contribution	T-DROP Account Balance	Pay
48	1	$ 10,426	$ 10,123	$ 10,452	$ 34,725
49	4	56,606	54,958	56,744	165,942
50	13	274,860	264,681	353,529	858,372
51	67	1,463,512	1,409,754	1,894,082	4,530,769
52	116	2,579,697	2,455,657	4,338,020	8,032,962
53	182	4,208,289	3,963,718	9,202,706	12,819,667
54	246	5,861,321	5,443,192	15,775,253	17,458,114
55	245	5,508,373	5,020,562	18,176,085	16,705,254
56	249	5,852,734	5,278,736	23,046,857	17,623,790
57	301	7,000,246	6,232,926	30,559,725	20,677,144
58	308	6,922,656	6,101,499	36,114,147	20,645,376
59	307	6,703,554	6,089,407	38,516,498	20,661,483
60	278	5,821,116	5,373,861	39,809,883	18,183,010
61	255	4,815,661	4,886,943	37,576,485	16,861,780
62	233	4,258,367	4,288,028	33,548,510	15,122,895
63	155	2,540,403	2,741,865	20,640,395	9,633,478
64	141	2,314,934	2,392,513	17,023,707	8,383,835
65	78	1,214,163	1,270,923	9,130,332	4,620,495
66	34	649,670	617,758	4,814,304	2,215,672
67	12	84,180	162,743	1,445,215	508,910
68	8	125,965	188,851	2,041,228	596,069
69	4	30,160	48,009	508,932	216,604
70	6	88,133	89,278	837,972	370,534
71	4	41,267	66,665	758,377	242,931
73	1	17,588	14,536	129,092	31,907
75	3	57,809	66,322	834,195	248,580
Totals	**3,251**	**$ 68,501,690**	**$ 64,533,508**	**$ 347,142,725**	**$ 217,450,298**

A T-DROP member continues to work, but does not accrue additional retirement benefits and does not make member contributions. A reduced benefit is paid into the T-DROP account (see pages C-3 and C-4) during T-DROP participation. Deposits to T-DROP cease at 10 years of T-DROP participation. ATRS receives full employer contributions on behalf of T-DROP participants.

All Members Participating in T-DROP at June 30, 2022 by Years in T-DROP

Years in T-DROP	Number	Current T-DROP Contribution	Original T-DROP Contribution	T-DROP Account Balance	Pay
1	524	$ 10,993,489	$ 10,686,639	$ 11,034,017	$ 34,143,646
2	468	9,538,826	9,025,724	19,272,914	30,043,148
3	469	9,687,408	8,912,518	29,469,392	30,759,018
4	437	9,995,496	8,959,371	40,881,440	29,859,497
5	321	7,357,915	6,413,961	38,010,634	21,501,271
6	294	6,921,325	5,876,040	43,244,276	20,198,124
7	244	5,711,082	4,727,678	41,977,486	16,546,466
8	185	4,401,432	3,580,162	37,653,446	12,907,214
9	154	3,894,717	3,090,364	37,923,528	10,827,017
10	103	-	2,264,597	32,020,979	7,394,811
11	22	-	401,017	6,007,660	1,275,861
12	15	-	291,760	4,616,457	1,022,961
13	5	-	123,249	2,061,257	369,678
14	5	-	87,837	1,552,069	297,984
15	4	-	79,404	1,128,795	255,260
17	1	-	13,187	288,375	48,342
Totals	**3,251**	**$ 68,501,690**	**$ 64,533,508**	**$ 347,142,725**	**$ 217,450,298**

A T-DROP member continues to work, but does not accrue additional retirement benefits and does not make member contributions. A reduced benefit is paid into the T-DROP account (see pages C-3 and C-4) during T-DROP participation. Deposits to T-DROP cease at 10 years of T-DROP participation. ATRS receives full employer contributions on behalf of T-DROP participants.

Active, T-DROP and Return to Work Members as of June 30, 2022

June 30	Number				Total Payroll
	Active	T-DROP	RTW	Total	$ Millions
2013	70,660	4,265	4,025	78,950	$ 2,819
2014	70,225	4,127	3,845	78,197	2,851
2015	68,945	3,974	3,741	76,660	2,874
2016	68,368	3,864	3,829	76,061	2,888
2017	68,337	3,811	3,881	76,029	2,922
2018	68,645	3,696	4,029	76,370	2,986
2019	68,457	3,707	4,077	76,241	3,027
2020	66,900	3,639	4,019	74,558	3,078
2021	66,633	3,465	3,575	73,673	3,205
2022	68,127	3,251	3,643	75,021	3,320

The actuarial valuation assumes the number of working members will remain constant at the current level. In some recent years the total number of working members has decreased. A decreasing population means less contribution income for the Retirement System than expected and can lead to funding difficulties in extreme cases.

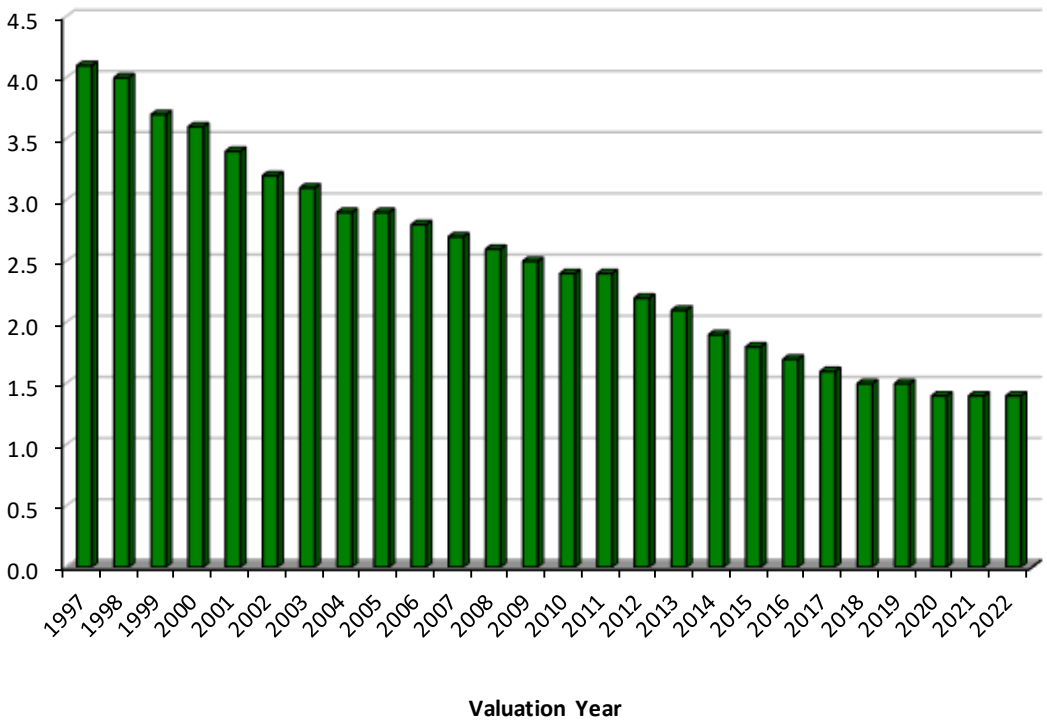
Annuities Being Paid Retirees and Beneficiaries July 1, 2022 by Type of Annuity Being Paid

Type of Annuity	No.	Annual Amounts		
		Original Annuities	Base Annuities	Current Annuities
RETIREMENT RESERVE ACCOUNT				
Age & Service				
Option 1 (Basic single life)	38,468	$ 617,098,978	$ 702,879,935	$ 939,937,432
Option A (Joint & 100% Survivor)	5,508	94,907,492	107,427,937	144,844,545
Option B (Joint & 50% Survivor)	2,724	61,998,751	72,481,207	97,809,004
Option C (10-year certain)	710	12,294,866	12,421,694	15,421,702
Beneficiaries	1,430	26,739,759	23,985,625	33,524,304
Totals	48,840	813,039,846	919,196,398	1,231,536,987
Disability				
Option 1	2,222	23,706,475	25,436,063	34,359,351
Option A	358	3,982,125	4,004,215	5,327,844
Option B	79	1,205,552	1,277,898	1,695,832
Option C	0	-	-	-
Beneficiaries	274	3,339,543	3,313,728	4,709,027
Totals	2,933	32,233,695	34,031,904	46,092,054
Act 793	139	800,638	1,689,168	1,689,168
Retirement Reserve Account	51,912	846,074,179	954,917,470	1,279,318,209
Act 808 Retirement Reserve Account	32	596,879	1,838,712	1,838,712
Total Retirement Reserve Account	51,944	846,671,058	956,756,182	1,281,156,921
SURVIVOR'S BENEFIT ACCOUNT				
Beneficiaries of Deceased Members				
Age 0 - 17	128	1,138,253	1,136,742	1,252,522
Age 18 - 23	78	778,150	773,463	876,265
Other	598	6,981,465	7,795,494	10,467,599
Totals	804	8,897,868	9,705,699	12,596,386
RETIREMENT SYSTEM TOTALS				
Total Annuities Being Paid	52,748	$ 855,568,926	$ 966,461,881	$ 1,293,753,307

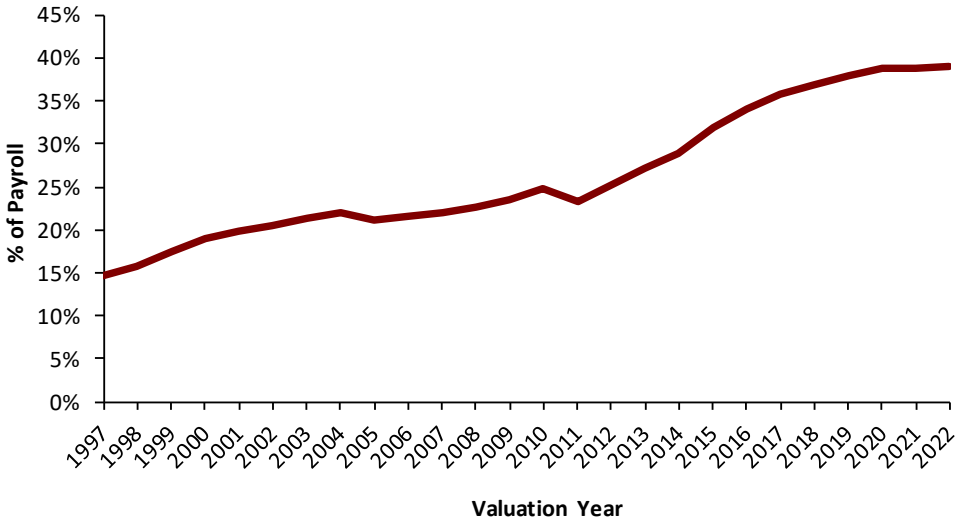
The Original Annuity is the annuity at the date of retirement.
The Base Annuity is the amount from which the 3.0% COLA is calculated.
The Current Annuity is the annuity payable at July 1, 2022 (Includes July 1 COLA).

Historical Graphs

Active Members Per Retired Life *



Retirement Benefits Being Paid as a Percent of Member Payroll *



** Beginning with the June 30, 2011 valuation, active members include T-DROP participants in payroll.*

Benefit Changes During Recent Years of Retirement and Related Changes in Purchasing Power (1990 $)

Year Ended June 30	Increase Beginning of Year	Benefit Dollars in Year*	Inflation (Loss) in Year#	Purchasing Power at Year End	
				1990 $	% of 1990
1990	$ - - - -	$ 11,000	- - - -	$ 11,000	100%
1991	330	11,330	(4.7)%	10,822	98%
1992	1,005	12,335	(3.1)%	11,429	104%
1993	1,045	13,380	(3.0)%	12,036	109%
1994	1,082	14,462	(2.5)%	12,693	115%
1995	400	14,862	(3.0)%	12,660	115%
1996	400	15,262	(2.8)%	12,652	115%
1997	772	16,034	(2.3)%	12,993	118%
1998	481	16,515	(1.7)%	13,161	120%
1999	1,383	17,898	(2.0)%	13,989	127%
2000	1,129	19,027	(3.7)%	14,336	130%
2001	1,406	20,433	(3.2)%	14,911	136%
2002	807	21,240	(1.1)%	15,337	139%
2003	562	21,802	(2.1)%	15,417	140%
2004	562	22,364	(3.3)%	15,314	139%
2005	562	22,926	(2.5)%	15,312	139%
2006	562	23,488	(4.3)%	15,037	137%
2007	562	24,050	(2.7)%	14,994	136%
2008	562	24,612	(5.0)%	14,611	133%
2009	562	25,174	1.4 %	15,161	138%
2010	755	25,929	(1.1)%	15,453	140%
2011	778	26,707	(3.6)%	15,370	140%
2012	778	27,485	(1.7)%	15,558	141%
2013	778	28,263	(1.8)%	15,723	143%
2014	778	29,041	(2.1)%	15,828	144%
2015	778	29,819	(0.1)%	16,232	148%
2016	778	30,597	(1.0)%	16,491	150%
2017	778	31,375	(1.6)%	16,638	151%
2018	778	32,153	(2.9)%	16,575	151%
2019	751	32,904	(1.6)%	16,687	152%
2020	451	33,355	(0.6)%	16,807	153%
2021	751	34,106	(5.4)%	16,306	148%
2022	751	34,857	(9.1)%	15,281	139%
2023	751	35,608			
2024					

* *The $11,000 benefit used to begin this schedule is an arbitrary amount. A smaller beginning amount could show a smaller purchasing power loss in percent loss.*

\# *Based on Consumer Price Index, All Urban Consumers, United States City Average (June values).*

Benefit Changes During Recent Years of Retirement and Related Changes in Purchasing Power (2000 $)

Year Ended June 30	Increase Beginning of Year	Benefit Dollars in Year*	Inflation (Loss) in Year#	Purchasing Power at Year End	
				2000 $	% of 2000
2000	$ - - - -	$ 11,600	- - - -	$ 11,600	100%
2001	1,003	12,603	(3.2)%	12,207	105%
2002	523	13,126	(1.1)%	12,579	108%
2003	372	13,498	(2.1)%	12,668	109%
2004	372	13,870	(3.3)%	12,605	109%
2005	372	14,242	(2.5)%	12,624	109%
2006	372	14,614	(4.3)%	12,417	107%
2007	372	14,986	(2.7)%	12,400	107%
2008	372	15,358	(5.0)%	12,100	104%
2009	372	15,730	1.4 %	12,573	108%
2010	472	16,202	(1.1)%	12,815	110%
2011	486	16,688	(3.6)%	12,746	110%
2012	486	17,174	(1.7)%	12,902	111%
2013	486	17,660	(1.8)%	13,039	112%
2014	486	18,146	(2.1)%	13,125	113%
2015	486	18,632	(0.1)%	13,460	116%
2016	486	19,118	(1.0)%	13,675	118%
2017	486	19,604	(1.6)%	13,797	119%
2018	486	20,090	(2.9)%	13,745	118%
2019	459	20,549	(1.6)%	13,831	119%
2020	159	20,708	(0.6)%	13,848	119%
2021	459	21,167	(5.4)%	13,431	116%
2022	459	21,626	(9.1)%	12,582	108%
2023	459	22,085			
2024					

* *The $11,600 benefit used to begin this schedule is an arbitrary amount. A smaller beginning amount could show a smaller purchasing power loss in percent loss.*

\# *Based on Consumer Price Index, All Urban Consumers, United States City Average (June values).*

Benefit Changes During Recent Years of Retirement and Related Changes in Purchasing Power (2010 $)

Year Ended June 30	Increase Beginning of Year	Benefit Dollars in Year*	Inflation (Loss) in Year#	Purchasing Power at Year End	
				2010 $	% of 2010
2010	$ - - - -	$ 11,900	- - - -	$ 11,900	100%
2011	357	12,257	(3.6)%	11,836	99%
2012	357	12,614	(1.7)%	11,981	101%
2013	357	12,971	(1.8)%	12,108	102%
2014	357	13,328	(2.1)%	12,188	102%
2015	357	13,685	(0.1)%	12,499	105%
2016	357	14,042	(1.0)%	12,699	107%
2017	357	14,399	(1.6)%	12,812	108%
2018	357	14,756	(2.9)%	12,764	107%
2019	330	15,086	(1.6)%	12,837	108%
2020	30	15,116	(0.6)%	12,780	107%
2021	330	15,446	(5.4)%	12,391	104%
2022	330	15,776	(9.1)%	11,605	98%
2023	330	16,106			
2024					

* *The $11,900 benefit used to begin this schedule is an arbitrary amount. A smaller beginning amount could show a smaller purchasing power loss in percent loss.*

\# *Based on Consumer Price Index, All Urban Consumers, United States City Average (June values).*

SECTION F

FINANCIAL PRINCIPLES

Financial Principles and Operational Techniques

Promises Made and To Be Paid For. As each year is completed, the System, in effect, hands an "IOU" to each member then acquiring a year of service credit. The "IOU" says: "The Arkansas Teacher Retirement System owes you one year's worth of retirement benefits, payments in cash commencing when you qualify for retirement."

The related ***key financial questions*** are:
Which generation of taxpayers contributes the money to cover the IOU?
The present taxpayers, who receive the benefit of the member's present year of service?
Or the future taxpayers, who happen to be in Arkansas at the time the IOU becomes a cash demand?

The financial objective of the ATRS is that this year's taxpayers contribute the money to cover the IOUs being handed out this year so that ***the employer contribution rate will remain approximately level from generation to generation*** -- our children and our grandchildren will not have to contribute greater percents of pay than we contribute now. This objective was set forth in Act 793 of 1977.

(There are systems which have ***a design for deferring contributions to future taxpayers***, lured by a lower contribution rate now and putting aside the fact that the contribution rate must then relentlessly grow much greater over decades of time -- consume now, and let your children face higher contribution rates after you retire.)

An inevitable byproduct of the level-cost design is the accumulation of reserve assets for decades and the income produced when the assets are invested. ***Investment income*** becomes the ***third and largest contributor*** for benefits to employees, and is interlocked with the contribution amounts required from employees and employers.

Translated to actuarial terminology, this level-cost objective means that the contribution rates must total at least the following:

> Normal Cost (the cost of members' service being rendered this year)
> … plus …
> Interest on Unfunded Actuarial Accrued Liabilities (unfunded accrued liabilities are the difference between (i) liabilities for service already rendered and (ii) the accrued assets of the plan).

Computing Contributions to Support System Benefits. From a given schedule of benefits and from the employee data and asset data furnished, the actuary determines the contribution rates to support the benefits, by means of ***an actuarial valuation***. An actuarial valuation has a number of ingredients such as: the rate of investment income which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of pay increases; and the assumed age or ages at actual retirement. In an actuarial valuation, assumptions must be made as to what the above rates will be, for the next year and for decades in the future. Only the subsequent actual experience of the System can indicate the degree of accuracy of the assumptions.

Reconciling Differences Between Assumed Experience and Actual Experience. Once actual experience has occurred and been observed, it will not coincide exactly with assumed experience, regardless of the accuracy of the various financial assumptions or the skill of the actuary and the precision of the calculations made. The System copes with these continually changing differences by having annual actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is continual adjustments in financial position.

Actuarial Valuation Process

The financing diagram on the next page shows the relationship between the two fundamentally different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program), and is thus an ***increasing contribution method***; and the ***level contribution method*** which equalizes contributions between the generations.

The actuarial valuation is the mathematical process by which the level contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

A. ***Census Data***, furnished by plan administrator
   Retired lives now receiving benefits
   Former employees with vested benefits not yet payable
   Active employees

B. + ***Asset data*** (cash & investments), furnished by plan administrator

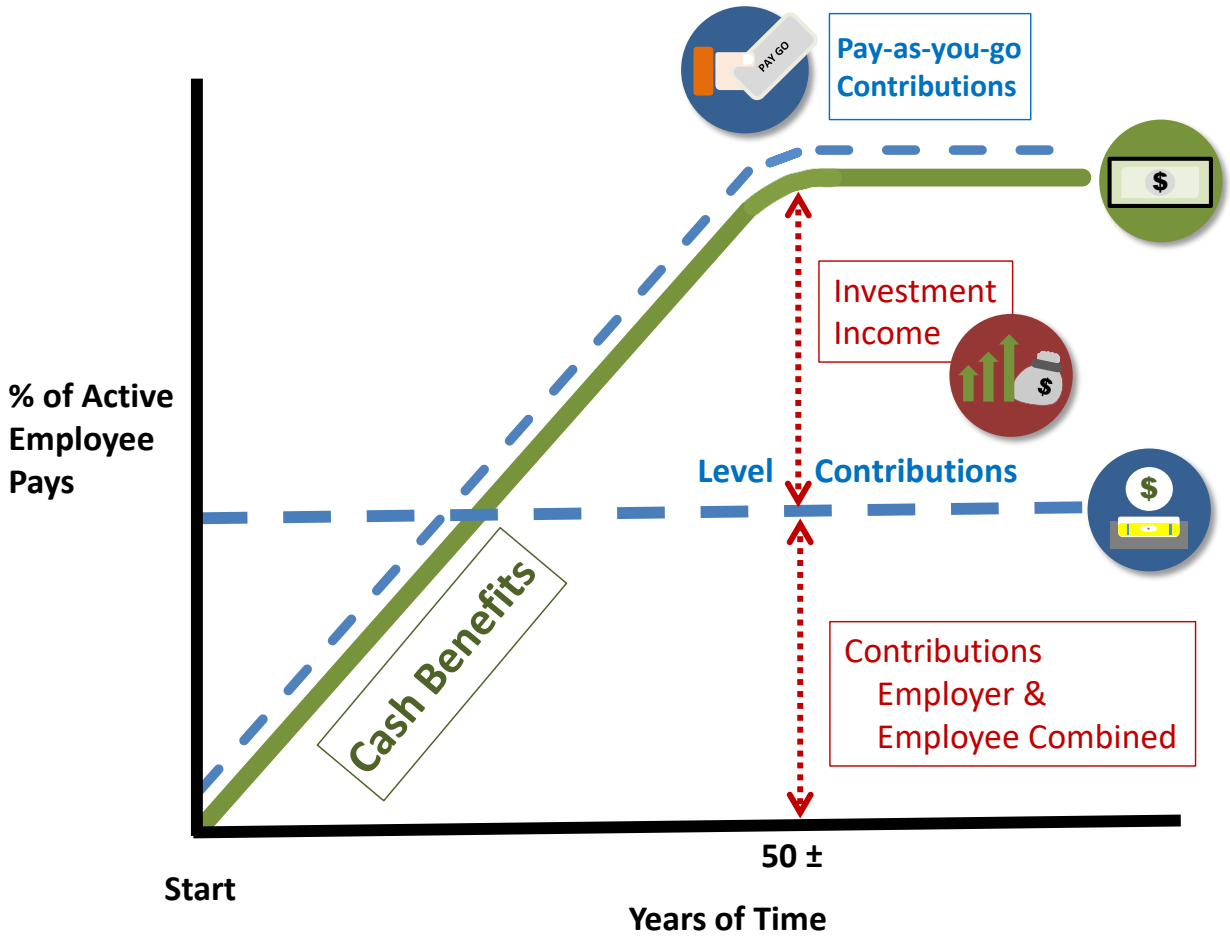
C. + **Benefit provisions** that establish eligibility and amounts of payments to members

D. + ***Assumptions concerning future financial experiences in various risk areas***, which assumptions are established by the Board of Trustees after consulting with the actuary

E. + ***The funding method*** for employer contributions (the long-term planned pattern for employer contributions)

F. + ***Mathematically combining the assumptions, the funding method, and the data***

G. = Determination of:
   Plan financial position, and/or
   New Employer Contribution Rate



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

- **Economic Risk Areas**
  - Rates of investment return
  - Rates of pay increase
  - Changes in active member group size
- **Non-Economic Risk Areas**
  - Ages at actual retirement
  - Rates of mortality
  - Rates of withdrawal of active members (turnover)
  - Rates of disability

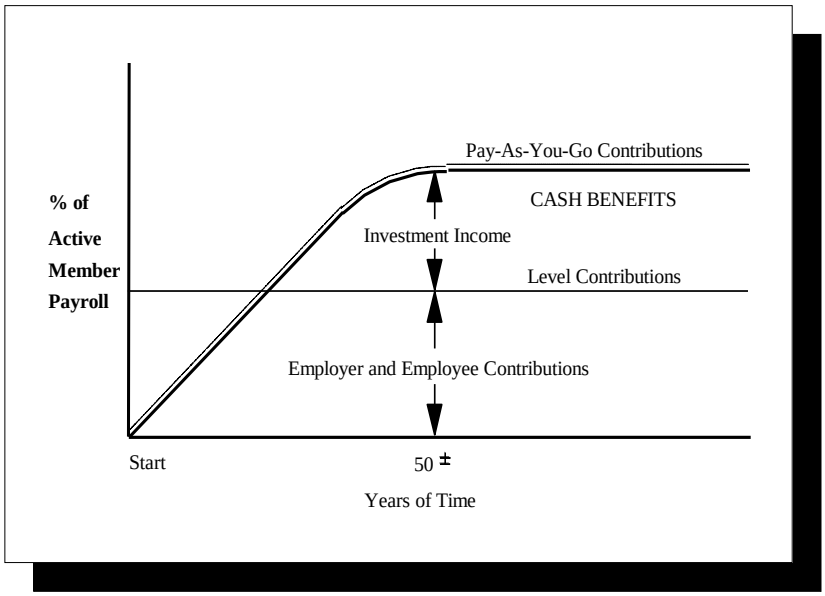
SECTION G

ACTUARIAL ASSUMPTIONS

Selection of Assumptions Used in Actuarial Valuations

Economic Assumptions

Investment return
Pay increases to individual employees
Active member group size and
total payroll growth



Demographic Assumptions

Actual ages at service retirement
Disability while actively employed
Separations before retirement
Mortality after retirement
Mortality before retirement

Relationship Between Plan Governing Body and the Actuary

The actuary should have the primary responsibility for choosing the ***demographic*** assumptions used in the actuarial valuation, making use of specialized training and experience.

Guidance regarding the selection of economic assumptions for measuring pension obligations is provided by Actuarial Standards of Practice (ASOP) No. 27. The standard requires that the selected economic assumptions be consistent with each other. That is, the selection of the investment return assumption should be consistent with the selection of the payroll growth and inflation assumptions.

ASOP No. 27 defines a reasonable economic assumption as an assumption that has the following characteristics: (a) It is appropriate for the purpose of the measurement; (b) It reflects the actuary's professional judgment; (c) It takes into account historical and current economic data that is relevant as of the valuation date; (d) It reflects the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data, or a combination thereof; and (e) It has no significant bias (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation or plan provisions that are difficult to measure are included and disclosed under Section 3.5.1, or when alternative assumptions are used for the assessment of risk.

Summary of Assumptions Used in Actuarial Valuations for the Arkansas Teacher Retirement System Assumptions Adopted by the Board of Trustees After Consulting with Actuary

The actuarial assumptions used in the valuation are shown in this section. The rationale for the assumptions is provided in the Experience Study covering the period July 1, 2010 through June 30, 2015. The Board of Trustees adopts the actuarial assumptions used for actuarial valuation purposes after consulting with the actuary. The actuarial assumptions represent estimates of future experience.

Economic Assumptions

The ***price inflation*** assumption is 2.50% although no specific Price Inflation is needed for this valuation. It is assumed that the 3% COLA will always be paid.

The investment return rate used in the valuation was 7.25% per year, compounded annually (net after administrative expenses). This rate was first used for the ***June 30, 2021*** valuation. The assumed real rate of return over price inflation is 4.75%.

The ***wage inflation*** assumption is 2.75%. This consists of 2.50% related to pure price inflation and 0.25% related to general economic improvements. This assumption was first used for the ***June 30, 2017*** valuation.

Pay increase assumptions for individual active members are shown on page G-9. Part of the assumption for each service year is for a merit and/or seniority increase, and the other 2.75% recognizes wage inflation. These rates were first used for the ***June 30, 2021*** valuation.

The Active Member Group (Active, T-DROP, RTW) size is assumed to remain constant at its present level.

Total active member payroll is assumed to increase 2.75% per year, which is the portion of the individual pay increase assumptions attributable to wage inflation. This rate was first used for the ***June 30, 2017*** valuation.

Non-Economic Assumptions

The mortality tables used were the Pub-2010 General Healthy Retired, General Disabled Retiree and General Employee Mortality amount weighted tables for males and females. Mortality rates were adjusted for future mortality improvements using projection scale MP-2020 from 2010.

A limited fluctuation credibility procedure was used to determine the appropriate scaling factor of each gender and each member classification (see the 2015-2020 Experience Study), and are shown below:

	Scaling Factor
Healthy Male Retirees	**105%**
Healthy Female Retirees	**105%**
Disabled Male Retirees	**104%**
Disabled Female Retirees	**104%**
Male Active Members	**100%**
Female Active Members	**100%**

Related values are shown on page G-4. These tables were first used for the ***June 30, 2021*** valuation.

The probabilities of retirement for members eligible to retire are shown on pages G-5 and G-6. The rates for full retirement and reduced retirement were first used in the ***June 30, 2021*** valuation.

The probabilities of withdrawal from service, ***death-in-service*** and ***disability*** are shown for sample ages on pages G-7 and G-8. These rates were first used in the ***June 30, 2021*** valuation.

The entry age actuarial cost method of valuation was used in determining accrued liabilities and normal cost. TDROP members are treated as active members. Normal cost runs from the date of entry to the date of retirement.

Differences in the past between assumed experience and actual experience ("actuarial gains and losses") become part of actuarial accrued liabilities.

Unfunded actuarial accrued liabilities are amortized to produce contribution amounts (the total of principal & interest) which are level percents of payroll contributions.

These cost methods were first used in the June 30, 1986 valuation.

The Fiscal Year 2022 employer and member contribution rates were 14.75% and 6.75%, respectively. The employer and member rates are scheduled to increase to an ultimate level of 15% and 7%, respectively in Fiscal Year 2023.

Asset Valuation Method. A market value related asset method is used as described on page D-1. This method was first used in the June 30, 1995 valuation. It was modified following the 1997-2002 Experience Study to include an 80% - 120% market value corridor.

The data about persons now covered and about present assets was furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary. Members whose dates of birth were not supplied were assumed to be 40 years old on the valuation date. Members whose salaries were not supplied and that entered T-DROP were assumed to have the group average pay of those with salary data as of the valuation date that entered T-DROP.

Single Life Retirement Values*

Sample Attained Ages in 2022	Present Value of $1.00 Monthly for Life		Present Value of $1 Monthly for Life Increasing 3.0% Annually		Future Life Expectancy (Years)		Percent Dying within Next Year	
	Male	Female	Male	Female	Male	Female	Male	Female
40	$159.89	$162.44	$213.33	$218.19	45.27	48.29	0.09 %	0.05 %
45	155.49	158.74	204.88	210.83	40.03	43.00	0.12 %	0.07 %
50	149.75	153.88	194.42	201.63	34.93	37.83	0.29 %	0.22 %
55	142.77	148.03	182.14	190.85	30.06	32.88	0.44 %	0.31 %
60	133.94	140.35	167.43	177.49	25.36	28.04	0.67 %	0.43 %
65	123.01	130.34	150.20	161.15	20.90	23.34	0.97 %	0.62 %
70	109.50	117.58	130.24	141.69	16.68	18.84	1.49 %	0.99 %
75	93.52	102.01	108.12	119.49	12.80	14.64	2.52 %	1.77 %
80	75.88	84.29	85.20	95.85	9.39	10.88	4.54 %	3.27 %
85	58.49	65.92	63.89	72.80	6.62	7.72	8.35 %	6.20 %
Base	2705 x 1.05	2706 x 1.05	2705 x 1.05	2706 x 1.05				
Projection	964	965	964	965				

* *Rates and life expectancies in future years are determined by the MP-2020 projection scale.*

Age	Benefit Increasing 3.0% Yearly	Portion of Age 60 Lives Still Alive	
		Male	Female
60	$100.00	100%	100%
65	115.00	96%	98%
70	130.00	91%	94%
75	145.00	84%	89%
80	160.00	73%	81%
Ref		2705 x 1.05	2706 x 1.05

Probabilities of Retirement for Members

Retirement Ages	% of Active Participants Retiring with Unreduced Benefits			
	Education		Support	
	Male	Female	Male	Female
48	8%	7%	8%	8%
49	8%	7%	8%	8%
50	8%	7%	8%	8%
51	8%	7%	8%	8%
52	8%	7%	8%	8%
53	8%	7%	8%	8%
54	8%	7%	8%	8%
55	8%	8%	8%	8%
56	10%	8%	8%	8%
57	10%	10%	8%	11%
58	10%	12%	8%	11%
59	14%	15%	8%	15%
60	17%	18%	13%	15%
61	24%	20%	13%	16%
62	27%	29%	28%	26%
63	27%	26%	25%	20%
64	27%	28%	25%	24%
65	60%	57%	57%	59%
66	60%	57%	47%	49%
67	50%	42%	44%	40%
68	45%	42%	44%	40%
69	45%	42%	44%	40%
70	45%	42%	44%	40%
71	45%	42%	44%	40%
72	45%	42%	44%	40%
73	45%	42%	44%	40%
74	45%	42%	44%	40%
75	100%	100%	100%	100%
Ref	3245	3246	3247	3248

These rates are based upon data presented in the 2015-2020 experience study and were first used in the 2021 valuation.

Probabilities of Reduced Retirement for Members

Retirement Ages	% of Active Participants Retiring with Reduced Benefits			
	Education		Support	
	Male	Female	Male	Female
45	1.0%	1.0%	2.0%	3.0%
46	1.0%	1.0%	2.0%	3.0%
47	1.0%	1.0%	2.0%	3.0%
48	1.0%	1.0%	2.0%	3.0%
49	1.0%	1.0%	2.0%	3.0%
50	2.0%	2.0%	3.0%	4.0%
51	3.0%	2.0%	3.0%	4.0%
52	3.0%	3.0%	4.0%	4.0%
53	4.0%	4.0%	4.0%	4.0%
54	5.0%	4.0%	5.0%	4.0%
55	6.0%	5.0%	6.0%	4.0%
56	6.0%	5.0%	7.0%	6.0%
57	8.0%	5.0%	7.0%	6.0%
58	9.0%	6.0%	7.0%	6.0%
59	6.0%	6.0%	7.0%	6.0%
Ref	3249	3250	3251	3252

These rates are based upon data presented in the 2015-2020 experience study and were first used in the 2021 valuation.

Duration of T-DROP for Members

Present T-DROP members are assumed to remain in T-DROP according to the following table:

Entry Age	Assumed Duration Years
50-56	7
57	6
58	5
59+	4

T-DROP Participation

It was assumed that members will participate in the T-DROP to the extent that participating in the T-DROP would provide the highest value of benefits.

Teachers
Separations from Active Employment
Before Age and Service Retirement

Sample Ages in 2022	Percent of Active Members Separating within the Next Year						
	Years of Service	Death *		Disability		Other	
		Male	Female	Male	Female	Male	Female
	0					17.00%	13.00%
	1					13.80%	11.30%
	2					11.30%	10.50%
	3					8.90%	8.30%
	4					6.30%	6.50%
25	5 & Up	0.03%	0.01%	0.02%	0.02%	5.80%	6.50%
30		0.05%	0.02%	0.02%	0.02%	4.20%	4.80%
35		0.07%	0.03%	0.02%	0.03%	2.90%	3.20%
40		0.09%	0.04%	0.04%	0.07%	2.00%	2.10%
45		0.10%	0.06%	0.13%	0.17%	1.70%	1.70%
50		0.14%	0.08%	0.31%	0.37%	1.60%	1.70%
55		0.21%	0.13%	0.61%	0.63%	1.60%	1.70%
60		0.33%	0.20%	0.82%	0.89%	1.50%	1.60%
65		0.47%	0.28%	0.82%	0.89%	1.20%	1.30%
Ref:		2723 x 1.00	2724 x 1.00	1217 x 1	1218 x 1	1364 1574	1365 1575

* *Rates and life expectancies in future years are determined by the MP-2020 projection scale.*

Support Employees
Separations from Active Employment
Before Age and Service Retirement

Sample Ages in 2022	Years of Service	Percent of Active Members Separating within the Next Year					
		Death *		Disability		Other	
		Male	Female	Male	Female	Male	Female
	0					54.50%	48.50%
	1					29.90%	27.20%
	2					19.80%	19.00%
	3					15.50%	15.30%
	4					12.00%	12.80%
25	5 & Up	0.03%	0.01%	0.02%	0.01%	10.60%	9.90%
30		0.05%	0.02%	0.05%	0.03%	7.80%	7.00%
35		0.07%	0.03%	0.10%	0.04%	5.70%	5.10%
40		0.09%	0.04%	0.13%	0.08%	4.40%	4.30%
45		0.10%	0.06%	0.21%	0.16%	3.70%	4.00%
50		0.14%	0.08%	0.45%	0.33%	3.50%	3.90%
55		0.21%	0.13%	0.88%	0.61%	3.50%	3.70%
60		0.33%	0.20%	1.36%	0.79%	3.40%	3.20%
65		0.47%	0.28%	1.36%	0.79%	2.70%	2.50%
Ref:		2723 x 1.00	2724 x 1.00	1219 x 1	1220 x 1	1366 1576	1367 1577

* *Rates and life expectancies in future years are determined by the MP-2020 projection scale.*

Individual Pay Increases

Education			
	Pay Increase Assumptions for an Individual Member		
Service	Merit & Seniority	Base (Economic)	Increase Next Year
1	2.50%	2.75%	5.25%
2	2.20%	2.75%	4.95%
3	1.90%	2.75%	4.65%
4	1.80%	2.75%	4.55%
5	1.70%	2.75%	4.45%
6	1.60%	2.75%	4.35%
7	1.50%	2.75%	4.25%
8	1.40%	2.75%	4.15%
9	1.30%	2.75%	4.05%
10	1.25%	2.75%	4.00%
11	1.20%	2.75%	3.95%
12	1.15%	2.75%	3.90%
13	1.10%	2.75%	3.85%
14	1.05%	2.75%	3.80%
15	1.00%	2.75%	3.75%
16	0.95%	2.75%	3.70%
17	0.85%	2.75%	3.60%
18	0.75%	2.75%	3.50%
19	0.65%	2.75%	3.40%
20	0.55%	2.75%	3.30%
21	0.50%	2.75%	3.25%
22	0.45%	2.75%	3.20%
23	0.40%	2.75%	3.15%
24	0.30%	2.75%	3.05%
25	0.20%	2.75%	2.95%
26	0.15%	2.75%	2.90%
27	0.10%	2.75%	2.85%
28	0.25%	2.75%	3.00%
29+	0.00%	2.75%	2.75%
Ref:	931		

Support			
	Pay Increase Assumptions for an Individual Member		
Service	Merit & Seniority	Base (Economic)	Increase Next Year
1	3.00%	2.75%	5.75%
2	2.60%	2.75%	5.35%
3	1.60%	2.75%	4.35%
4	1.45%	2.75%	4.20%
5	1.35%	2.75%	4.10%
6	1.25%	2.75%	4.00%
7	1.20%	2.75%	3.95%
8	1.15%	2.75%	3.90%
9	1.10%	2.75%	3.85%
10	1.05%	2.75%	3.80%
11	1.00%	2.75%	3.75%
12	0.95%	2.75%	3.70%
13	0.90%	2.75%	3.65%
14	0.80%	2.75%	3.55%
15	0.75%	2.75%	3.50%
16	0.70%	2.75%	3.45%
17	0.65%	2.75%	3.40%
18	0.60%	2.75%	3.35%
19	0.50%	2.75%	3.25%
20	0.45%	2.75%	3.20%
21	0.40%	2.75%	3.15%
22	0.35%	2.75%	3.10%
23	0.30%	2.75%	3.05%
24	0.25%	2.75%	3.00%
25	0.25%	2.75%	3.00%
26	0.25%	2.75%	3.00%
27	0.25%	2.75%	3.00%
28	0.40%	2.75%	3.15%
29+	0.00%	2.75%	2.75%
Ref:	932		

Miscellaneous and Technical Assumptions
June 30, 2022

Marriage Assumption:	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male members are assumed to have a beneficiary three years younger and female members are assumed to have a beneficiary two years older.
Pay Increase Timing:	Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing:	Decrements are assumed to occur mid-year, with the exception of normal and early retirement, which are assumed to occur at the beginning of the year. This implies that people who worked the entire school year are reported as active members even if they retired at the end of the year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and the service nearest whole year on the date of the valuation.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability does not operate during the first 5 years of service. Disability and turnover do not operate during retirement eligibility.
Normal Form of Benefit:	The assumed normal form of benefit is the straight life form.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. The payroll used for this purpose is payroll for all active members plus payroll for members in the T-DROP and retirees who returned to work.
Liability Adjustments:	The liability calculations assume that the non-contributory and contributory multipliers for the first ten years of service are at the standard rate at the time the service is earned.
Data Adjustments:	Members whose dates of birth were not supplied were assumed to be 40 years old on the valuation date. Members whose salaries were not supplied and that entered the T-DROP were assumed to have the group average pay of those with salary data as of the valuation that entered the T-DROP.

SECTION H

GLOSSARY

Glossary

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Accumulated Benefit Obligation. The actuarial present value of vested and non-vested benefits based on service to date and past and current salary levels.

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent. A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

***Actuarial Present Value of Credited Projected Benefits or Pension Benefit Obligation*.** The present value of future benefits based on service to date and the effect projected salary increases.

Actuary. A person who is trained in the applications of probability and compound interest to solve problems in business and finance that involve payment of money in the future, contingent upon the occurrence of future events. Most actuaries in the United States are Members of the American Academy of Actuaries. The Society of Actuaries is an international research, education and membership organization for actuaries in the life and health insurance, employee benefits, and pension fields. It administers a series of examinations leading initially to Associateship and the designation A.S.A. and ultimately to Fellowship with the designation F.S.A. The federal government certifies actuaries to practice under ERISA with the designation of E.A.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Glossary

Experience Gain (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, in accordance with the actuarial cost method being used.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Plan Termination Liability. The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a "going concern" basis and is not normally determined in a routine actuarial valuation.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability."

Valuation Assets. The value of current plan assets recognized for valuation purposes. Generally based on book value plus a portion of unrealized appreciation or depreciation.

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December 9, 2022

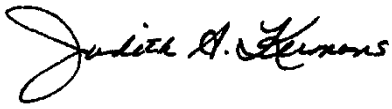
Mr. Clint Rhoden
Executive Director
Arkansas Teacher Retirement System
1400 West Third
Little Rock, Arkansas 72201

Re: Report of June 30, 2022 Actuarial Valuation of Active and Inactive Members

Dear Mr. Rhoden:

Enclosed are 15 copies of the report. If you need anything else, please call.

Sincerely,
Gabriel, Roeder, Smith & Company



Judith A. Kermans, EA, FCA, MAAA

JAK:bd
Enclosures

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Arkansas Teacher Retirement System

Annual Actuarial Valuation of Annuities Being Paid to Retirees and Beneficiaries

June 30, 2022

OUTLINE OF CONTENTS
Report of Actuarial Valuation of ATRS Retirees and Beneficiaries

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December 9, 2022

Board of Trustees
Arkansas Teacher Retirement System
Little Rock, Arkansas

Dear Board Members:

Presented in this report are the results of the ***Annual Actuarial Valuation of annuities being paid to retirees and beneficiaries*** of the Arkansas Teacher Retirement System (ATRS).

The date of the valuation was June 30, 2022 (using amounts payable as of July 1, 2022).

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the Retirement System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The valuation was based upon census data and financial information provided by the System's administrative staff. Preparation of this data requires considerable staff time. The helpful cooperation of the Arkansas Teacher Retirement System staff in furnishing the data is acknowledged with appreciation. 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 data provided by ATRS.

This report was prepared using certain assumptions approved by the Board. The actuarial assumptions used for valuation purposes are summarized in the Appendix. These assumptions reflect experience during the period July 1, 2015 to June 30, 2020 and expectations for the future.

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

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; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. The scope of an actuarial valuation does not contain an analysis of the potential range of such future measurements.

This is one of multiple documents comprising the actuarial results. The other documents include the active and inactive valuation dated December 9, 2022, and the presentation dated December 5, 2022.

To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the Arkansas Teacher Retirement System as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. The actuarial assumptions used for the valuation produce results which, individually and in the aggregate, are reasonable.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. Brian B. Murphy, Judith A. Kermans and Heidi G. Barry are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The actuaries submitting this report are independent of the plan sponsor.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

Brian B. Murphy, FSA, EA, FCA, MAAA, PhD

Judith A. Kermans, EA, FCA, MAAA

Heidi G. Barry, ASA, FCA, MAAA

BBM/JAK/HGB:ah

Comments

As expected, during the year ended June 30, 2022 the number of retired lives increased, as did the total amount being paid monthly to retired lives.

The financing diagram on page 6 shows the general pattern in which cash benefits increase (the green line). The schedule below shows how ATRS history illustrates the general pattern.

	Retired Lives Receiving Benefits		
June 30	No.	Annual Amounts	% of Active Payroll
		(Millions)	
1967	3,846	$ 6.27	
1972	5,453	11.08	
1977	7,524	23.96	
1982	8,828	36.64	
1987	10,526	66.45	10.0%
1992	12,033	115.50	10.7%
1997	14,233	194.90	15.0%
1998	14,802	220.38	16.1%
1999	15,887	248.75	17.4%
2000	16,657	280.14	18.9%
2001	17,778	309.03	19.8%
2002	19,199	334.15	20.5%
2003	20,271	359.98	21.4%
2004	21,428	386.23	22.1%
2005	22,680	415.04	21.1%
2006	24,153	449.77	21.6%
2007	25,611	484.55	22.1%
2008	26,801	515.56	22.7%
2009	28,818	564.59	23.5%
2010	30,587	612.77	24.8%
2011	32,099	657.08	23.3%
2012	34,160	709.17	25.3%
2013	36,254	763.76	27.1%
2014	38,478	822.19	28.8%
2015	40,748	916.62	31.9%
2016	43,095	983.87	34.1%
2017	45,092	1,044.74	35.8%
2018	46,824	1,099.35	36.8%
2019	48,677	1,146.74	37.9%
2020	50,133	1,194.82	38.8%
2021	51,405	1,242.70	38.8%
2022	52,748	1,293.75	39.0%

A significant financial goal for the Arkansas Teacher Retirement System was to reach a point in time where System assets fully covered the liabilities for future benefit payments to retirees and beneficiaries then on rolls. This goal was achieved in 1980 and retired life liabilities continue to be 100% funded.

Other Observations

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.25% on the actuarial value of assets), it is expected that:

1) The unfunded actuarial accrued liabilities will be fully amortized after 26 years;
2) The funded status of the plan will increase gradually towards a 100% funded ratio; and
3) The unfunded accrued liability will increase for several years before beginning to decline.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in other words of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

Limitations of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

FINANCIAL PRINCIPLES

Financial Principles and Operational Techniques

Promises Made and To Be Paid For. As each year is completed, the System in effect hands an "IOU" to each member then acquiring a year of service credit. The "IOU" says: "The Arkansas Teacher Retirement System owes you one year's worth of retirement benefits, payments in cash commencing when you qualify for retirement."

The related ***key financial questions*** are:

Which generation of taxpayers contributes the money to cover the IOU?
The present taxpayers, who receive the benefit of the member's present year of service?
Or the future taxpayers, who happen to be in Arkansas at the time the IOU becomes a cash demand?

The financial objective of the ATRS is that this year's taxpayers contribute the money to cover the IOUs being handed out this year so that ***the employer contribution rate will remain approximately level from generation to generation*** -- our children and our grandchildren will not have to contribute greater percents of pay than we contribute now. This objective was set forth in Act 793 of 1977.

(There are systems which have ***a design for deferring contributions to future taxpayers***, lured by a lower contribution rate now and putting aside the fact that the contribution rate must then relentlessly grow much greater over decades of time -- consume now, and let your children face higher contribution rates after you retire.)

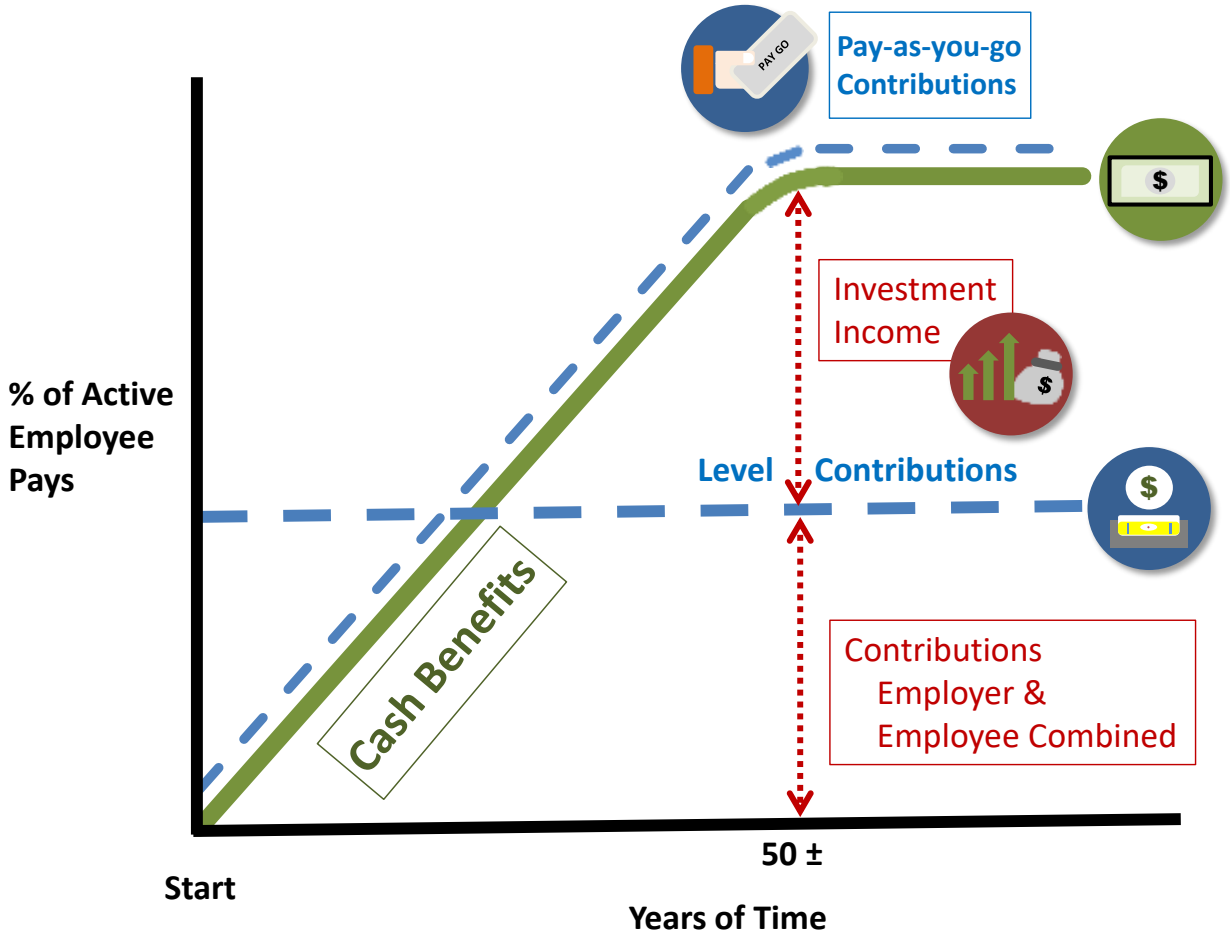
An inevitable byproduct of the level-cost design is the accumulation of reserve assets for decades and the income produced when the assets are invested. ***Investment income*** becomes the ***third and largest contributor*** for benefits to employees, and is interlocked with the contribution amounts required from employees and employers.

Translated to actuarial terminology, this level-cost objective means that the contribution rates must total at least the following:

> Normal Cost (the cost of members' service being rendered this year)
> ... plus ...
> Interest on Unfunded Actuarial Accrued Liabilities (unfunded accrued liabilities are the difference between (i) liabilities for service already rendered and (ii) the accrued assets of the plan).

Computing Contributions to Support System Benefits. From a given schedule of benefits and from the employee data and asset data furnished, the actuary determines the contribution rates to support the benefits, by means of ***an actuarial valuation***. An actuarial valuation has a number of ingredients such as: the rate of investment income which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of pay increases; and the assumed age or ages at actual retirement. In an actuarial valuation, assumptions must be made as to what the above rates will be, for the next year and for decades in the future. Only the subsequent actual experience of the System can indicate the degree of accuracy of the assumptions.

Reconciling Differences Between Assumed Experience and Actual Experience. Once actual experience has occurred and been observed, it will not coincide exactly with assumed experience, regardless of the accuracy of the assumptions or the skill of the actuary and the precision of the calculations made. The future can be predicted with considerable but not complete precision. ATRS copes with these continually changing differences by having annual actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is continual adjustments in financial position.



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

- **Economic Risk Areas**
  - Rates of investment return
  - Rates of pay increase
  - Changes in active member group size
- **Non-Economic Risk Areas**
  - Ages at actual retirement
  - Rates of mortality
  - Rates of withdrawal of active members (turnover)
  - Rates of disability

Actuarial Valuation Process

The financing diagram on the preceding page shows the relationship between the two fundamentally different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program), and is thus an ***increasing contribution method***; and the ***level contribution method*** which equalizes contributions between the generations.

The actuarial valuation is the mathematical process by which the level contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

A. ***Census data***, furnished by plan administrator

Retired lives now receiving benefits
Former employees with vested benefits not yet payable
Active employees

B. + ***Asset data*** (cash & investments), furnished by plan administrator

C. + ***Benefit provisions*** that establish eligibility and amounts of payments to members

D. + ***Assumptions concerning future financial experience in various risk areas***, which assumptions are established by the Board of Trustees after consulting with the actuary

E. + ***The funding method*** for employer contributions (the long-term planned pattern for employer contributions)

F. + ***Mathematically combining the assumptions, the funding method, and the data***

G. = Determination of:

Plan financial position, and/or
New Employer Contribution Rate

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, material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base. In a fixed rate plan with unfunded liabilities, a reduction in covered payroll can have a negative effect on the system as actual employer contributions are based on a lower than expected payroll;
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; and
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. Teacher shortages and reductions in school age populations may have an effect on the System other than 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 timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures are discussed below and on the following pages. An additional historical summary of plan maturity measures can be found on page 11.

	2022	2021	2020	2019	2018
Ratio of the Market Value of Assets to Total Payroll	5.9	6.7	5.7	6.1	6.1
Ratio of Actuarial Accrued Liability to Payroll	7.4	7.5	7.6	7.5	7.3
Ratio of Actives to Retirees and Beneficiaries	1.4	1.4	1.4	1.5	1.5
Ratio of Net Cash Flow to Market Value of Assets	-1.0%	-3.2%	-3.9%	-3.6%	-3.5%
Duration of the Present Value of Future Benefits	14.03	14.02	13.83	13.82	13.86

Ratio of the Market Value of Assets to Payroll

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. The market value of assets is currently 5.9 times the payroll indicating that a return on assets 2% different from assumed would equal approximately 12% of payroll. Such a change could affect the amortization period by approximately five years based on 2022 results. While asset smoothing would reduce the effect, asset gains and losses much larger than 2% are common. An increasing level of this maturity measure generally indicates an increasing volatility in the amortization period.

Ratio of Actuarial Accrued Liability to Payroll

As the ratio of actuarial accrued liability to payroll increases, the amortization period becomes increasingly sensitive to the effects of demographic gains and losses, and assumption changes. For example, a 1% demographic gain or loss would correspond to 7.4% of payroll and would affect the amortization period by three years based on the 2022 results.

Ratio of Actives to Retirees and Beneficiaries

A young plan with many active members and few retirees will have a high ratio of actives 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 benefits and expenses exceed contributions, and existing funds may be 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.

Plan Maturity Measures (Concluded)

Duration of Present Value of Future Benefits

The modified duration of the present value of future benefits may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, the current duration of 14.0 (which is based on a 7.25% discount rate) indicates that the present value of future benefits would increase approximately 14.0% if the assumed rate of return were lowered 1%. Such a change could affect the amortization period by 20 years or more.

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.

Plan Maturity Measures (Based on Market Value of Assets)

Valuation Date June 30	(1) Accrued Liabilities (AAL)	(2) Market Value of Assets	(3) Unfunded AAL (1)-(2)	(4) Valuation Payroll	(5) % Change in Payroll	(6) Funded Ratio (2)/(1)	(7) Annuitant Liabilities (AnnLiab)	(8) AnnLiab/ AAL (7)/(1)	(9) Liability/ Payroll (1)/(4)	(10) Assets/ Payroll (2)/(4)	(11) Est. Porfolio Std. Dev.	(12) Std. Dev. % of Pay (10)x(11)	(13) Unfunded/ Payroll (3)/(4)	(14) Net External Cash Flow (NECF)	(15) NECF/ Assets (14)/(2)	(16) Portfolio Rate of Return	(17) 10-year Trailing Average
2012	$ 16,139	$ 11,484	$ 4,655	$ 2,803		71.2%	$ 7,649	47.4%	575.8%	409.7%			166.1%	$ (285)	-2.5%	-1.1%	6.6%
2013#	16,718	12,830	3,888	2,819	0.6%	76.7%	8,181	48.9%	593.0%	455.1%			137.9%	(337)	-2.6%	14.9%	8.0%
2014	17,310	14,856	2,454	2,851	1.1%	85.8%	8,777	50.7%	607.2%	521.1%			86.1%	(395)	-2.7%	19.2%	8.2%
2015	18,136	15,036	3,100	2,874	0.8%	82.9%	9,778	53.9%	631.0%	523.1%			107.9%	(445)	-3.0%	4.3%	7.7%
2016	18,812	14,559	4,253	2,888	0.5%	77.4%	10,430	55.4%	651.3%	504.0%			147.3%	(505)	-3.5%	0.2%	6.3%
2017#*	20,298	16,285	4,013	2,922	1.2%	80.2%	11,337	55.9%	694.7%	557.4%			137.3%	(556)	-3.4%	16.0%	6.0%
2018	20,935	17,493	3,442	2,986	2.2%	83.6%	11,851	56.6%	701.1%	585.8%	12.7%	77.3%	115.3%	(607)	-3.5%	11.4%	7.6%
2019	21,709	17,742	3,967	3,027	1.4%	81.7%	12,460	57.4%	717.2%	586.1%	12.5%	76.3%	131.1%	(642)	-3.6%	5.2%	10.4%
2020	22,352	16,902	5,450	3,078	1.7%	75.6%	12,890	57.7%	726.2%	549.1%	12.5%	71.5%	177.1%	(665)	-3.9%	-1.0%	8.8%
2021*	23,987	21,469	2,518	3,205	4.1%	89.5%	13,596	56.7%	748.4%	669.8%	13.8%	92.1%	78.6%	(677)	-3.2%	31.7%	9.6%
2022	24,697	19,679	5,018	3,320	3.6%	79.7%	14,044	56.9%	743.8%	592.7%	13.7%	81.1%	151.1%	(192)	-1.0%	-7.5%	8.9%

(*) ATRS had experience studies in these years leading to a change or "true up" in actuarial assumptions. A pattern of periodic studies is a sign of a well-run system and suggests the extent to which the liability measures the actuary provides are likely to be realistic.

(#) ATRS had benefit changes in these years. Benefit increases cause liabilities to rise; benefit decreases cause liabilities to fall. In either case benefit changes affect the year by year comparability of the measures on this page.

(6). The Funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

(9) and (10) The ratios of liabilities and assets to payroll gives an indication of both maturity and volatility. Many systems have values between 500% and 700%. Values significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

(13) The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A value above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability within a reasonable time frame.

(14) and (15) The ratio of Net External Cash Flow to assets is an important measure of sustainability. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately -4%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.

(16) and (17) Investment return is probably the largest single risk that most systems face. The year by year return and the 10-year geometric average give an indicator of the past performance of the investment program. Of course, past performance is not a guarantee of future results. Some of the trailing averaged are distorted by the extraordinary events of 2008.

BENEFIT PROVISIONS

Summary of Benefit Provisions
June 30, 2022

1. **Post-Retirement Increases – A.C.A. §§ 24-7-713, 24-7-727 (compound COLA).** Each July 1, annuities are adjusted to be equal to the base annuity times 100% plus 3% for each full year in the period from the effective date of the base annuity to the current July 1. The base annuity is the amount of the member's annuity on the later of July 1, 2001 or the effective date of retirement. The July 1, 2009 cost of living adjustment for retirees was compounded. The annuity was set to 103% of the June 30, 2009 retirement benefit amount. After it was calculated on July 1, 2009, the base amount was reset to be the July 1, 2009 benefit amount. Future cost of living raises will be established by the new updated base amount. Future cost of living adjustments will be evaluated on an annual basis to determine if a simple or compound cost of living increase will be given, depending on the financial condition of the System.

2. **Lump Sum Death Benefit – A.C.A. § 24-7-720.** Beneficiaries of deceased active members or retirees with 10 or more years of ATRS credited service are eligible to receive a lump sum death benefit of up to $10,000. Resolution 2020-27 on September 28, 2021 set the minimum amount of the lump sum death benefit for all eligible members to six thousand six hundred sixty-seven dollars ($6,667); retired members who retired on or before July 1, 2007 will receive an additional six hundred sixty-six dollars and sixty cents ($666.60) for each contributory year of service credit up to the maximum amount of ten thousand dollars ($10,000); and all other members will receive an additional three hundred thirty-three dollars and thirty cents ($333.30) for each contributory year of service credit up to the maximum amount of ten thousand dollars ($10,000).

3. **Act 808 Retirement – A.C.A. § 24-4-732.** Any employee of a state agency who was an active member of the Arkansas Teacher Retirement System on April 8, 1987, and who qualified for retirement before January 1, 1988, could become a member of the Arkansas Public Employees Retirement System and retire from that system. All credited service was transferred to that system but the member's contributions were retained by the Arkansas Teacher Retirement System and the benefit amount is transferred monthly to the Arkansas Public Employees Retirement System. Each July 1, annuities are adjusted by 3% (compound escalator).

4. **Act 793 Retirement – A.C.A § 24-4-522.** Any employee who was a member of the rehabilitation services in 1977 was permitted to become a member of the Arkansas Public Employees Retirement System. Liabilities associated with prior service earned through June 30, 1978 remain in the Arkansas Teacher Retirement System. Future service is allocated to the Arkansas Public Employees Retirement System. Each July 1, annuities are adjusted by 3% (compound escalator).

5. **Retiree Benefit Stipend – A.C.A. § 24-7-713.** Each retired member as of June 30, 2008, with 5 or more years of ATRS credited service receives a $75 per month stipend. Members in T-DROP do not receive the $75 per month stipend until actual retirement. For all members retiring on or after July 1, 2008, a minimum of 10 years of ATRS credited service is required to receive the $75 per month stipend. The ATRS Board is allowed to set the stipend to a minimum of $1 per month and a maximum of $75 per month. By Board Resolution 2017-34 on November 13, 2017 the benefit stipend is removed from the base amount for all retirees and beneficiaries beginning in fiscal year 2019 and the benefit stipend will be reduced to $50.00 for fiscal year 2020 and beyond. The Resolution contains a "hold harmless" provision that prevents the lowering of the stipend if it would actually reduce the total monthly benefit. This would only affect retirees when the COLA is less than $25 per month.

6. **T-DROP Cash Balance Account.** Effective July 1, 2012, a T-DROP cash balance account was established that allows members exiting (retiring) from T-DROP to place all or a portion of their T-DROP proceeds into a Cash Balance Account (CBA) at ATRS. On November 13, 2017, by Resolution 2017-38 the Board set the CBA interest rate schedule based on years of participation as follows: 2.50% for year one, 2.75% for year two, 3.00% for year three, 3.25% for year four, 3.50% for year five, and 4.00% for year six and beyond. Each fiscal year, the Board can grant an incentive interest rate to encourage continued participation in the CBA program. For fiscal year 2022, the Board granted CBA participants an incentive rate of 1.0%, by Resolution 2021-36 on September 27, 2021.

7. **Optional Forms of Benefits – A.C.A. § 24-7-706:**

   Option 1 ***(Straight Life Annuity)***

   A member will receive the maximum monthly benefit for which he/she qualifies, throughout his/her lifetime. No monthly benefits will be paid to his/her beneficiary after the member's death. Should a member die before he/she has drawn benefits in an amount equal to his/her contributions plus earned interest, the balance will be paid to a designated beneficiary. The designated beneficiary may be anyone chosen by the member.

   Option A (100% Survivor Annuity)

   Under this option a member will receive a reduced annuity throughout his/her lifetime. Upon the member's death, the designated beneficiary will receive the same annuity for the balance of his/her lifetime.

   Option B (50% Survivor Annuity)

   Under this option a member will receive a reduced annuity throughout his/her lifetime. Upon the member's death, the designated beneficiary will receive one-half (1/2) of this annuity for the balance of his/her lifetime.

Option C (Annuity for Ten Years Certain and Life Thereafter)

A reduced monthly benefit payable for 120 months. After that time, or if the beneficiary dies prior to 120 months, a member's monthly allowance will revert to the amount he/she would have received under the regular plan and continue for life. If the member dies before receiving 120 payments, the designated beneficiary will receive a monthly benefit in the same amount until monthly benefits to both the member and the beneficiary equal 120 monthly payments. No further benefits are then payable to the beneficiary.

Pop-Up Election

Following the death of or a divorce from the member's designated beneficiary, his or her benefit reverts (pops-up) to the straight life annuity amount from the elected optional annuity amount. The member may then elect new beneficiaries in accordance with Arkansas Code and rules adopted by the ATRS board.

Option Factors are based upon a 5.0% interest rate and the RP-2014/MP2017 tables (static projection to 2022) adjusted with a 50% unisex mix.

Sample Benefit Computations for a Member Retiring July 1, 2022 with a Simple 3% COLA

Data for an example member is shown below.

Annual retirement benefit as of July 1, 2022 (excluding stipend): $30,000

Projected benefits, taking into account increases after retirement would be:

	Annual Amount		
Year Ended June 30	Base	Current	$ Increase
2023	$30,000	$30,000	$ 0
2024	30,000	30,900	900
2025	30,000	31,800	900
2026	30,000	32,700	900
2027	30,000	33,600	900

Thereafter, the amount would increase by $900 annually for life. Act 793 members and Act 808 members receive compound COLAs.

CHANGES IN PURCHASING POWER

Benefit Changes During Recent Years of Retirement and Related Changes in Purchasing Power (1990 $)

Year Ended June 30	Increase Beginning of Year	Benefit Dollars in Year*	Inflation (Loss) in Year#	Purchasing Power at Year End	
				1990 $	% of 1990
1990	$ - - - -	$ 11,000	- - - -	$ 11,000	100%
1991	330	11,330	(4.7)%	10,822	98%
1992	1,005	12,335	(3.1)%	11,429	104%
1993	1,045	13,380	(3.0)%	12,036	109%
1994	1,082	14,462	(2.5)%	12,693	115%
1995	400	14,862	(3.0)%	12,660	115%
1996	400	15,262	(2.8)%	12,652	115%
1997	772	16,034	(2.3)%	12,993	118%
1998	481	16,515	(1.7)%	13,161	120%
1999	1,383	17,898	(2.0)%	13,989	127%
2000	1,129	19,027	(3.7)%	14,336	130%
2001	1,406	20,433	(3.2)%	14,911	136%
2002	807	21,240	(1.1)%	15,337	139%
2003	562	21,802	(2.1)%	15,417	140%
2004	562	22,364	(3.3)%	15,314	139%
2005	562	22,926	(2.5)%	15,312	139%
2006	562	23,488	(4.3)%	15,037	137%
2007	562	24,050	(2.7)%	14,994	136%
2008	562	24,612	(5.0)%	14,611	133%
2009	562	25,174	1.4 %	15,161	138%
2010	755	25,929	(1.1)%	15,453	140%
2011	778	26,707	(3.6)%	15,370	140%
2012	778	27,485	(1.7)%	15,558	141%
2013	778	28,263	(1.8)%	15,723	143%
2014	778	29,041	(2.1)%	15,828	144%
2015	778	29,819	(0.1)%	16,232	148%
2016	778	30,597	(1.0)%	16,491	150%
2017	778	31,375	(1.6)%	16,638	151%
2018	778	32,153	(2.9)%	16,575	151%
2019	751	32,904	(1.6)%	16,687	152%
2020+	451	33,355	(0.6)%	16,807	153%
2021	751	34,106	(5.4)%	16,306	148%
2022	751	34,857	(9.1)%	15,281	139%
2023	751	35,608			
2024					

* *The $11,000 benefit used to begin this schedule is an arbitrary amount. A different beginning amount could show a different purchasing power amount, but the same in percent loss.*

\# *Based on Consumer Price Index, All Urban Consumers, United States City Average (June values).*

\+ *The Retiree Benefit Stipend was reduced by $300 in FY 2020.*

Benefit Changes During Recent Years of Retirement and Related Changes in Purchasing Power (2000 $)

Year Ended June 30	Increase Beginning of Year	Benefit Dollars in Year*	Inflation (Loss) in Year#	Purchasing Power at Year End	
				2000 $	% of 2000
2000	$ - - - -	$ 11,600	- - - -	$ 11,600	100%
2001	1,003	12,603	(3.2)%	12,207	105%
2002	523	13,126	(1.1)%	12,579	108%
2003	372	13,498	(2.1)%	12,668	109%
2004	372	13,870	(3.3)%	12,605	109%
2005	372	14,242	(2.5)%	12,624	109%
2006	372	14,614	(4.3)%	12,417	107%
2007	372	14,986	(2.7)%	12,400	107%
2008	372	15,358	(5.0)%	12,100	104%
2009	372	15,730	1.4 %	12,573	108%
2010	472	16,202	(1.1)%	12,815	110%
2011	486	16,688	(3.6)%	12,746	110%
2012	486	17,174	(1.7)%	12,902	111%
2013	486	17,660	(1.8)%	13,039	112%
2014	486	18,146	(2.1)%	13,125	113%
2015	486	18,632	(0.1)%	13,460	116%
2016	486	19,118	(1.0)%	13,675	118%
2017	486	19,604	(1.6)%	13,797	119%
2018	486	20,090	(2.9)%	13,745	118%
2019	459	20,549	(1.6)%	13,831	119%
2020+	159	20,708	(0.6)%	13,848	119%
2021	459	21,167	(5.4)%	13,431	116%
2022	459	21,626	(9.1)%	12,582	108%
2023	459	22,085			
2024					

** The $11,600 benefit used to begin this schedule is an arbitrary amount. A different beginning amount could show a different purchasing power amount, but the same in percent loss.*

 # Based on Consumer Price Index, All Urban Consumers, United States City Average (June values).

+ The Retiree Benefit Stipend was reduced by $300 in FY 2020.

Benefit Changes During Recent Years of Retirement and Related Changes in Purchasing Power (2010 $)

Year Ended June 30	Increase Beginning of Year	Benefit Dollars in Year*	Inflation (Loss) in Year#	Purchasing Power at Year End	
				2010 $	% of 2010
2010	$ - - - -	$ 11,900	- - - -	$ 11,900	100%
2011	357	12,257	(3.6)%	11,836	99%
2012	357	12,614	(1.7)%	11,981	101%
2013	357	12,971	(1.8)%	12,108	102%
2014	357	13,328	(2.1)%	12,188	102%
2015	357	13,685	(0.1)%	12,499	105%
2016	357	14,042	(1.0)%	12,699	107%
2017	357	14,399	(1.6)%	12,812	108%
2018	357	14,756	(2.9)%	12,764	107%
2019	330	15,086	(1.6)%	12,837	108%
2020+	30	15,116	(0.6)%	12,780	107%
2021	330	15,446	(5.4)%	12,391	104%
2022	330	15,776	(9.1)%	11,605	98%
2023	330	16,106			
2024					

** The $11,900 benefit used to begin this schedule is an arbitrary amount. A different beginning amount could show a different purchasing power amount, but the same in percent loss.*

 # Based on Consumer Price Index, All Urban Consumers, United States City Average (June values).

+ The Retiree Benefit Stipend was reduced by $300 in FY 2020.

VALUATION DATA

Summary of
Annuities Being Paid Retirees and Beneficiaries July 1, 2022
by Disbursing Account and Gender

Disbursing Account	Men		Women		Totals	
	No.	Annual Annuities	No.	Annual Annuities	No.	Annual Annuities
RETIREMENT RESERVE ACCOUNT						
Age & Service Annuities						
Retirees	10,383	$285,877,105	37,027	$912,135,578	47,410	$1,198,012,683
Beneficiaries	444	9,810,606	986	23,713,698	1,430	33,524,304
Totals	10,827	295,687,711	38,013	935,849,276	48,840	1,231,536,987
Disability						
Retirees	513	8,050,146	2,146	33,332,881	2,659	41,383,027
Beneficiaries	138	2,216,353	136	2,492,674	274	4,709,027
Totals	651	10,266,499	2,282	35,825,555	2,933	46,092,054
Act 793	72	1,122,756	67	566,412	139	1,689,168
Retirement Reserve Account	11,550	307,076,966	40,362	972,241,243	51,912	1,279,318,209
Act 808 Retirement Reserve Account	20	1,335,084	12	503,628	32	1,838,712
Total Retirement Reserve Account	11,570	308,412,050	40,374	972,744,871	51,944	1,281,156,921
SURVIVOR'S BENEFIT ACCOUNT						
Beneficiaries of Deceased Members	406	6,015,919	398	6,580,467	804	12,596,386
RETIREMENT SYSTEM TOTALS						
Total Annuities Being Paid	**11,976**	$314,427,969	**40,772**	$979,325,338	**52,748**	$1,293,753,307
Prior Year Totals	11,779	$305,396,793	39,626	$937,304,571	51,405	$1,242,701,364

Average Age	**72.0**	**71.8**	**71.8**

Summary of
Annuities Being Paid Retirees and Beneficiaries July 1, 2022
by Disbursing Account and Source of Financing

Disbursing Account	Annual Annuities		Total	
	Employee Financed	Employer Financed	No.	Annual Annuities
RETIREMENT RESERVE ACCOUNT				
Age & Service Annuities				
Retirees	$ 68,002,225	$ 1,130,010,458	47,410	$ 1,198,012,683
Beneficiaries	347,883	33,176,421	1,430	33,524,304
Totals	68,350,108	1,163,186,879	48,840	1,231,536,987
Disability				
Retirees	1,393,946	39,989,081	2,659	41,383,027
Beneficiaries	138,996	4,570,031	274	4,709,027
Totals	1,532,942	44,559,112	2,933	46,092,054
Act 793	112,021	1,577,147	139	1,689,168
Retirement Reserve Account	69,995,071	1,209,323,138	51,912	1,279,318,209
Act 808 Retirement Reserve Account	74,770	1,763,942	32	1,838,712
Total Retirement Reserve Account	70,069,841	1,211,087,080	51,944	1,281,156,921
SURVIVOR'S BENEFIT ACCOUNT				
Beneficiaries of Deceased Members	396,938	12,199,448	804	12,596,386
RETIREMENT SYSTEM TOTALS				
Total Annuities Being Paid	**$ 70,466,779**	**$ 1,223,286,528**	**52,748**	**$ 1,293,753,307**
Prior Year Totals	$ 72,241,409	$ 1,170,459,955	51,405	$ 1,242,701,364

Annuities Being Paid Retirees and Beneficiaries July 1, 2022 by Type of Annuity Being Paid

Type of Annuity	No.	Annual Amounts		
		Original Annuities	Base Annuities	Current Annuities
RETIREMENT RESERVE ACCOUNT				
Age & Service				
Option 1 (Basic single life)	38,468	$ 617,098,978	$ 702,879,935	$ 939,937,432
Option A (Joint & 100% Survivor)	5,508	94,907,492	107,427,937	144,844,545
Option B (Joint & 50% Survivor)	2,724	61,998,751	72,481,207	97,809,004
Option C (10-year certain)	710	12,294,866	12,421,694	15,421,702
Beneficiaries	1,430	26,739,759	23,985,625	33,524,304
Totals	48,840	813,039,846	919,196,398	1,231,536,987
Disability				
Option 1	2,222	23,706,475	25,436,063	34,359,351
Option A	358	3,982,125	4,004,215	5,327,844
Option B	79	1,205,552	1,277,898	1,695,832
Option C	0	-	-	-
Beneficiaries	274	3,339,543	3,313,728	4,709,027
Totals	2,933	32,233,695	34,031,904	46,092,054
Act 793	139	800,638	1,689,168	1,689,168
Retirement Reserve Account	51,912	846,074,179	954,917,470	1,279,318,209
Act 808 Retirement Reserve Account	32	596,879	1,838,712	1,838,712
Total Retirement Reserve Account	51,944	846,671,058	956,756,182	1,281,156,921
SURVIVOR'S BENEFIT ACCOUNT				
Beneficiaries of Deceased Members				
Age 0-17	128	1,138,253	1,136,742	1,252,522
Age 18-23	78	778,150	773,463	876,265
Other	598	6,981,465	7,795,494	10,467,599
Totals	804	8,897,868	9,705,699	12,596,386
RETIREMENT SYSTEM TOTALS				
Total Annuities Being Paid	52,748	$ 855,568,926	$ 966,461,881	$ 1,293,753,307

The Original Annuity is the annuity at the date of retirement (includes stipend).

The Base Annuity is the amount from which the 3.0% COLA is calculated.

The Current Annuity is the annuity payable at July 1, 2022 including the COLA granted on July 1.

Annuities Being Paid July 1, 2022
from the Retirement Reserve Account to
AGE AND SERVICE Retirees and Beneficiaries
by Attained Ages

Attained Age	Annual Amounts			
	No.	Original Annuities	Base Annuities	Current Annuities
Under 40	9	$ 168,402	$ 145,983	$ 195,449
40-44	7	107,659	98,437	119,753
45-49	16	206,141	197,573	211,384
50-54	339	9,249,784	9,032,408	9,906,034
55-59	1,307	35,508,697	35,338,824	41,917,671
60-64	6,534	125,668,288	127,210,287	156,237,318
65-69	11,733	207,598,865	218,862,618	282,218,960
70-74	12,479	207,664,237	232,037,790	318,134,255
75-79	8,515	128,392,820	155,220,654	220,282,904
80-84	4,651	61,774,715	81,777,093	117,276,127
85-89	2,167	25,696,158	38,428,947	55,169,625
90-94	869	9,140,424	16,526,531	23,689,820
95 & Up	214	1,863,656	4,319,253	6,177,687
Totals	**48,840**	**$813,039,846**	**$919,196,398**	**$1,231,536,987**
Avg. Age	**71.8**			

Amounts in the Original Annuities column include the original $900 Retiree Benefit Stipend. Amounts in the Base Annuities column exclude this amount for purposes of determining the COLA. Amounts in the Current Annuities column include the current $600 Retiree Benefit Stipend.

Annuities Being Paid July 1, 2022
from the Retirement Reserve Account to
DISABILITY Retirees and Beneficiaries by Attained Ages

Attained Age	Annual Amounts			
	No.	Original Annuities	Base Annuities	Current Annuities
Under 40	9	$ 75,117	$ 69,804	$ 84,074
40-44	24	249,895	240,295	264,061
45-49	94	1,155,293	1,093,855	1,293,912
50-54	215	2,885,457	2,742,979	3,258,057
55-59	373	4,411,808	4,187,300	5,161,284
60-64	593	6,693,734	6,379,913	8,351,755
65-69	576	6,243,819	6,189,478	8,653,493
70-74	511	5,174,473	5,679,728	8,249,249
75-79	328	3,455,739	4,327,950	6,267,205
80-84	137	1,407,250	2,082,644	3,007,412
85-89	49	357,999	693,078	1,002,583
90-94	18	99,563	265,512	383,750
95 & Up	6	23,548	79,368	115,219
Totals	**2,933**	**$32,233,695**	**$34,031,904**	**$46,092,054**
Avg. Age	**65.9**			

Amounts in the Original Annuities column include the original $900 Retiree Benefit Stipend. Amounts in the Base Annuities column exclude this amount for purposes of determining the COLA. Amounts in the Current Annuities column include the current $600 Retiree Benefit Stipend.

Annuities Being Paid July 1, 2022
from the Retirement Reserve Account to
ACT 793 Retirees and Beneficiaries by Attained Ages

Attained Age	Annual Amounts		
	No.	Original Annuities	Current Annuities
Under 40	-	$ -	$ -
40-44	-	-	-
45-49	-	-	-
50-54	-	-	-
55-59	-	-	-
60-64	-	-	-
65-69	11	24,187	41,965
70-74	28	103,641	187,160
75-79	42	241,400	486,021
80-84	34	241,228	496,842
85-89	17	127,341	308,240
90-94	7	62,841	168,940
95 & Up	-	-	-
Totals	**139**	**$800,638**	**$1,689,168**
Avg. Age	**78.3**		

Base annuities are equal to current annuities since the COLA is compounded.

Annuities Being Paid July 1, 2022 from the Retirement Reserve Account to SURVIVOR BENEFICIARIES by Attained Ages

Attained Age	Annual Amounts			
	No.	Original Annuities	Base Annuities	Current Annuities
Under 40	215	$1,962,805	$1,954,055	$ 2,188,817
40-44	4	29,032	29,482	37,945
45-49	4	45,760	47,039	55,158
50-54	23	310,117	301,973	366,749
55-59	40	556,005	531,467	650,534
60-64	99	1,226,223	1,199,013	1,482,352
65-69	135	1,728,469	1,739,278	2,308,834
70-74	112	1,277,110	1,383,931	1,913,397
75-79	90	1,100,297	1,372,710	1,938,456
80-84	47	372,120	562,352	814,748
85-89	24	215,322	391,627	562,397
90-94	9	72,808	184,834	264,267
95 & Up	2	1,800	7,938	12,732
Totals	**804**	**$8,897,868**	**$9,705,699**	**$12,596,386**
Avg. Age	**55.3**			

Amounts in the Original Annuities column include the original $900 Retiree Benefit Stipend. Amounts in the Base Annuities column exclude this amount for purposes of determining the COLA. Amounts in the Current Annuities column include the current $600 Retiree Benefit Stipend.

Annuities Being Paid July 1, 2022
from the ACT 808 Retirement Reserve Account to
ACT 808 Retirees and Beneficiaries by Attained Ages

Attained Age	Annual Amounts		
	No.	Original Annuities	Current Annuities
Under 40	-	$ -	$ -
40-44	-	-	-
45-49	-	-	-
50-54	-	-	-
55-59	-	-	-
60-64	-	-	-
65-69	-	-	-
70-74	-	-	-
75-79	-	-	-
80-84	3	41,788	138,330
85-89	11	235,966	766,642
90-94	11	205,250	598,738
95 & Up	7	113,875	335,002
Totals	**32**	**$596,879**	**$1,838,712**
Avg. Age	**90.6**		

Base annuities are the same as current annuities since the COLA is compounded.

Retiree and Beneficiary Data
as of June 30

Year	Estimated Number Added	Estimated Number Removed	Total Retirees*	Annual Allowances (Millions)	% Increase in Annual Allowances@	Average Annual Allowances
1992	455	312	12,033	$ 115.50	10.4%	$ 9,599
1993	589	316	12,306	129.71	12.3%	10,540
1994	846	512	12,640	141.87	9.4%	11,224
1995	908	342	13,206	156.59	10.4%	11,857
1996	1,107	654	13,659	170.59	8.9%	12,489
1997	1,049	475	14,233	194.90	14.3%	13,694
1998	809	240	14,802	220.38	13.1%	14,888
1999	1,582	497	15,887	248.75	12.9%	15,658
2000	1,249	479	16,657	280.14	12.6%	16,818
2001	1,571	450	17,778	309.03	10.3%	17,383
2002	1,989	568	19,199	334.15	8.1%	17,404
2003	1,621	549	20,271	359.98	7.7%	17,758
2004	1,685	528	21,428	386.23	7.3%	18,025
2005	1,822	570	22,680	415.04	7.5%	18,300
2006	1,958	485	24,153	449.77	8.4%	18,622
2007	2,017	559	25,611	484.55	7.7%	18,920
2008	1,703	513	26,801	515.56	6.4%	19,237
2009	2,721	704	28,818	564.59	9.5%	19,591
2010	2,588	819	30,587	612.77	8.5%	20,034
2011	2,394	882	32,099	657.08	7.2%	20,470
2012	2,932	871	34,160	709.17	7.9%	20,760
2013	3,039	945	36,254	763.76	7.7%	21,067
2014	3,156	932	38,478	822.19	7.7%	21,368
2015	3,326	1,056	40,748	916.62	11.5%	22,495
2016	3,272	925	43,095	983.87	7.3%	22,830
2017	2,996	999	45,092	1,044.74	6.2%	23,169
2018	2,927	1,195	46,824	1,099.35	5.2%	23,478
2019	2,849	996	48,677	1,146.74	4.3%	23,558
2020	2,811	1,355	50,133	1,194.82	4.2%	23,833
2021	2,852	1,580	51,405	1,242.70	4.0%	24,175
2022	2,788	1,445	52,748	1,293.75	4.1%	24,527

** T-DROP participants are classified as active members for purposes of the valuation and are not included in this schedule.*

@ Upon actual retirement, T-DROP account balances may be paid in the form of an additional annuity – a "T-DROP Annuity." Annual annuities shown include T-DROP annuities beginning in 2015.

REPORTED ASSETS

Reported Assets

The assets of the Retirement System, as of June 30, 2022, were reported to your actuary to be $19,679,467,252. This amount, increased by a funding value adjustment of $648,814,232 this year, is used to finance the Retirement System liability.

Accounts	Assets as of June 30	
	2022	2021
Regular Accounts		
Members' Deposit Accounts		
Contributions	$ 1,619,234,265	$ 1,517,838,030
Interest	10,879,135,880	12,934,857,979
Total	12,498,370,145	14,452,696,009
T-DROP Member Deposit Accounts		
Contributions	28,418,105	25,976,011
Interest	19,012,373	21,070,652
Total	47,430,478	47,046,663
Cash Balance Account	207,565,576	183,336,816
Employer's Accumulation Account	(7,008,787,923)	(6,500,901,628)
Retirement Reserve Account	13,468,111,609	12,792,323,810
Act 808 Retirement Reserve Account	6,840,591	8,234,533
T-Lump Payable	339,803,043	369,188,176
Survivors Benefit Account	110,412,603	107,149,458
Total Regular Accounts	19,669,746,122	21,459,073,837
Other Accounts		
Income Expense Account	9,721,130	9,699,035
Other Special Reserves	-	-
Miscellaneous	-	-
Total Other Accounts	9,721,130	9,699,035
Total Accounting Value of Assets	19,679,467,252	21,468,772,872
Funding Value Adjustment	648,814,232	(2,125,902,360)
Funding Value of Assets	$ 20,328,281,484	$ 19,342,870,512

VALUATION RESULTS

Liabilities for Annuities Being Paid July 1, 2022
Tabulated by Type of Annuity

Type of Annuity	Liabilities July 1, 2022		
	Men	Women	Totals
RETIREMENT RESERVE ACCOUNT			
Age & Service Annuities			
Option 1 (Straight Life)	$ 1,637,705,241	$ 7,981,045,530	$ 9,618,750,771
Option A (100% Joint & Survivor)	875,791,144	989,195,008	1,864,986,152
Option B (50% Joint & Survivor)	422,178,320	695,380,303	1,117,558,623
Option C (10 Years Certain & Life)	38,195,176	162,895,015	201,090,191
Beneficiaries	77,843,637	200,841,586	278,685,223
Total Age & Service	3,051,713,518	10,029,357,442	13,081,070,960
Disability Annuities			
Option 1	50,747,633	288,782,704	339,530,337
Option A	27,059,408	47,071,512	74,130,920
Option B	7,018,017	12,490,008	19,508,025
Option C	-	-	-
Beneficiaries	21,246,640	24,885,925	46,132,565
Total Disability	106,071,698	373,230,149	479,301,847
Act 793	7,736,987	4,948,415	12,685,402
Retirement Reserve Account	3,165,522,203	10,407,536,006	13,573,058,209
Act 808 Retirement Reserve Account	5,641,760	1,760,832	7,402,592
Total Retirement Reserve Account	3,171,163,963	10,409,296,838	13,580,460,801
SURVIVORS' BENEFIT ACCOUNT			
Beneficiaries of Deceased Members	54,465,951	61,495,176	115,961,127
RETIREMENT SYSTEM TOTALS			
Total Annuity Liabilities	3,225,629,914	10,470,792,014	13,696,421,928
Cash Benefit Account Liabilities			207,565,576
Liabilities for Lump Sum Death Benefits			139,834,612
Total	$ 3,225,629,914	$ 10,470,792,014	$ 14,043,822,116

Annual Reserve Transfers

The annual accounting transfers listed below are recommended so that retired life accounts will be fully funded as of the valuation date.

Reserve Account	June 30, 2022 Balance Reported	Transfer Amount	June 30, 2022 Balance After Transfer
Retiree Accounts			
RRA	$ 13,468,111,609	$ 104,946,600	$ 13,573,058,209
808 RRA	6,840,591	562,001	7,402,592
SBA	110,412,603	5,548,524	115,961,127
Total Retiree Accounts	13,585,364,803	111,057,125	13,696,421,928
EAA	(7,008,787,923)	(111,057,125)	(7,119,845,048)
Total	**$ 6,576,576,880**	**$ -**	**$ 6,576,576,880**

Lump sum death benefits for retirees are paid from the Employer Accumulation Account and are not included in the figures shown in this report. The actuarial accrued liabilities for lump sum death benefits for retirees are currently $139.8 million. The Cash Balance Account includes an additional $207.6 million of retiree liabilities and is not included in the schedule above. No reserve transfers are required for this account.

Retirement Reserve Account
Comparative Statement of Annuities, Accrued Liabilities and Assets
($ Millions)

Valuation Date June 30	Annual Annuities Being Paid			Average	Computed Liabilities	Applicable Assets	Unfunded Retired Life Liabilities	Ratio of Assets to Liabilities
	No.	Amount	% Incr.					
1980*#	8,001	$ 30.10	3.5%	$ 3,761	$ 280.70	$ 280.7	none	100.0%
1985*+	9,331	51.49	13.6%	5,518	479.9	479.9	none	100.0%
1990	11,054	87.84	7.2%	7,946	847.7	847.7	none	100.0%
1995	12,622	150.45	10.8%	11,920	1,428.6	1,428.6	none	100.0%
2000* ##	16,172	275.65	14.6%	17,045	2,828.8	2,828.8	none	100.0%
2005	22,147	409.42	7.5%	18,486	4,148.1	4,148.1	none	100.0%
2006	23,606	443.98	8.4%	18,808	4,483.4	4,483.4	none	100.0%
2007	25,038	478.30	7.7%	19,103	4,816.4	4,816.4	none	100.0%
2008	26,258	509.29	6.5%	19,396	5,391.3	5,391.3	none	100.0%
2009	28,228	557.83	9.5%	19,762	5,891.9	5,891.9	none	100.0%
2010	29,969	605.55	8.6%	20,206	6,358.0	6,358.0	none	100.0%
2011^	31,498	649.47	7.3%	20,619	6,972.6	6,972.6	none	100.0%
2012	33,533	701.09	7.9%	20,907	7,481.0	7,481.0	none	100.0%
2013	35,622	755.26	7.7%	21,202	8,004.8	8,004.8	none	100.0%
2014	37,824	813.33	7.7%	21,503	8,561.9	8,561.9	none	100.0%
2015@	40,070	907.09	11.5%	22,638	9,515.7	9,515.7	none	100.0%
2016	42,395	973.78	7.4%	22,969	10,157.2	10,157.2	none	100.0%
2017* ^	44,394	1,034.17	6.2%	23,295	11,026.4	11,026.4	none	100.0%
2018	46,108	1,088.30	5.2%	23,603	11,515.7	11,515.7	none	100.0%
2019	47,979	1,137.79	4.5%	23,714	12,094.6	12,094.6	none	100.0%
2020	49,365	1,182.98	4.0%	23,964	12,494.4	12,494.4	none	100.0%
2021^	50,633	1,230.58	4.0%	24,304	13,163.2	13,163.2	none	100.0%
2022	51,944	1,281.16	4.1%	24,664	13,580.5	13,580.5	none	100.0%

* *After plan amendments.*

\# *After change in interest assumption from 6.0% to 7.0%, change in post-retirement adjustments from 1.5% to 3.0% and recommended reserve transfer.*

\+ *After redetermination of base, retroactive application of new minimum benefit formula and reserve transfers.*

\## *Includes Act 808 and Act 793 retirees beginning in 2000.*

^ *After changes in assumptions.*

@ *Upon actual retirement, T-DROP account balances maybe paid in the form of an additional annuity – a "T-DROP Annuity." Annual annuities shown include T-DROP annuities beginning in 2015.*

Survivors' Benefit Account
Accrued Liabilities and Assets
Comparative Statement

Valuation Date June 30	Annual Annuities Being Paid		Computed Liabilities	Applicable Assets	Unfunded Accrued Liabilities	Ratio of Assets to Liabilities
	No.	Amount				
1980*#	393	$ 772,631	$ 7,042,644	$ 7,042,644	none	100.0%
1985*+	421	1,240,399	12,411,800	12,411,800	none	100.0%
1990	424	1,830,743	18,117,244	18,117,244	none	100.0%
1995	416	2,723,940	26,220,218	26,220,218	none	100.0%
2000*	485	4,487,519	43,701,138	43,701,138	none	100.0%
2005	533	5,619,675	56,257,745	56,257,745	none	100.0%
2006	547	5,791,974	57,605,939	57,605,939	none	100.0%
2007	573	6,250,603	63,481,565	63,481,565	none	100.0%
2008	543	6,269,551	66,496,539	66,496,539	none	100.0%
2009	590	6,761,034	70,857,161	70,857,161	none	100.0%
2010	618	7,224,585	75,108,334	75,108,334	none	100.0%
2011^	601	7,605,212	81,150,385	81,150,385	none	100.0%
2012	627	8,081,913	84,930,745	84,930,745	none	100.0%
2013	632	8,491,667	88,139,802	88,139,802	none	100.0%
2014	654	8,861,734	89,793,996	89,793,996	none	100.0%
2015	678	9,530,889	95,272,795	95,272,795	none	100.0%
2016	700	10,084,359	98,960,258	98,960,258	none	100.0%
2017* ^	698	10,574,602	104,668,995	104,668,995	none	100.0%
2018	716	11,042,074	107,043,067	107,043,067	none	100.0%
2019	741	11,313,962	106,306,434	106,306,434	none	100.0%
2020	768	11,843,667	108,528,929	108,528,929	none	100.0%
2021^	772	12,116,736	113,740,676	113,740,676	none	100.0%
2022	804	12,596,386	115,961,127	115,961,127	none	100.0%

* *Includes plan amendments.*

\# *After change in interest assumption from 6.0% to 7.0%, change in post-retirement adjustments from 1.5% to 3.0% and recommended reserve transfer.*

\+ *After redetermination of base annuity, retroactive application of new minimum benefit formula and recommended reserve transfer.*

^ *After changes in assumptions.*

Annual Allowances of Retired Lives by Year of Retirement as of June 30, 2022

Calendar Year of Retirement	No.	Annual Amount Being Paid			Average
		Original	Total Increase	Current	
2022*	606	$ 7,627,366	$ 391,994	$ 8,019,360	$13,233
2021	2,694	47,734,414	6,685,722	54,420,136	20,200
2020	2,711	46,059,215	7,641,449	53,700,664	19,808
2019	2,743	44,415,794	9,076,319	53,492,113	19,501
2018	2,728	45,424,711	10,378,965	55,803,676	20,456
2017	2,738	45,221,846	12,900,020	58,121,866	21,228
2016	2,807	46,055,508	14,729,591	60,785,099	21,655
2015	2,988	49,040,747	17,474,383	66,515,130	22,261
2014	2,935	49,565,393	19,206,774	68,772,167	23,432
2013	2,681	45,508,071	19,655,670	65,163,741	24,306
2012	2,614	42,738,075	20,149,154	62,887,229	24,058
2011	2,341	38,702,736	19,314,437	58,017,173	24,783
2010	1,988	32,720,292	18,399,513	51,119,805	25,714
2009	2,040	34,207,550	20,471,212	54,678,762	26,803
2008	1,969	31,404,062	18,647,293	50,051,355	25,420
2007	1,823	28,875,996	17,496,893	46,372,889	25,438
2006	1,592	25,840,930	17,206,224	43,047,154	27,040
2005	1,563	25,580,687	19,175,442	44,756,129	28,635
2004	1,379	21,556,263	15,672,031	37,228,294	26,997
2003	1,224	18,913,514	14,577,713	33,491,227	27,362
2002	1,176	18,794,252	14,658,789	33,453,041	28,446
2001	1,128	16,634,240	13,342,956	29,977,196	26,576
2000	998	16,249,288	13,977,446	30,226,734	30,287
1999	829	12,635,468	12,209,124	24,844,592	29,969
1998	788	11,253,448	11,413,659	22,667,107	28,765
1997	596	9,554,459	10,599,439	20,153,898	33,815
1996	455	7,690,143	8,662,380	16,352,523	35,940
1995	493	7,949,379	9,381,513	17,330,892	35,154
1994	483	7,883,069	10,094,920	17,977,989	37,222
1993	343	5,724,666	7,886,506	13,611,172	39,683
1992	208	2,782,815	4,152,462	6,935,277	33,343
1991	156	1,888,448	2,921,331	4,809,779	30,832
1990	171	1,787,538	3,335,950	5,123,488	29,962
1989	171	1,956,347	3,648,721	5,605,068	32,778
1988	141	1,566,995	3,185,452	4,752,447	33,705
Before 1987	448	4,025,201	9,462,934	13,488,135	30,107
TOTAL	**52,748**	**$855,568,926**	**$438,184,381**	**$1,293,753,307**	**$24,527**

** Reporting for calendar year 2022 is not yet complete. The July 1st retirees are not included in the schedule.*

APPENDIX

APPENDIX

Single Life Retirement Values
Based on PubG-2010 Mortality Amount-Weighted Tables
Adjusted Using MP-2020 Projection Scale and 7.25% Interest

Sample Attained Ages in 2022*	Present Value of $1.00 Monthly for Life		Present Value of $1 Monthly for Life Increasing 3.0% Annually		Future Life Expectancy (Years)		Percent Dying within Next Year	
	Men	Women	Men	Women	Men	Women	Men	Women
40	$159.89	$162.44	$213.33	$218.19	45.27	48.29	0.09 %	0.05 %
45	155.49	158.74	204.88	210.83	40.03	43.00	0.12 %	0.07 %
50	149.75	153.88	194.42	201.63	34.93	37.83	0.29 %	0.22 %
55	142.77	148.03	182.14	190.85	30.06	32.88	0.44 %	0.31 %
60	133.94	140.35	167.43	177.49	25.36	28.04	0.67 %	0.43 %
65	123.01	130.34	150.20	161.15	20.90	23.34	0.97 %	0.62 %
70	109.50	117.58	130.24	141.69	16.68	18.84	1.49 %	0.99 %
75	93.52	102.01	108.12	119.49	12.80	14.64	2.52 %	1.77 %
80	75.88	84.29	85.20	95.85	9.39	10.88	4.54 %	3.27 %
85	58.49	65.92	63.89	72.80	6.62	7.72	8.35 %	6.20 %
Base	2705 x 1.05	2706 x 1.05	2705 x 1.05	2706 x 1.05				
Projection	964	965	964	965				

* *Rates and life expectancies in future years are determined by the MP-2020 projection scale.*

Age	Benefit Increasing 3.0% Yearly	Portion of Age 60 Lives Still Alive	
		Men	Women
60	$100.00	100%	100%
65	115.00	96%	98%
70	130.00	91%	94%
75	145.00	84%	89%
80	160.00	73%	81%
Ref		2705 x 1.05	2706 x 1.05

The above chart is an illlustration for a member who retires at age 60 in 2022.