

Arkansas Public Employees Retirement System

Actuarial Valuation and Experience Gain/Loss Analysis
June 30, 2020



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November 13, 2020

Board of Trustees
Arkansas Public Employees Retirement System
Little Rock, Arkansas

Ladies and Gentlemen:

The results of the **June 30, 2020 actuarial valuation** of the Arkansas Public Employees Retirement System together with **the annual gain and loss analysis** for the year ended June 30, 2020 are presented in this report. The purpose of the valuation and gain/loss analysis is to measure funding progress in relation to the actuarial cost method and to determine the employer contribution rate for the fiscal year beginning July 1, 2022.

Calculations required for compliance with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 have been issued in separate reports.

This report should not be relied on for any other purpose than those described above. It 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 System only in its entirety and only with permission of the Board. Gabriel, Roeder, Smith & Company is not responsible for the unauthorized use of this report.

The findings in this report are based on data and other information through June 30, 2020. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as: plan experience differing from that anticipated by the economic and 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 (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. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

The actuarial methods and assumptions used in the actuarial valuation are summarized in Section E of this report. The assumptions are established by the Board after consulting with the actuary. The actuarial assumptions used for the valuation produce results which, individually and in the aggregate, are reasonable.

The cooperation of the Executive Director and the APERS staff in furnishing the materials required for these valuations is acknowledged with appreciation.

The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Section E of this report. This report includes risk metrics on pages A-13 through A-16 but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

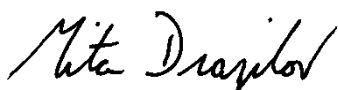
This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

This report has been prepared by individuals who have substantial experience valuing public employee retirement systems. To the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice promulgated by the Actuarial Standards Board and in conformance with Title 24 of the Arkansas Code.

Mita D. Drazilov 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 signing individuals are independent of the plan sponsor.

Respectfully submitted,



Mita D. Drazilov, ASA, FCA, MAAA



Heidi G. Barry, ASA, FCA, MAAA



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SECTION A

VALUATION RESULTS

Comments

General Financial Objective. Section 24-2-701 of the Arkansas Code provides as follows:

The general financial objective of each Arkansas public employee retirement plan shall be to establish and receive contributions that, expressed as percentages of active member payroll, will remain approximately level from generation to generation of Arkansas citizens. More specifically, contributions received each year shall be sufficient both:

- (1) To fully cover the costs of benefit commitments being made to members for their service being rendered in that year; and
- (2)(A) 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.
- (B) Alternatively, if the costs of benefit commitments for service previously rendered are overfunded, the plan may deduct a level payment that, if deducted annually over a reasonable period of future years, will fully liquidate the overfunded portion of such costs.

Benefit Changes. There were no benefit changes in the June 30, 2020 valuation.

Assumption Changes. There were no assumption changes in the June 30, 2020 valuation.

Method Changes. The amortization period for APERS was updated for the June 30, 2020 valuation to a 23-year period. There have been no other changes in methods since the June 30, 2019 valuation.

APERS Status. Based upon the results of the June 30, 2020 actuarial valuation, **APERS continues to satisfy the general financial objective** of level contribution financing.

APERS Reserve Strength. As a by-product of achieving level contribution financing, actuarial accrued liabilities usually become more and more funded over a period of years. On a funding value of assets basis, the System has a 79% funded ratio. On a market value of assets basis, the System has a 76% funded ratio.

Employer Contribution Rates. Based upon experience through June 30, 2020, the State and Local Government contribution rate (including General Assembly members) will be 15.32% of covered payroll for the fiscal year beginning July 1, 2022.

District Judges. Results for the District Judges are presented in Section D. These results are not included in any of the numbers presented in Sections A, B and C.



Recommendations

Reserve Transfers. Each year reserve transfers are recommended so that there will be a balance between assets and actuarial accrued liabilities in the Retirement Reserve Account and the Deferred Annuity Account.

- The Retirement Reserve Account is responsible for future annuity payments to present retired lives.
- The Deferred Annuity Account is responsible for future annuity payments to present inactive members.

This year's recommended transfer amounts are as follows:

Employer Accum. Account Before Transfers	Transfers as of July 1, 2020 (from) to:		Employer Accum. Account After Transfers
	Retirement Reserve Account	Deferred Annuity Account	
\$1,678,854,334	\$386,551,151	\$16,291,409	\$1,276,011,774

For the purposes of this valuation it was assumed that these transfers would be made.

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 7.15% on the actuarial value of assets), it is expected that:

- (1) The employer normal cost as a percentage of pay will decrease to approximately 7.2% (the employer normal cost for the new contribution plans) as non-contributory members leave employment;
- (2) The unfunded actuarial accrued liabilities will be fully amortized as of June 30, 2045; and
- (3) The funded status of the plan will increase gradually towards a 100% funded ratio.

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.
- (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. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. 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.



Employer Contribution Rates Computed for Fiscal Years Beginning July 1, 2022

Contribution for	Contributions Expressed as %'s of Active Payroll For Fiscal Year Beginning July 1, 2022			Total
	Non-Contributory	Contributory	DROP	
Normal Cost:				
Age and service annuities (including DROP and reduced retirement)				8.17%
Separation benefits				2.08%
Disability benefits				0.52%
Death-in-service annuities				0.31%
Administrative expenses				0.40%
Total	9.37%	12.23%	9.19%	11.48%
Member contributions	0.00%	5.00%	0.00%	3.71%
Employer Normal Cost	9.37%	7.23%	9.19%	7.77%
Unfunded Actuarial Accrued Liabilities				7.55% *
Total Employer Contribution				15.32%

* The unfunded actuarial accrued liability and total payroll is projected to the beginning of Fiscal Year 2022 when determining the unfunded amortization rate. Unfunded actuarial accrued liabilities were amortized over a 23-year period.

Note: The above contribution rates are based upon State and Local payroll that includes payroll for DROP participants and retired members returned to work. The total payroll is \$1,926,878,180 as of June 30, 2020.

Summary Statement of System Resources and Obligations

Year Ended June 30, 2020

Present Resources and Expected Future Resources

A.	Present Valuation Assets:	
	1. Net assets from System financial statements	\$ 8,738,362,156
	2. Market value adjustment	352,061,237
	3. Valuation assets	<u>9,090,423,393</u>
B.	Actuarial present value of expected future employer contributions:	
	1. For normal costs	1,042,045,479
	2. For unfunded actuarial accrued liability	2,422,600,801
	3. Total	<u>3,464,646,280</u>
C.	Actuarial present value of expected future member contributions	<u>598,543,370</u>
D.	Total Present and Expected Future Resources	<u><u>\$ 13,153,613,043</u></u>

Actuarial Present Value of Expected Future Benefit Payments

A.	To retirees and beneficiaries:	\$ 6,270,115,595
B.	To vested terminated members	558,984,407
C.	To present active and DROP members:	
	1. Allocated to service rendered prior to valuation date - actuarial accrued liability	4,683,924,192
	2. Allocated to service likely to be rendered after valuation date	1,640,588,849
	3. Total	<u>6,324,513,041</u>
D.	Total Actuarial Present Value of Expected Future Benefit Payments	<u><u>\$ 13,153,613,043</u></u>

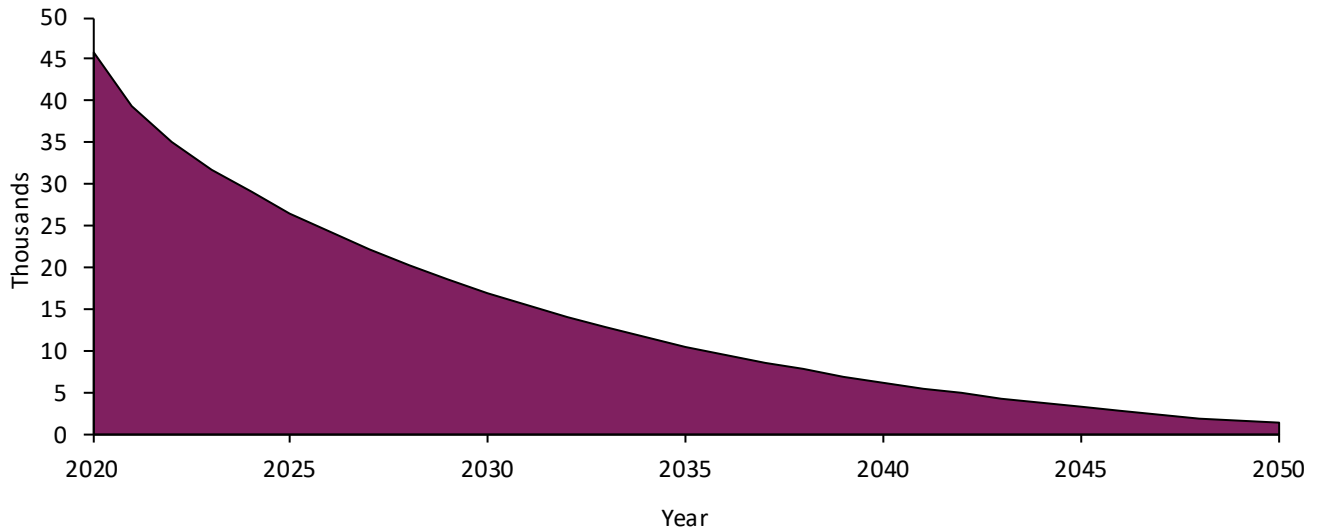
Computed Actuarial Liabilities and Allocation Using Entry Age Actuarial Cost Method as of June 30, 2020

Actuarial Present Value of	Total Present Value	Portion Covered By Future Normal Cost Contributions	Actuarial Accrued Liabilities (1) - (2)
Benefits to be paid to current retirees, beneficiaries, and future beneficiaries of current retirees	\$6,270,115,595	\$ 0	\$6,270,115,595
Age and service allowances based on total service likely to be rendered by present active members and current DROP participants	5,542,338,215	1,209,712,175	4,332,626,040
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members	1,032,743,842	307,980,578	724,763,264
Disability benefits likely to be paid to present active members	173,466,350	76,995,144	96,471,206
Death-in-service benefits likely to be paid on behalf of present active members	134,949,041	45,900,952	89,048,089
Total	\$13,153,613,043	\$1,640,588,849	\$ 11,513,024,194
Applicable assets (funding value)	9,090,423,393	0	9,090,423,393
Liabilities to be covered by future contributions	\$ 4,063,189,650	\$1,640,588,849	\$ 2,422,600,801

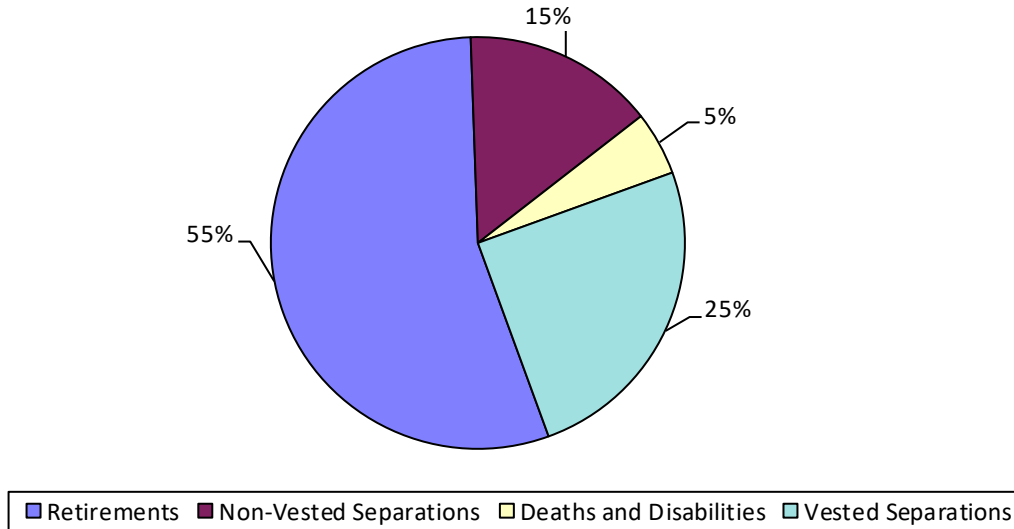


Expected Development of Present Population June 30, 2020

Closed Group Population Projection



Expected Termination Type from Active Employment



The charts show the expected future development of the present population in simplified terms. The Retirement System presently covers 45,893 active members (includes DROP). Eventually, 15% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. About 80% of the present population is expected to receive monthly retirement benefits either by retiring directly from active service, retiring from DROP, or retiring from vested deferred status. About 5% of the present population is expected to become eligible for death-in-service or disability benefits. Within 8 years, over half of the covered membership is expected to consist of new hires.

Valuation Results Comparative Statement (\$ Millions)

Valuation Date June 30,	Actuarial Accrued Liabilities & Reserves	Valuation Assets	% Funded	Unfunded Actuarial Accrued Liabilities & Reserves			Contribution Rate Computed Percents	
				Dollars	Amortiz. Period *	% of Payroll	General Assembly	State & Local**
2001 @	\$4,111	\$ 4,342	105.6 %	\$(231)	50	(22) %	148.78 %	10.00 %
2002 #	4,398	4,404	100.1	(6)	6	(1)	150.95	10.00
2003 #	4,674	4,416	94.5	258	30	22	222.80	11.09
2004	5,005	4,438	88.7	567	30	48	201.39	12.54
2005 @#	5,619	4,584	81.6	1,035	22	85	459.47	12.54
2006	5,936	4,949	83.4	987	19	78	464.67	12.54
2007 @	6,174	5,498	89.1	676	18	52	410.58	11.01
2008 #	6,543	5,866	89.7	677	14	49	408.06	11.00
2009 @	6,938	5,413	78.0	1,525	30	106	521.36	12.46
2010	7,304	5,409	74.1	1,895	30	124	518.69	13.47
2011 #	7,734	5,467	70.7	2,267	30	147	939.81	14.24
2012	8,163	5,625	68.9	2,538	30	151		14.88
2013 #	8,284	6,159	74.3	2,125	25	126		14.76
2014 #	8,864	6,895	77.8	1,969	23	113		14.50
2015 #	9,295	7,352	79.1	1,943	25	111		14.50
2016	9,663	7,769	80.4	1,894	21	106		14.75
2017 #	10,321	8,157	79.0	2,164	25	121		15.32
2018	10,694	8,416	78.7	2,278	26	123		15.32
2019	11,129	8,739	78.5	2,390	24	124		15.32
2020	11,513	9,090	79.0	2,423	23	126		15.32

* Amortization period is for State division prior to 2001, State and Local division for 2001 and later and may be rounded above. General Assembly unfunded actuarial accrued liabilities are amortized over an 18-year period as of June 30, 2008.

** Local Government rate was 6.00% for the 1998 valuation, 7.00% for the 1999 valuation, and 8.00% for the 2000 valuation. Beginning with the June 30, 2012 valuation, results include General Assembly.

@ After legislated changes in benefit provisions.

After changes in actuarial assumptions.



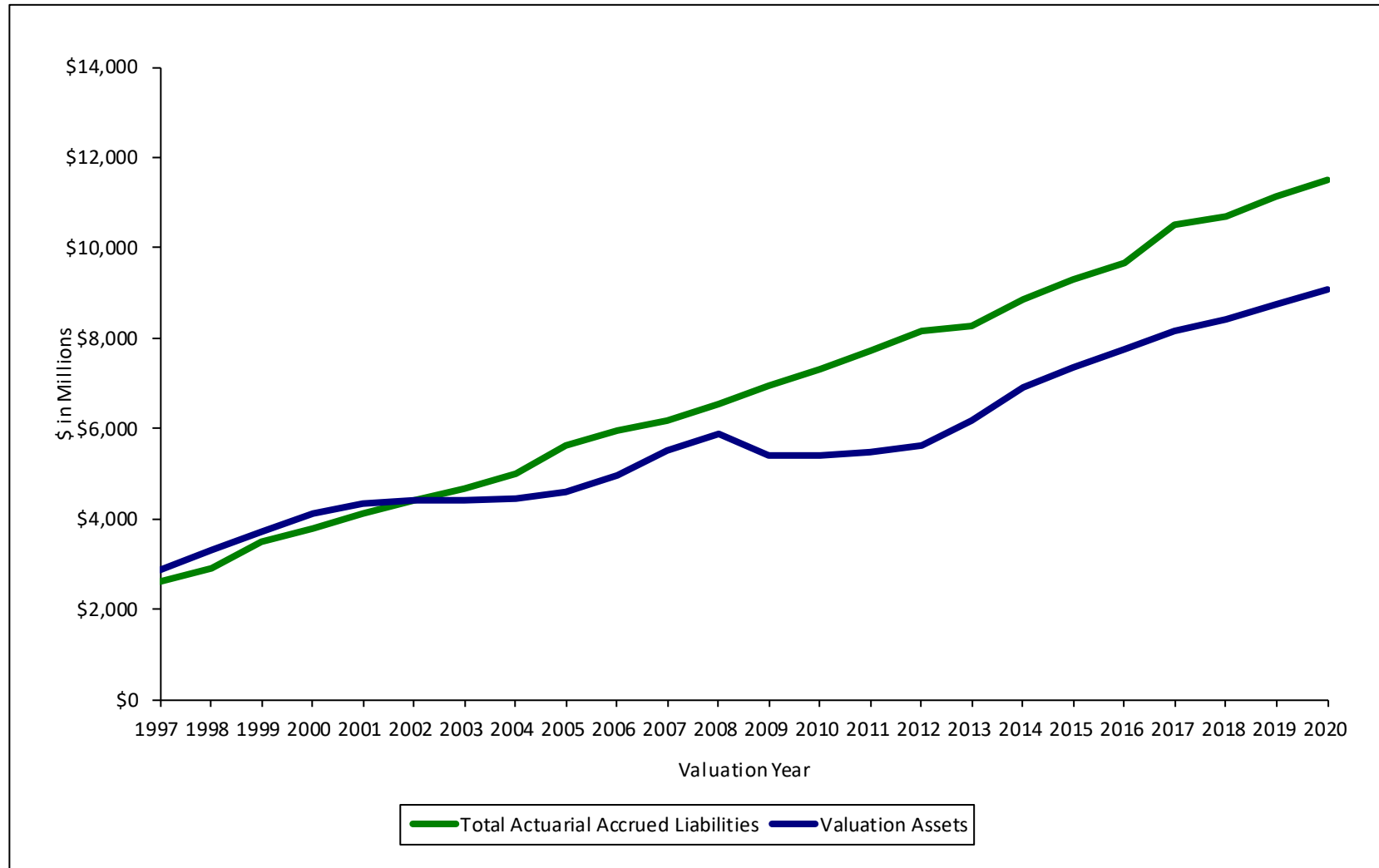
Active Members and Retired Lives Historical Comparative Schedule

Valuation Date	Active Members				Retired Lives (Including DROP Members)			
	No.	Valuation Payroll			No.	Active per Retired	Annual Benefits	
		\$ Millions	Average	% Incr.			\$ Millions	As a % of Pay
6/30/84	NA	NA	NA	NA	7,036	NA	\$ 19.1	4.4%
6/30/85	NA	NA	NA	NA	7,331	NA	22.0	4.8%
6/30/86	NA	NA	NA	NA	7,649	NA	24.1	4.9%
6/30/87	NA	NA	NA	NA	8,074	NA	30.2	6.0%
6/30/88	NA	NA	NA	NA	9,155	NA	39.6	7.5%
6/30/89	NA	NA	NA	NA	9,418	NA	42.9	7.6%
6/30/90	NA	NA	NA	NA	9,747	NA	44.9	7.4%
6/30/91	NA	NA	NA	NA	10,110	NA	49.2	7.6%
6/30/92	39,752	\$ 698.2	\$ 17,564	NA	10,456	3.8	51.9	7.4%
6/30/93	39,849	733.4	18,404	4.8%	10,840	3.7	56.8	7.7%
6/30/94	40,940	778.7	19,021	3.3%	11,213	3.7	60.7	7.8%
6/30/95	42,041	834.5	19,850	4.4%	11,683	3.6	70.1	8.4%
6/30/96	42,712	889.3	20,821	4.9%	12,073	3.5	76.2	8.6%
6/30/97	43,068	938.5	21,791	4.7%	12,644	3.4	84.8	9.0%
6/30/98	43,047	974.7	22,644	3.9%	13,480	3.2	94.6	9.7%
6/30/99	43,064	1,008.9	23,427	3.5%	14,688	2.9	119.3	11.8%
6/30/00	43,121	1,050.0	24,351	3.9%	15,544	2.8	133.6	12.7%
6/30/01	42,556	1,070.1	25,146	3.3%	16,643	2.6	150.0	14.0%
6/30/02	42,230	1,111.5	26,320	4.7%	17,748	2.4	167.6	15.1%
6/30/03	42,879	1,147.9	26,772	1.7%	18,838	2.3	186.0	16.2%
6/30/04	42,826	1,175.8	27,455	2.6%	19,872	2.2	203.4	17.3%
6/30/05	42,938	1,214.9	28,295	3.1%	21,080	2.0	232.9	19.2%
6/30/06	43,453	1,267.1	29,159	3.1%	22,234	2.0	254.7	20.1%
6/30/07	43,630	1,302.6	29,855	2.4%	22,409	1.9	274.8	21.1%
6/30/08	44,357	1,379.8	31,106	4.2%	23,555	1.9	297.0	21.5%
6/30/09	44,702	1,433.7	32,073	3.1%	24,972	1.8	323.1	22.5%
6/30/10	45,394	1,522.7	33,544	4.6%	25,880	1.8	342.2	22.5%
6/30/11	45,145	1,542.9	34,177	1.9%	28,137	1.6	375.7	24.3%
6/30/12	45,937	1,606.1	34,962	2.3%	29,282	1.6	399.5	24.9%
6/30/13	45,707	1,612.7	35,285	0.9%	30,533	1.5	426.2	26.4%
6/30/14	45,841	1,638.0	35,735	1.3%	31,914	1.4	457.1	27.9%
6/30/15	45,722	1,645.0	35,979	0.7%	33,106	1.4	483.9	29.4%
6/30/16	45,676	1,686.5	36,923	2.6%	34,214	1.3	509.7	30.2%
6/30/17	46,094	1,668.8	36,204	(1.9)%	36,260	1.3	540.1	32.4%
6/30/18	46,207	1,723.6	37,302	3.0%	37,398	1.2	575.1	33.4%
6/30/19	45,965	1,802.4	39,212	5.1%	38,543	1.2	609.1	33.8%
6/30/20	44,373	1,795.7	40,469	3.2%	39,805	1.1	637.1	35.5%

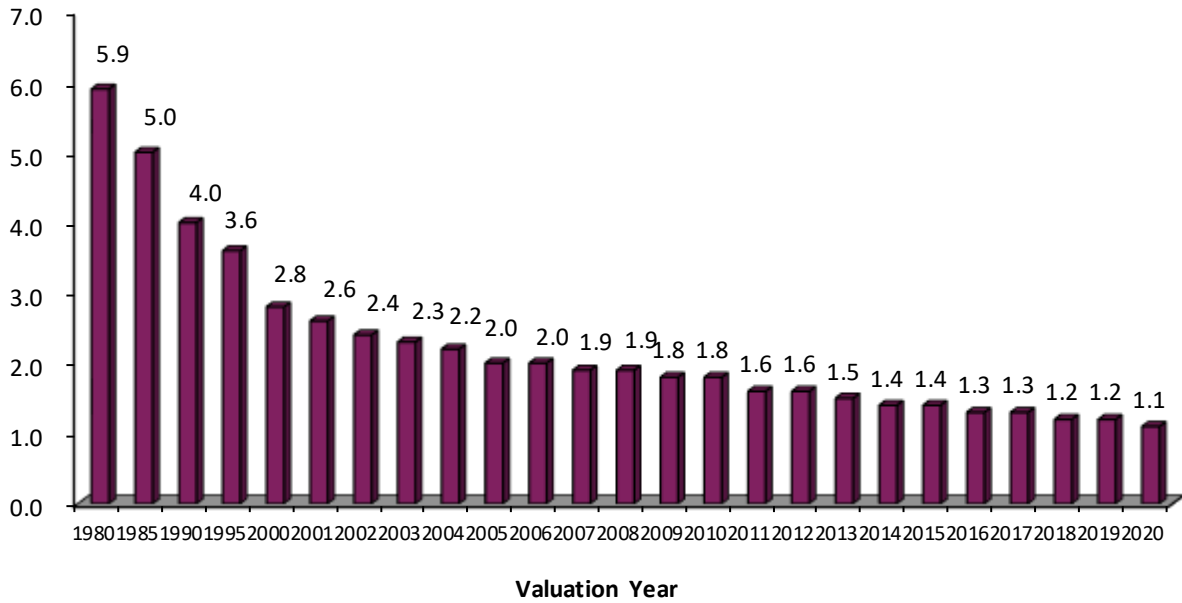
The above valuation payroll results do not include DROP payroll.



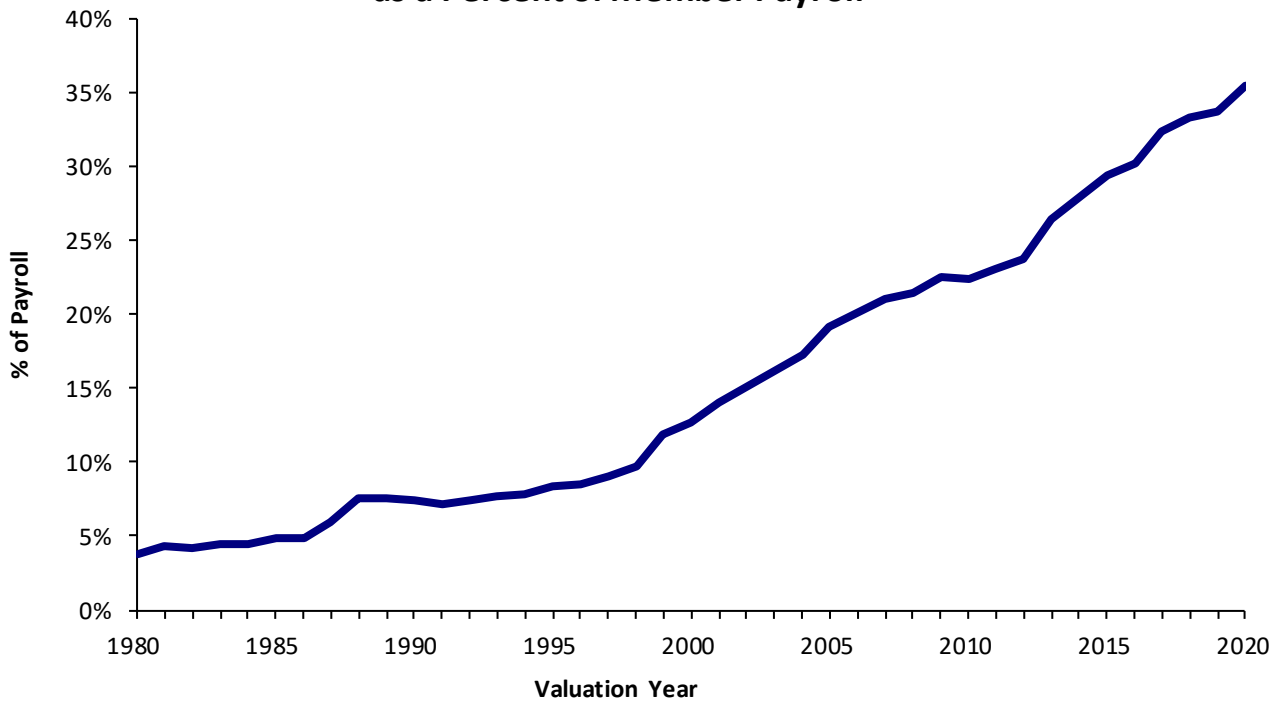
Actuarial Accrued Liabilities and Assets



Active Members Per Retired Life



Retirement Benefits Being Paid as a Percent of Member Payroll



Short Condition Test

The APERS 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 condition 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) Active member contributions on deposit;
- 2) The liabilities for future benefits to present retired lives; and
- 3) The liabilities for service already rendered by active members.

In a System that has been following the discipline of level percent-of-payroll financing, the liabilities for active 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 unusual circumstances). In addition, the liabilities for service already rendered by active 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 uncommon.

Short Condition Test Comparative Statement (\$ in Millions)

Val'n. Date: June 30	Entry Age Accrued Liability			Valuation Assets	Portion of Present Values Covered by Present Assets			
	(1) Active Member Contr.	(2) Retirees and Benef.	(3) Active Members (Employer Financed Portion)		(1)	(2)	(3)	Total
	STATE DIVISION (including sub-divisions)							
1998@	\$17.2	\$ 640.3	\$1,395.9	\$2,328.5	100%	100%	119%	113%
1999@#	16.9	784.0	1,634.2	2,637.1	100%	100%	112%	108%
2000	15.8	747.5	1,865.7	2,943.3	100%	100%	117%	112%
LOCAL GOVERNMENT DIVISION								
1998@	\$ 8.8	\$ 337.9	\$ 501.1	\$ 968.1	100%	100%	124%	114%
1999#	8.8	446.9	587.9	1,074.7	100%	100%	105%	103%
2000	7.6	440.0	706.0	1,178.1	100%	100%	103%	102%
STATE AND LOCAL GOVERNMENT DIVISION								
2001#	\$23.4	\$1,305.0	\$2,759.2	\$4,335.5	100%	100%	109%	106%
2002@	20.5	1,502.7	2,850.8	4,397.2	100%	100%	101%	101%
2003@	20.5	1,624.7	3,004.7	4,408.3	100%	100%	92%	95%
2004	20.5	1,762.2	3,197.6	4,429.9	100%	100%	83%	89%
2005@	15.5	1,878.2	3,701.7	4,576.1	100%	100%	72%	82%
2006	15.5	1,990.6	3,907.3	4,941.1	100%	100%	75%	84%
2007#	29.7	2,268.5	3,856.7	5,489.3	100%	100%	83%	89%
2008@	45.8	2,463.9	4,014.9	5,858.1	100%	100%	83%	90%
2009	66.4	2,750.3	4,059.9	5,406.8	100%	100%	64%	79%
2009#	66.4	2,750.3	4,103.5	5,406.8	100%	100%	63%	78%
2010	92.8	2,928.7	4,266.1	5,403.5	100%	100%	56%	74%
2011@	119.2	3,268.3	4,327.8	5,462.6	100%	100%	48%	71%
2012	122.1	3,518.7	4,521.9	5,625.4	100%	100%	44%	69%
2013@	147.9	3,855.2	4,281.1	6,159.3	100%	100%	50%	74%
2014@	176.3	4,246.7	4,440.6	6,894.9	100%	100%	56%	78%
2015@	201.1	4,654.5	4,439.2	7,351.7	100%	100%	56%	79%
2016	228.4	4,929.2	4,505.1	7,768.9	100%	100%	58%	80%
2017	291.1	5,547.3	4,671.8	8,157.0	100%	100%	50%	78%
2017@	291.1	5,460.9	4,568.5	8,157.0	100%	100%	53%	79%
2018	334.7	5,717.9	4,641.7	8,416.4	100%	100%	51%	79%
2019	376.0	6,015.8	4,737.0	8,738.7	100%	100%	50%	79%
2020	410.2	6,270.1	4,832.7	9,090.4	100%	100%	50%	79%

After legislated changes in benefit provisions.

@ After changes in actuarial assumptions.



Risks Associated With Measuring the Accrued Liability and Actuarially Determined Contribution

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

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

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

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

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

The computed contribution rate shown on page A-3 may be considered as a minimum contribution rate that complies with the Board's funding policy. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	<u>2020</u>	<u>2019</u>
Ratio of the market value of assets to total payroll	4.53	4.55
Ratio of actuarial accrued liability to payroll	5.97	5.76
Ratio of actives to retirees and beneficiaries	1.1	1.2
Ratio of net cash flow to market value of assets	(2.7)%	(2.5)%
Duration of the actuarial accrued liability	14.38	14.47

Funded Ratio

The ratio of actuarial value of assets to actuarial accrued liabilities is expected to trend toward 100% by June 30, 2045 under the current amortization period.

Ratio of Market Value of Assets to Payroll

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

Ratio of Actuarial Accrued Liability to Payroll

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time. The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

Ratio of Unfunded Actuarial Accrued Liability to Payroll

The ratio of the unfunded actuarial accrued liability to payroll is expected to trend toward 0% by June 30, 2045.

Ratio of Actives to Retirees and Beneficiaries

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

Ratio of Net Cash Flow to Market Value of Assets

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

Standard Deviation of Investment Return to Payroll

This measure illustrates the impact of a one standard deviation change in investment return as a percent of payroll. Investment return experience other than expected ultimately affects the employer contribution rates. The higher the ratio of this risk metric, the greater the expected volatility in employer contribution rates. Absent changes in investment policy, this metric is expected to increase as the assets grow to 100% of the AAL.

Duration of Present Value of Future Benefits

The 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, duration of 10 indicates that the present value of future benefits would increase approximately 10% if the assumed rate of return were lowered 1%.

Additional Risk Assessment

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

Summary of Risk Measures

Valuation Date June 30,	Funded Ratio		UAAL	Total Actuarial Value			Standard Deviation of
	Based on AVA	Based on MVA	Amortization Period	Total UAAL / Total Payroll	of Assets / Total Payroll	Total AAL / Total Payroll	Investment Return / Total Payroll
2005 @#	82 %	83 %	22	0.9	3.8	4.6	**
2006	83	87	19	0.8	3.9	4.7	**
2007 @	89	97	18	0.5	4.2	4.7	**
2008 #	90	86	14	0.5	4.3	4.7	**
2009 @	78	62	30	1.1	3.8	4.8	**
2010	74	65	30	1.2	3.6	4.8	**
2011 #	71	75	30	1.5	3.4	4.8	**
2012	69	70	30	1.5	3.3	4.8	**
2013 #	74	77	25	1.3	3.6	4.9	**
2014 #	78	85	23	1.1	4.0	5.1	59 %
2015 #	79	81	25	1.1	4.2	5.3	58 %
2016	80	76	21	1.1	4.3	5.4	56 %
2017 #	78	76	25	1.3	4.6	5.9	56 %
2018	79	80	26	1.2	4.6	5.8	63 %
2019	79	79	24	1.2	4.5	5.8	62 %
2020	79	76	23	1.3	4.7	6.0	62 %

@ After legislated changes in benefit provisions.

After changes in actuarial assumptions.

** Unavailable.

Funded ratio: The funded ratio is expected to trend toward 100% by June 30, 2045 under the current amortization period.

UAAL Amortization Period: The statutory amortization period is expected to decrease by one year each year.

UAAL / Total Payroll: The ratio of the unfunded actuarial accrued liability to payroll is expected to trend towards 0% by June 30, 2045.

Funding Value of Assets / Total Payroll: As the funded ratio increases, this ratio is expected to converge to the ratio of Total AAL / Payroll.

Total AAL / Total Payroll: This measure is expected to increase as the System matures.

Standard Deviation of Investment Return / Total Payroll: This measure illustrates the impact of a one standard deviation change in investment return as a percent of payroll. Investment return experience other than expected ultimately affects the employer contribution rates. The higher the ratio of this risk metric, the greater the expected volatility in employer contribution rates. Absent changes in investment policy, this metric is expected to increase as the assets grow to 100% of the AAL.



SECTION B

VALUATION DATA

Summary of Provisions Evaluated (Excludes Special Provisions for General Assembly) (Last Changed as of 7/1/2009)

The Old Contributory Plan is available to persons who became members of APERS before January 1, 1978. The Non-Contributory Plan applies to all persons first hired after January 1, 1978 and before July 1, 2005 in APERS-covered employment. The New Contributory Plan applies to all persons hired after July 1, 2005 in APERS-covered employment or Non-Contributory members who elected to participate in the New Contributory Plan.

New Contributory Plan

Non-Contributory Plan

Voluntary Retirement

With a full benefit, after either (a) age 65 with 5 years of service, or (b) 28 years of actual service, regardless of age. For sheriff and public safety members, the age 65 requirement is reduced 1 month for each 2 months of actual service, but not below age 55 (age 52 for sheriff members with a minimum of 10 years of actual service).

With a full benefit, after either (a) age 65 with 5 years of service, or (b) 28 years of actual service, regardless of age. For sheriff and public safety members, the age 65 requirement is reduced 1 month for each 2 months of actual service, but not below age 55 (age 52 for sheriff members with a minimum of 10 years of actual service).

With a reduced benefit, after age 55 with 5 years of service or any age with 25 years of service. The reduction is equal to ½ of 1% for each month retirement precedes normal retirement age or 1% for each month below 28 years of actual service, whichever is less.

With a reduced benefit, after age 55 with 5 years of service or any age with 25 years of service. The reduction is equal to ½ of 1% for each month retirement precedes normal retirement age or 1% for each month below 28 years of actual service, whichever is less.

Final Average Compensation (FAC)

Average of highest 36 calendar months of covered compensation.

Average of highest 36 calendar months of covered compensation.

Full Age & Service Retirement Benefit

2.00% of FAC times years of service (2.03% for service prior to July 1, 2007), plus .5% of FAC times years of service over 28 years for service after July 1, 2009. The minimum monthly benefit is \$150 minus any age and beneficiary option reductions.

1.72% of FAC times years and months of credited service (1.75% for service prior to July 1, 2007), plus .5% of FAC times years of service over 28 years for service after July 1, 2009. If retirement is prior to age 62, an additional .33% of FAC times years of service will be paid until age 62. The portion of the APERS benefit based on service before 1978 cannot be less than the amount provided by contributory provisions in effect at the time of retirement. The minimum monthly benefit is \$150 minus any age and beneficiary option reductions.



Summary of Provisions Evaluated

New Contributory Plan

Non-Contributory Plan

Benefit Increases After Retirement

Annually, there will be a cost-of-living adjustment equal to 3% of the current benefit.

Annually, there will be a cost-of-living adjustment equal to 3% of the current benefit.

Member Contribution Rates

5% of covered compensation (pre-tax). Member contributions are refundable if APERS-covered employment terminates before a monthly benefit is payable. Members will earn interest on the contributions at a rate of 4% annually.

No employee contributions for service after January 1, 1978. If there is service before January 1, 1978, contributions for that period are refundable later in the same manner as under the Contributory Plan.

Vested Retirement Benefits

5 or more years of service, and leaving APERS-covered employment before full retirement age. Deferred full retirement benefit, based on service and pay at termination, begins at age 65. A death benefit is payable to surviving spouse of member who dies before benefit commencement.

5 or more years of service and leaving APERS-covered employment before full retirement age. Deferred full retirement benefit, based on service and pay at termination, begins at age 65. A death benefit is payable to surviving spouse of member who dies before benefit commencement.

In place of deferred full benefit, at age 55 or older a qualifying member can elect an immediate reduced benefit.

In place of deferred full benefit, at age 55 or older a qualifying member can elect an immediate reduced benefit.

Total and Permanent Disability

Disabled after 5 or more years of service, including credit for 18 of the 24 months preceding disability.

Disabled after 5 or more years of service, including credit for 18 of the 24 months preceding disability.

Amount is computed as an age & service benefit, based on service and pay at disability.

Amount is computed as an age & service benefit, based on service and compensation at disability.



Summary of Provisions Evaluated

New Contributory Plan

Non-Contributory Plan

Death After Retirement

If death occurs before total monthly benefit payments equal member's accumulated contributions, the difference is refunded.

Member contributions before 1978 are protected in the same manner as under the Contributory Plan.

A retiring member can also elect an optional form of benefit, which provides beneficiary protection paid for by reducing the retired member's benefit amount. Should the member elect a straight life benefit and decease within 12 months of the date of retirement, a benefit may be payable to the surviving spouse under certain conditions.

A retiring member can also elect an optional form of benefit, which provides beneficiary protection paid for by reducing the retired member's benefit amount. Should the member elect a straight life benefit and decease within 12 months of the date of retirement, a benefit may be payable to the surviving spouse under certain conditions.

Death While In APERS-Covered Employment

Member's accumulated contributions are refundable.

Member's accumulated contributions before 1978 are refundable.

If the member had 5 or more years of service, monthly benefits are payable instead. Surviving spouse receives a benefit computed as if member had retired and elected the Joint & 75% Survivor Option. Payment begins immediately.

If the member had 5 or more years of service, monthly benefits are payable instead. Surviving spouse receives a benefit computed as if member had retired and elected the Joint & 75% Survivor Option. Payment begins immediately.

Each dependent child receives benefit of 10% of compensation (maximum of 25% for all children).

Each dependent child receives benefit of 10% of compensation (maximum of 25% for all children).

Dependent parents benefits are payable if neither spouse nor children's benefits are payable.

Dependent parents benefits are payable if neither spouse nor children's benefits are payable.



Summary of Provisions Evaluated Credited Service

Membership Group	Service Credits
Public Safety Members (including State Capitol Police and Wildlife Sub-Division members) hired before July 1, 1997	1-1/2 times regular rate with 5 years actual service required to meet benefit eligibility rules.
Governor (hired before July 1, 1999)	3 times regular rate with 5 years actual service required to meet death-in-service eligibility and 4 years actual service required for other benefit eligibility.
Elected State Constitutional Officers (hired before July 1, 1999)	2-1/2 times regular rate with 5 years actual service required to meet benefit eligibility.
General Assembly	Regular crediting rate with 5 years of actual service required to meet death-in-service eligibility and 10 years of actual service required for other benefit eligibility.
Other Elected Public Officials (municipal and county officials)	2 times regular rate with 5 years actual service required to meet benefit eligibility.
All Other Members	Regular rate.

Arkansas Public Employees Deferred Retirement Option Plan

Members with 28 years of actual service in APERS or in combination with a reciprocal system are eligible to participate.

Members, for a maximum of 7 years, may continue employment and have 75% of their accrued benefit (at date of participation with 30 or more years of service) paid into the Deferred Retirement Option Plan in lieu of any further benefit accruals.

The payments into the Deferred Retirement Option Plan accumulate with interest at a rate established by the Board. The interest is paid on the mean balance and is paid to the member at termination of active membership in either a lump sum or as an annuity.

Employer contributions continue for members participating in the DROP.



Summary of Provisions Evaluated

General Assembly Division

Additional Benefit Provisions

Voluntary Retirement Eligibility

Age 65 with 10 or more years of credited service, 28 years of actual service regardless of age, or age 55 with 12 or more years of actual service, 10 of which must be as a member of the General Assembly. In addition, a member of the General Assembly who was a member of the General Assembly on July 1, 1979, or holding any other Arkansas elective office on July 1, 1979, is eligible to retire with 17.5 years of actual service regardless of age.

Vesting

Termination of employment prior to normal retirement age after completing 10 or more years of credited service.

Retirement Benefit

\$35.00 per month times years of General Assembly service. The amount is \$40.00 per month per year of service for any member who served as Speaker of the House of Representatives or President Pro Tempore of the Senate.

Disability

Eligibility: 10 years of credited service.

Amount: Accrued retirement benefit.

Death-In-Service

Eligibility: 5 years of service.

Amount - Less than 10 years in General Assembly: Same as for regular members.

Amount - 10 or more years in General Assembly: 100% of the benefit the member would have been entitled to had he or she been at retirement age payable to an eligible surviving spouse.

Death-After-Retirement

100% of the benefit the member was receiving payable to an eligible surviving spouse.

Participation

A member of the General Assembly may, at any time, elect either (i) to be covered by regular benefit provisions, or (ii) to discontinue an APERS membership.



Summary of Provisions Evaluated

Illustration of Benefit Changes During Recent Years of Retirement and Related Changes in Purchasing Power

Year Ended June 30	Increase Beginning of Year	Benefit Dollars In Year	Inflation (Loss) In Year#	Purchasing Power at Year End	
				1985 \$	% of 1985
1985	--	\$ 8,000	(3.7)%	\$8,000	100%
1986	\$ 240	8,240	(1.7)%	8,102	101%
1987	240	8,480	(3.7)%	8,041	101%
1988	240	8,720	(3.9)%	7,958	99%
1989	240	8,960	(5.1)%	7,780	97%
1990	240	9,200	(4.7)%	7,630	95%
1991	240	9,440	(4.7)%	7,478	93%
1992	661	10,101	(3.1)%	7,761	97%
1993	303	10,404	(3.0)%	7,761	97%
1994	584	10,988	(2.5)%	7,996	100%
1995	275	11,263	(3.0)%	7,958	99%
1996	1,064	12,327	(2.8)%	8,472	106%
1997	345	12,672	(3.0)%	8,506	106%
1998	760	13,432	(2.3)%	8,761	110%
1999	309	13,741	(1.7)%	8,896	111%
2000	990	14,731	(3.7)%	9,194	115%
2001	442	15,173	(3.2)%	9,172	115%
2002	713	15,886	(1.1)%	9,502	119%
2003	477	16,363	(2.1)%	9,586	120%
2004	491	16,854	(3.0)%	9,586	120%
2005	506	17,360	(3.2)%	9,570	120%
2006	521	17,881	(4.1)%	9,465	118%
2007	715	18,596	(2.4)%	9,617	120%
2008	558	19,154	(5.6)%	9,380	118%
2009	575	19,729	2.1 %	9,864	123%
2010	592	20,321	(1.2)%	10,036	125%
2011	610	20,931	(3.6)%	9,962	125%
2012	628	21,559	(1.4)%	10,118	126%
2013	647	22,206	(2.0)%	10,221	128%
2014	666	22,872	(2.0)%	10,322	129%
2015	686	23,558	(0.2)%	10,614	133%
2016	707	24,265	(0.8)%	10,843	136%
2017	728	24,993	(1.7)%	10,979	137%
2018	750	25,743	(2.9)%	10,984	137%
2019	772	26,515	(1.8)%	11,112	139%
2020	795	27,310	(1.0)%	11,334	142%
2021	819	28,129			

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

Revenues and Expenditures
July 1, 2019 Through June 30, 2020
Market Value

	Totals
Balance 7/1/2019	\$8,808,818,611
Revenues	
Member contributions	70,727,621
Employer contributions	298,121,991
Transfers	4,013,300
Other	1,046,877
Investment return*	174,077,432
Total	547,987,221
Expenditures	
Benefits paid and refunds	601,177,269
Expenses	11,649,192
Total	612,826,461
Reserve Adjustments	0
Balance 6/30/2020	\$8,743,979,371
Less Contributions Receivable	5,617,215
Balance Available for Funding Valuation	\$8,738,362,156

* Net of investment expenses.

Note: Results may not total due to rounding.

Reported Accrued Assets Available for Benefits June 30, 2020

Retirement System Account	Reported Assets June 30, 2020
Employer Accumulation Account	\$ 1,276,011,774 *
Members Deposit Account	464,165,970
Members Deposit Interest Reserve	89,346,264
Retirement Reserve Account	6,270,115,595 *
Deferred Annuity Reserve Account	558,984,407 *
DROP Reserve	85,272,616
Miscellaneous Reserves	82,744
Total Market Value	<u>\$ 8,743,979,370</u>
Less Contributions Receivable	<u>5,617,214</u>
Market Value Available for Funding	\$ 8,738,362,156
Funding Value of Assets	\$ 9,090,423,393
Valuation Asset Adjustment	352,061,237
Adjusted Employer Accum. Account	\$ 1,628,073,011

* After recommended reserve transfers (see page A-2).

Reported Accrued Assets Available for Benefits

June 30, 2020

(Concluded)

The Employers Accumulation Account represents employer contributions accumulated for benefits on behalf of present members.

The Members Deposit Account represents member contributions accumulated for (1) monthly benefits at retirement, and (2) refunds upon termination if monthly benefits are not payable.

The Members Deposit Interest Reserve Account represents interest credited on member contributions.

The Retirement Reserve Account represents reserves, from employer and member contributions, held for the monthly benefits being paid to present retired lives.

The Deferred Annuity Account represents employer reserves held for future monthly benefits to present inactive members.

In financing the liabilities, the Fund balances displayed on the previous page were applied to the actuarial accrued liabilities.

Development of Funding Value of Assets

Valuation Date June 30:	2018	2019	2020	2021	2022	2023
A. Funding Value Beginning of Year	\$ 8,157,037,661	\$ 8,416,354,234	\$ 8,738,714,746			
B. Market Value End of Year	8,571,821,992	8,803,211,537	8,738,362,156			
C. Market Value Beginning of Year	7,998,520,598	8,571,821,992	8,803,211,537			
D. Non-Investment Net Cash Flow	(208,183,314)	(219,167,312)	(238,916,672)			
E. Investment Income						
E1. Market Total: B - C - D	781,484,708	450,556,857	174,067,291			
E2. Assumed Rate	7.15%	7.15%	7.15%			
E3. Amount for Immediate Recognition	575,871,296	594,024,272	616,375,135			
E4. Amount for Phased-In Recognition	205,613,412	(143,467,415)	(442,307,844)			
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.25 x E4	51,403,353	(35,866,854)	(110,576,961)			
F2. First Prior Year	69,290,648	51,403,353	(35,866,854)	\$(110,576,961)		
F3. Second Prior Year	(137,323,597)	69,290,648	51,403,353	(35,866,854)	\$(110,576,961)	
F4. Third Prior Year	(91,741,813)	(137,323,595)	69,290,646	51,403,353	(35,866,853)	\$(110,576,961)
F5. Total Phase-Ins	(108,371,409)	(52,496,448)	(25,749,816)	(95,040,462)	(146,443,814)	(110,576,961)
G. Preliminary Funding Value End of Year: A + D + E3 + F5	\$ 8,416,354,234	\$ 8,738,714,746	\$ 9,090,423,393			
H. Adjustment to Minimum of 75% of B, Maximum 125% of B	0	0	0			
I. Funding Value End of Year	\$ 8,416,354,234	\$ 8,738,714,746	\$ 9,090,423,393			
J. Difference Between Market & Funding Value	155,467,758	64,496,791	(352,061,237)			
K. Recognized Rate of Return	5.8%	6.5%	6.9%			
L. Market Rate of Return	9.9%	5.3%	2.0%			
M. Ratio of Funding Value to Market Value	98%	99%	104%			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (Line E4) are phased-in over a closed 4-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. If assumed rates are exactly realized for 3 consecutive years, Funding Value will become equal to Market Value.



Summary of Annuitants on Rolls

Retirees and beneficiaries (including DROP participants) on rolls included in the valuation totaled 39,805, involving annual annuities of \$637,106,712, distributed as follows:

Division	Number	Annuities Being Paid July 1, 2020	
		Monthly	Annualized
State & Local	38,007	\$ 48,080,832	\$ 576,969,984
General Assembly	114	172,852	2,074,224
Governor	1	5,475	65,700
Wildlife	149	525,571	6,306,852
State Constitutional Officers	14	62,780	753,360
Penitentiary	0	0	0
Sub-total	38,285	48,847,510	586,170,120
DROP	1,520	4,244,716	50,936,592
Totals	39,805	\$ 53,092,226	\$ 637,106,712

Inactive members, entitled to deferred annuities, included in the valuation totaled 14,711, involving deferred monthly annuities of \$6,750,753, distributed as follows:

Division	Number of Inactive Members	Deferred Annuities	
		Monthly	Annualized
State and Local	14,701	\$ 6,741,156	\$ 80,893,872
General Assembly	4	2,950	35,400
Wildlife	3	1,494	17,928
State Constitutional Officers	3	5,153	61,836
Totals	14,711	\$ 6,750,753	\$ 81,009,036

Retirement System Totals
Annuities Being Paid Retirees and Beneficiaries
and DROP Participants
June 30, 2020
by Attained Age and Type of Retirement

Attained Ages	DROP		Age & Service*		Disability		Death-in-Service Beneficiaries		Totals	
	No.	Annual Amount	No.	Annual Annuities	No.	Annual Annuities	No.	Annual Annuities	No.	Annual Annuities
Under 40			80	\$ 474,660	21	\$ 117,336	199	\$ 900,348	300	\$ 1,492,344
40-44			37	285,852	43	258,768	29	156,048	109	700,668
45-49	18	\$ 627,672	83	1,303,536	105	905,100	46	292,764	252	3,129,072
50-54	229	7,999,260	422	10,466,856	207	1,978,584	73	741,276	931	21,185,976
55-59	552	19,985,304	2,123	43,290,792	497	4,824,420	141	1,156,572	3,313	69,257,088
60-64	518	16,303,080	5,101	85,188,912	690	7,292,880	184	1,652,508	6,493	110,437,380
65-69	158	4,547,832	8,351	132,082,692	723	7,601,004	193	1,718,268	9,425	145,949,796
70-74	42	1,348,704	7,596	122,024,532	556	5,893,404	141	1,457,736	8,335	130,724,376
75-79	3	124,740	4,756	70,336,884	272	2,683,584	97	957,852	5,128	74,103,060
80-84			2,978	42,275,724	66	719,832	67	658,368	3,111	43,653,924
85-89			1,549	23,233,944	25	347,676	27	279,684	1,601	23,861,304
90-94			625	9,583,548	7	124,932	15	192,816	647	9,901,296
95-99			137	2,377,956	3	45,072	5	39,024	145	2,462,052
Over 100			14	239,880			1	8,496	15	248,376
Totals	1,520	\$50,936,592	33,852	\$543,165,768	3,215	\$32,792,592	1,218	\$10,211,760	39,805	\$637,106,712

* Including survivor beneficiaries of deceased retirees and QDRO alternate payees.



Annuities Being Paid June 30, 2020 by Type of Annuity

Type of Annuity	Number	Annual Annuities
Age & Service Retirees		
Life	22,021	\$ 367,076,844
Option A- 60 (5 years certain)	1,991	26,787,276
Option A-120 (10 years certain)	3,287	42,648,804
Option B- 50 (joint and 50% survivor)	1,815	37,685,952
Option B- 75 (joint and 75% survivor)	2,873	49,603,572
Totals	31,987	523,802,448
Disability Retirees		
Life	2,179	22,545,528
Option A- 60	186	1,748,052
Option A-120	400	3,978,600
Option B- 50	163	1,731,672
Option B- 75	287	2,788,740
Totals	3,215	32,792,592
Beneficiaries of Age & Service and Disability Retirees		
Life	46	981,696
Option A- 60	49	377,868
Option A-120	290	2,720,916
Option B- 50	397	3,874,500
Option B- 75	798	9,123,468
Totals	1,580	17,078,448
Total Age & Service Retirees & Beneficiaries	33,567	540,880,896
Death-in-Service Beneficiaries	1,218	10,211,760
Total Death and Disability Retirees & Beneficiaries	4,433	43,004,352
QDRO Alternate Payees	285	2,284,872
Total Retirees & Beneficiaries	38,285	586,170,120
DROP Participants	1,520	50,936,592
Total Including DROP Participants	39,805	\$ 637,106,712

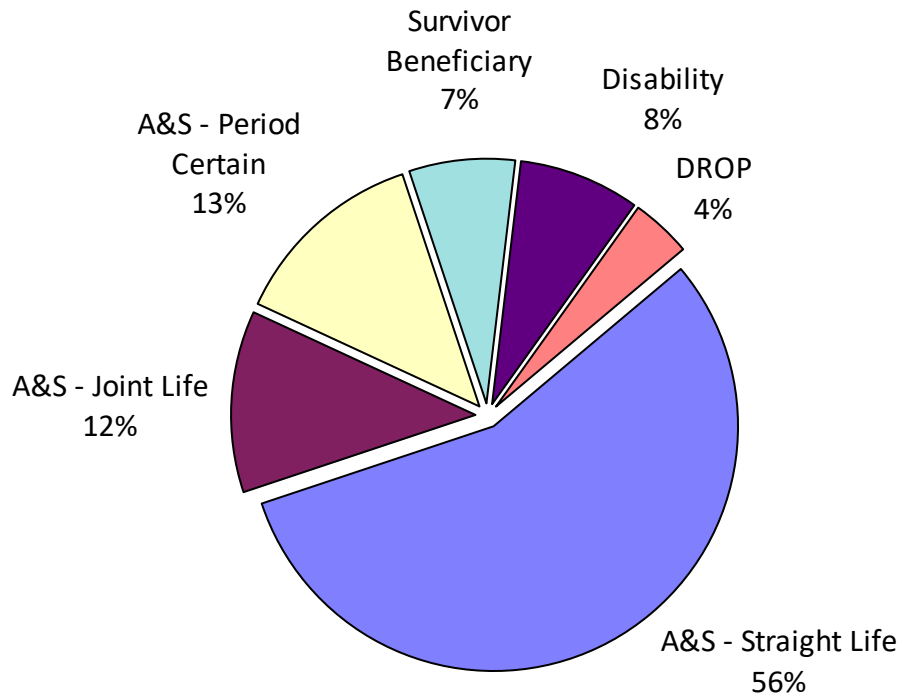
The average monthly benefit is \$1,333.81



Schedule of Average Benefit Payments (Voluntary Retirements Still Receiving Benefits as of June 30, 2020)

	Years of Credited Service				
	10-14	15-19	20-24	25-29	30+
Retirement Effective Dates July 1, 2019 to June 30, 2020					
Average Monthly Benefit	\$ 439.55	\$ 1,029.09	\$ 1,540.36	\$2,372.23	\$3,217.21
Average Monthly FAS	2,791.36	3,379.30	3,786.62	2,781.00	2,412.39
Number of Active Retirees	1,149	340	256	385	211
Retirement Effective Dates July 1, 2018 to June 30, 2019					
Average Monthly Benefit	485.59	961.56	1,569.79	2,342.18	3,093.57
Average Monthly FAS	2,735.94	3,260.28	3,679.97	2,784.56	2,464.53
Number of Active Retirees	865	266	221	382	178
Retirement Effective Dates July 1, 2017 to June 30, 2018					
Average Monthly Benefit	455.14	991.06	1,472.39	2,325.23	2,954.57
Average Monthly FAS	2,711.53	3,303.54	3,717.60	2,457.80	1,878.18
Number of Active Retirees	763	274	186	385	214
Retirement Effective Dates July 1, 2016 to June 30, 2017					
Average Monthly Benefit	481.50	1,029.89	1,490.30	2,351.32	3,060.06
Average Monthly FAS	2,827.35	3,284.51	3,442.16	3,618.77	3,900.04
Number of Active Retirees	843	286	203	454	213
Retirement Effective Dates July 1, 2015 to June 30, 2016					
Average Monthly Benefit	473.37	1,010.25	1,480.91	2,306.85	2,930.09
Average Monthly FAS	2,836.80	3,278.34	3,734.49	3,726.51	4,058.28
Number of Active Retirees	830	238	163	441	222
Retirement Effective Dates July 1, 2014 to June 30, 2015					
Average Monthly Benefit	464.07	1,113.73	1,535.49	2,344.41	2,904.59
Average Monthly FAS	2,768.57	3,238.30	3,493.35	3,521.92	3,868.05
Number of Active Retirees	835	258	214	468	203
Retirement Effective Dates July 1, 2013 to June 30, 2014					
Average Monthly Benefit	439.94	957.40	1,422.04	2,261.50	2,850.48
Average Monthly FAS	2,691.68	2,991.31	3,400.22	3,512.88	3,727.83
Number of Active Retirees	750	230	174	470	164
Retirement Effective Dates July 1, 2012 to June 30, 2013					
Average Monthly Benefit	439.47	909.99	1,503.68	2,308.12	2,788.18
Average Monthly FAS	2,549.33	2,817.05	3,527.85	3,309.36	3,654.43
Number of Active Retirees	789	209	184	508	199
Retirement Effective Dates July 1, 2011 to June 30, 2012					
Average Monthly Benefit	415.01	948.47	1,383.72	2,315.59	2,718.91
Average Monthly FAS	2,538.35	2,940.64	3,205.23	3,408.59	3,383.48
Number of Active Retirees	731	209	165	432	156
Retirement Effective Dates July 1, 2010 to June 30, 2011					
Average Monthly Benefit	445.50	991.98	1,507.80	2,322.97	2,710.13
Average Monthly FAS	2,583.34	2,897.53	3,182.95	3,380.22	3,418.11
Number of Active Retirees	638	183	177	420	184
Retirement Effective Dates July 1, 2010 to June 30, 2020					
Average Monthly Benefit	454.41	998.68	1,496.11	2,323.74	2,931.49
Average Monthly FAS	2,712.85	3,168.10	3,531.75	3,277.24	3,272.55
Number of Active Retirees	8,193	2,493	1,943	4,345	1,944

Annuities Being Paid by Type June 30, 2020



New Retirees June 30, 2020

	<u>New Retirees June 30, 2020</u>	
	<u>Age & Service</u>	<u>Disability</u>
Number*	2,330	224
Average Age (yrs.)	62.9	56.3
Average Service (yrs.)	16.7	14.5
Average Monthly Benefit	\$1,214.61	\$787.78

* May include members who become new retirees from a non-active status.

Retirement System Totals
Annuities Likely to be Paid Present Inactive Members
June 30, 2020
by Attained Age

Attained Ages	No.	Estimated Annual Annuities
Under 40	1,871	\$ 9,893,496
40-44	1,889	10,458,924
45-49	2,701	15,160,740
50-54	3,040	17,373,060
55-59	2,541	14,813,340
60-64	1,695	9,290,640
65-69	974	4,018,836
Totals	14,711	\$ 81,009,036

Liabilities for Deferred Annuities June 30, 2020

Number of Inactive Members	Estimated Annual Annuities	Annuity Liabilities
14,711	\$ 81,009,036	\$ 558,984,407

**State and Local Division
(Excluding General Assembly)
Active Members* in Valuation June 30, 2020
by Attained Age and Years of Service**

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	240							240	\$ 6,666,237
20-24	2,589	22						2,611	77,679,189
25-29	3,659	623	13					4,295	145,546,498
30-34	2,813	1,419	439	12				4,683	175,615,224
35-39	2,238	1,348	999	426	10			5,021	204,113,372
40-44	1,856	1,263	1,017	854	254	3		5,247	221,629,702
45-49	1,500	1,082	951	866	740	172	3	5,314	232,017,607
50-54	1,408	1,059	827	787	736	457	97	5,371	234,081,929
55-59	1,312	1,031	846	804	684	437	171	5,285	226,592,568
60	193	198	174	153	130	74	37	959	42,083,634
61	172	167	174	151	137	65	30	896	39,114,547
62	160	158	135	124	102	55	24	758	32,555,722
63	147	134	140	115	86	52	21	695	30,357,118
64	113	123	112	108	92	61	27	636	29,076,240
65	96	109	88	75	62	38	16	484	21,226,467
66	77	81	52	57	41	36	15	359	16,598,699
67	67	74	54	50	32	24	8	309	12,909,750
68	48	56	38	37	23	8	9	219	9,059,967
69	51	42	31	17	11	17	7	176	7,360,332
70 & over	214	189	136	138	75	37	24	813	31,372,693
Totals	18,953	9,178	6,226	4,774	3,215	1,536	489	44,371	\$1,795,657,495

* Not including DROP participants.

Group Averages

Age:	44.4 years
Service:	8.9 years
Annual Pay:	\$40,469



**General Assembly Sub-Division
Active Members in Valuation June 30, 2020
by Attained Age and Years of Service**

Attained Age	Years of Service to Valuation Date							No.	Valuation Payroll
	0-4	5-9	10-14	15-19	20-24	25-27	28 Plus		
60									
61									
62				1				1	\$ 41,824
63									
64									
65									
66									
67									
68									
69									
70									
71									
72									
73									
74									
75									
76				1				1	41,824
77									
78									
79									
Totals				2				2	\$83,648

While not used in the computations, the following *group averages* are computed and shown for their general interest.

Group Averages

Age:	69.2 years
Service:	17.5 years
Annual Pay:	\$41,824

SECTION C

GAIN/(LOSS) ANALYSIS

Gain/(Loss) Analysis Comments

Purpose of Gain/(Loss) Analysis. Regular actuarial valuations give valuable information about the composite change in unfunded actuarial accrued liabilities – whether or not the liabilities are increasing or decreasing and by how much.

But valuations do not show the portion of the change attributable to each risk area within the Retirement System: the rate of investment return which plan assets earn; the rates of withdrawal of active members who leave covered employment; the rates of mortality; the rates of disability; the rates of pay increases; and the ages at actual retirement. In an actuarial valuation, assumptions must be made as to what these rates will be, for the next year and for decades in the future.

The objective of a gain and loss analysis is to determine the portion of the change in actuarial condition (unfunded actuarial accrued liabilities) attributable to each risk area.

The fact that actual experience differs from assumed experience is to be expected – **the future cannot be predicted with precision**. The economic risk areas (particularly investment return and pay increases) are volatile. Inflation directly affects economic risk areas, and inflation seems to defy reliable prediction.

Changes in the valuation assumed experience for a risk area should be made when the differences between assumed and actual experience have been observed to be sizable and persistent. A gain and loss analysis covering a relatively short period may or may not be indicative of **long-term trends, which are the basis of actuarial assumptions**.

Changes in Unfunded Actuarial Accrued Liabilities During the Period July 1, 2019 to June 30, 2020

	<u>Total (\$ in millions)</u>
(1) UAAL* at beginning of year	\$ 2,390.0
(2) Employer normal cost from last valuation	150.0
(3) Actual employer contributions	298.1
(4) Interest accrual: $[(1) + \frac{1}{2}[(2) - (3)]] \times .0715$	165.6
(5) Expected UAAL before changes: $(1) + (2) - (3) + (4)$	2,407.5
(6) Increase from benefit changes	0.0
(7) Changes from revised actuarial assumptions and methods	0.0
(8) New entrant liabilities	57.5
(9) Expected UAAL after changes: $(5) + (6) + (7) + (8)$	2,465.0
(10) Actual UAAL at end of year	2,422.6
<hr/>	
(11) Gain/(Loss): $(9) - (10)$	\$ 42.4

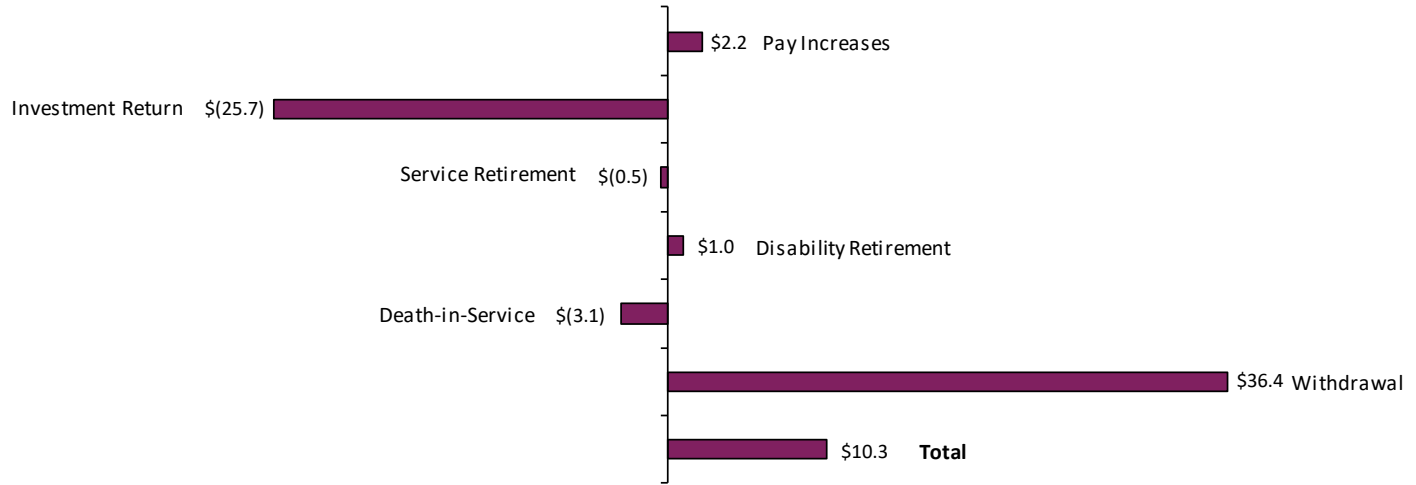
* *Unfunded actuarial accrued liability.*

Experience Gains/(Losses) by Risk Area During the Period July 1, 2019 to June 30, 2020

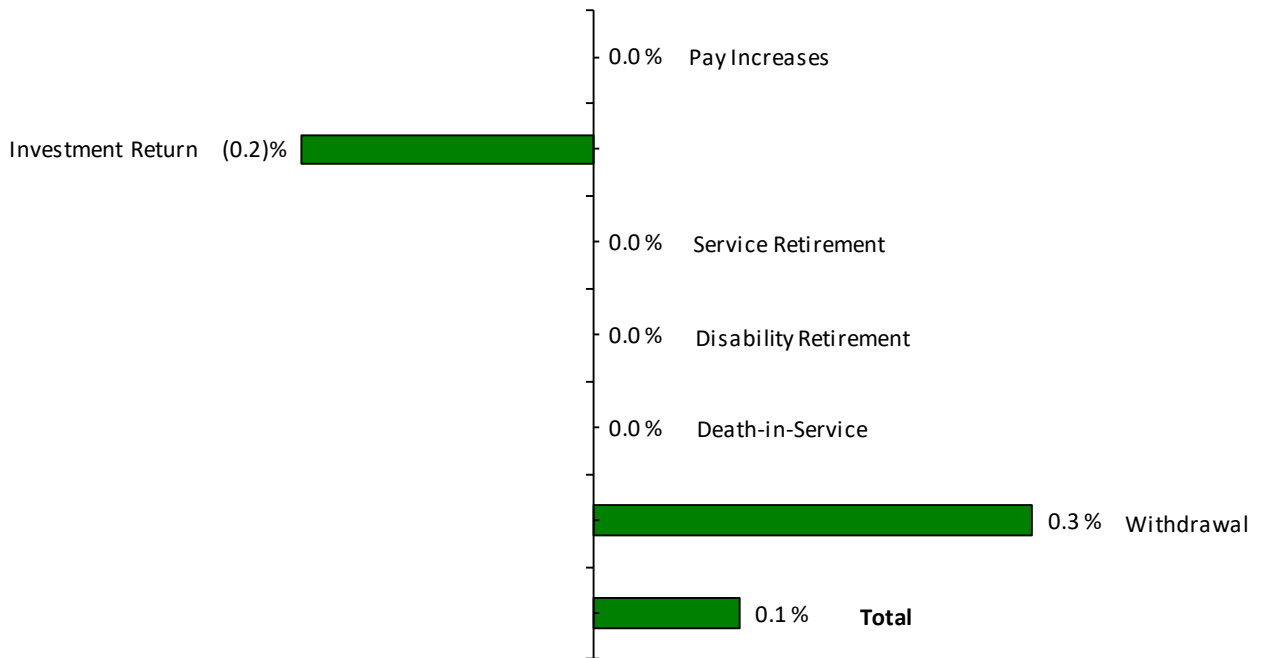
Type of Risk Area	Total (\$ in millions)	% of Accrued Liabilities
ECONOMIC RISK AREAS		
<i>Pay Increases.</i> If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	\$ 2.2	0.0 %
<i>Investment Return.</i> If there is greater investment return than assumed, there is a gain. If less return, a loss.	(25.7)	(0.2)%
NON-ECONOMIC RISK AREAS		
<i>Non-Casualty Retirements.</i> If members retire at older ages or with lower final average pays than assumed, there is a gain. If younger ages or higher average pays, a loss.	(0.5)	0.0 %
<i>Disability Retirements.</i> If there are fewer disabilities than assumed, there is a gain. If more, a loss.	1.0	0.0 %
<i>Death-in-Service Benefits.</i> If there are fewer claims than assumed, there is a gain. If more, a loss.	(3.1)	0.0 %
<i>Withdrawal.</i> If more liabilities are released by other separations than assumed, there is a gain. If smaller releases, a loss.	36.4	0.3 %
Total Active Member Actuarial Gains/(Losses)	\$ 10.3	0.1 %
<i>Retired Life Mortality.</i>	30.0	0.3 %
<i>Other.</i> Includes data adjustments at retirement, timing of financial transactions, and miscellaneous unidentified sources.	\$ 2.1	0.0 %
Total Actuarial Gains/(Losses)	\$ 42.4	0.4 %

Actuarial Gains/(Losses) Active Members 2019-2020 Plan Year

Amounts in \$ Millions



% of Accrued Liabilities



Actuarial Gains/(Losses) by Risk Area Active Members - Comparative Statement (\$ in Millions)

Year Ending June 30	Gain/(Loss) By Risk Area						Total Experience Gain/(Loss)		Accrued Liability End of Year
	Pay Increases	Invest- ments	Age & Service Retirement	Disability	Death-In- Service	Withdrawal	Dollars	% of AAL	
1992	\$ 2.7	\$ 27.9	\$ 2.7	\$ 1.2	\$ 2.1	\$ (6.1)	\$ 30.5	3.2 %	\$ 1,607.6
1993	(2.6)	36.3	1.6	1.3	3.1	4.2	43.9	2.7 %	1,711.3
1994	26.0	21.5	3.8	1.4	2.4	(2.2)	52.9	3.1 %	1,853.8
1995	32.0	68.1	(2.1)	(1.5)	(3.0)	(1.7)	91.8	4.5 %	2,057.4
1996	(0.7)	103.5	5.7	2.9	1.4	5.3	118.1	5.8 %	2,290.6
1997	(2.2)	155.3	7.7	3.6	1.9	4.9	171.2	7.5 %	2,605.6
1998	18.2	197.4	(4.4)	4.2	2.1	20.6	238.1	9.1 %	2,882.5
1999	(0.6)	153.1	(0.3)	3.2	(0.1)	25.8	181.1	5.5 %	3,478.7
2000	(13.1)	134.1	2.2	2.8	(0.1)	20.7	146.6	4.2 %	3,803.4
2001	31.3	(37.0)	3.3	3.0	0.1	18.9	19.6	0.5 %	4,111.0
2002	5.4	(247.1)	3.7	(2.5)	0.5	(4.2)	(244.2)	(5.6)%	4,398.0
2003	36.0	(292.6)	11.2	3.3	(0.1)	15.2	(227.0)	(4.9)%	4,398.0
2004	16.2	(274.0)	18.4	0.5	0.2	8.6	(230.0)	(4.6)%	5,004.5
2005	46.7	(143.4)	20.1	0.5	0.5	28.5	(47.1)	(0.8)%	5,619.4
2006	(15.4)	46.5	17.0	0.8	0.0	11.4	60.3	1.0 %	5,936.3
2007	53.2	215.5	12.4	0.8	0.1	17.2	299.2	4.8 %	6,173.8
2008	(35.8)	(0.5)	(1.4)	0.9	0.1	10.0	(26.7)	(0.4)%	6,542.7
2009	1.9	(808.1)	(7.3)	1.1	0.0	4.9	(807.5)	(11.6)%	6,937.9
2010	(2.8)	(319.7)	(2.1)	2.4	(0.1)	(7.7)	(330.0)	(4.5)%	7,304.2
2011	65.1	(259.8)	10.7	(5.9)	(0.1)	7.7	(182.3)	(2.4)%	7,734.1
2012	35.8	(189.5)	11.1	0.8	(0.2)	(4.2)	(146.1)	(1.8)%	8,162.7
2013	89.2	190.9	27.6	0.8	(0.3)	3.4	311.6	3.7 %	8,284.2
2014	86.7	351.3	13.4	0.9	(0.3)	5.6	457.6	5.3 %	8,863.6
2015	93.6	71.4	17.1	1.3	(0.3)	23.8	206.9	2.3 %	9,294.8
2016	(10.8)	47.7	18.7	1.2	(0.3)	14.6	71.1	0.8 %	9,662.7
2017	110.6	17.6	25.5	1.9	(0.3)	29.7	185.0	1.8 %	10,510.2
2018	4.9	(108.4)	5.3	1.6	(2.8)	64.8	(34.6)	(0.4)%	10,694.3
2019	2.6	(52.5)	0.1	1.2	(2.6)	47.6	(3.6)	(0.1)%	11,128.8
2020	2.2	(25.7)	(0.5)	1.0	(3.1)	36.4	10.3	0.1 %	11,513.0



Development of Gain/(Loss) From Investment Return* During the Period July 1, 2019 to June 30, 2020

	<u>\$ Millions</u>
1. Total Assets Beginning of Year	\$ 8,738.7
2. Total Assets End of Year (Funding Value)	
a. Actual	\$ 9,090.4
b. If net investment return had been 7.15%	\$ 9,116.1
3. Gain/(Loss): 2a. minus 2b.	\$ (25.7)

* "Investment return" as used in this Gain/(Loss) Analysis means essentially: assumed investment income; plus/minus a four-year phase-in of differences between actual and assumed investment return (see page B-10).

**Active and DROP Members
Who Became Age & Service Retirees
During the Period July 1, 2019 to June 30, 2020
(Retirement With Unreduced Benefit
Beginning Immediately)
Attained Age of 65 or Older With Less
Than 28 Years of Service**

Ages	State & Local Retirements	
	Actual#	Expected
65	112	93
66	97	82
67	46	59
68	35	32
69	30	24
70	24	24
71	21	19
72	11	15
73	24	14
74	6	11
75 & Up	38	42
	444	415

Additionally, there were 154 new age and service retirees with less than 28 years of non-reciprocal service and under the age of 65.

Averages, in Years:

Age at retirement 68.8

Service at retirement 14.0

**Active Members
Who Became Reduced Early Retirees
During the Period July 1, 2019 to June 30, 2020
(Early Retirements With Reduced Benefits
Beginning Immediately)**

Ages	State & Local Early Retirement	
	Actual	Expected
55	17	15
56	14	14
57	9	16
58	12	20
59	23	22
60	17	28
61	27	28
62	88	99
63	53	89
64	37	52
Totals	297	383

Averages, in Years:

Age at retirement	60.5
Service at retirement	17.5

**Active and DROP Members Who Retired or
Active Members Who Entered the DROP
During the Period July 1, 2019 to June 30, 2020
(28 or More Years of Service)**

Years of Service	State & Local			
	Retirement		DROP	
	Actual	Expected	Actual	Expected
28	44	60	41	n/a
29	45	50	56	n/a
30	49	52	15	n/a
31	36	41	15	n/a
32	28	27	9	n/a
33	26	24	4	n/a
34	39	33	5	n/a
35	47	40	2	n/a
36	29	30	2	n/a
37	17	27	2	n/a
38 & Up	48	168	5	n/a
Totals	408	552	156	

Averages, in Years:

Age at retirement	61.5	57.9
Service at retirement	33.2	30.1

**Active Members Who Became Disability Retirees
During the Period July 1, 2019 to June 30, 2020
(and Who Were Active Members as of June 30, 2019)**

Ages	State & Local Disabilities	
	Actual	Expected
20- 24		0
25- 29	1	0
30- 34		1
35- 39	1	3
40- 44		5
45- 49	1	10
50- 54	11	16
55- 59	20	26
60 & Up	17	26
Totals	51	87

Averages, in Years:

Age at retirement	55.8
Service at retirement	15.2

**Active Members Who Left Active Status with a
Deferred Benefit Payable
During the Period July 1, 2019 to June 30, 2020
(Vested Separations)**

Ages	State & Local Vested Separations	
	Actual	Expected
Below 30	54	104
30- 34	115	197
35- 39	170	193
40- 44	153	171
45- 49	201	155
50- 54	162	121
55- 59	116	82
60 & Up	108	50
Totals	1,079	1,072

Averages, in Years:

Age at termination 47.1

Service at termination 10.3

**Active Members Who Left Active Status with
No Benefit Payable
During the Period July 1, 2019 to June 30, 2020
(Non-Vested Separations)**

Service at Termination	State & Local Non-Vested Separations	
	Actual	Expected
0	2,368	2,164
1	1,101	1,051
2	645	669
3	432	412
4	254	1
Totals	4,800	4,297

Averages, in Years:

Age at termination	45.4
Service at termination	1.9

**Members Active Both Beginning and End of Year
Salary Increases by Age Group
During the Period July 1, 2019 to June 30, 2020**

Age Groups	Number	Beginning Pay	Ending Pay		Percentage Increase	
			Expected	Actual	Expected	Actual
Below 25	1,577	\$ 45,624,538	\$ 49,932,815	\$ 48,287,895	9.4%	5.8%
25- 29	3,258	108,474,329	116,466,414	116,036,511	7.4%	7.0%
30- 34	3,943	145,532,157	154,302,242	154,504,838	6.0%	6.2%
35- 39	4,479	179,470,790	189,169,550	188,737,063	5.4%	5.2%
40- 44	4,635	190,807,469	200,367,986	200,643,178	5.0%	5.2%
45- 49	5,036	216,049,019	225,996,188	225,652,268	4.6%	4.4%
50- 54	5,170	223,493,358	233,034,678	232,880,504	4.3%	4.2%
55- 59	5,355	235,171,743	244,696,199	244,720,708	4.1%	4.1%
60-64	4,052	181,440,345	188,303,488	189,153,584	3.8%	4.3%
65 & Over	2,161	91,345,535	94,314,265	95,001,243	3.2%	4.0%
Totals	39,666				4.9%	4.8%

SECTION D

DISTRICT JUDGES – VALUATION RESULTS AND VALUATION DATA

District Judges

Employer Contribution Rates Computed June 30, 2020

Contribution for	Computed Employer Contributions	
	New Plan and Paid-Off Old Plan (% of Active Payroll)	Still Paying Old Plan (Annual \$)
Normal Cost:		
Age and service annuities (including reduced retirement)	18.07%	
Separation benefits	1.62%	
Disability benefits	1.47%	
Death-in-service annuities	1.25%	
Total	22.41%	
Member contributions	5.00%	
Employer Normal Cost	17.41%	
Unfunded Actuarial Accrued Liabilities	28.88% *	\$603,260 **
Total Employer Contribution	46.29%	\$603,260

* Unfunded actuarial accrued liabilities were amortized over a 6.6-year period.

** Unfunded actuarial accrued liabilities were amortized over a 15-year period.

District Judges

Summary Statement of System Resources and Obligations

Year Ended June 30, 2020

Present Resources and Expected Future Resources

	Totals
A. Present Valuation Assets:	
1. Net assets from system financial statements	\$ 25,031,320
2. Market value adjustment	1,944,807
3. Valuation assets	26,976,127
B. Actuarial present value of expected future employer contributions:	
1. For normal costs	1,124,488
2. For unfunded actuarial accrued liability	8,863,716
3. Total	9,988,204
C. Actuarial present value of expected future member contributions	325,254
D. Total Present and Expected Future Resources	\$ 37,289,585

Actuarial Present Value of Expected Future Benefit Payments and Reserves

A. To retirees and beneficiaries	\$ 19,099,119
B. To vested terminated members	5,574,181
C. To present active members:	
1. Allocated to service rendered prior to valuation date - actuarial accrued liability	11,166,543
2. Allocated to service likely to be rendered after valuation date	1,449,742
3. Total	12,616,285
D. Reserve	0
E. Total Actuarial Present Value of Expected Future Benefit Payments	\$ 37,289,585

District Judges

Computed Actuarial Liabilities and Allocation Using Entry Age Actuarial Cost Method as of June 30, 2020

Actuarial Present Value of	(1) Total Present Value	(2) Portion Covered By Future Normal Cost Contributions	Actuarial Accrued Liabilities (1) - (2)
Benefits to be paid to current retirees, beneficiaries, and future beneficiaries of current retirees	\$19,099,119	\$ 0	\$19,099,119
Age and service allowances based on total service likely to be rendered by present active members	12,200,216	1,171,043	11,029,173
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members	5,618,391	109,776	5,508,615
Disability benefits likely to be paid to present active members	18,258	93,006	(74,748)
Death-in-service benefits likely to be paid on behalf of present active members	353,601	75,917	277,684
Total	\$37,289,585	\$1,449,742	\$35,839,843
Applicable assets (funding value)	26,976,127	0	26,976,127
Liabilities to be covered by future contributions	\$10,313,458	\$1,449,742	\$ 8,863,716

District Judges

Summary of Provisions Evaluated

Voluntary Retirement	<i>With a full benefit</i> , after either (a) age 50 with 20 years of eligibility service, (b) age 60 with 16 years of eligibility service, or (c) age 65 with 8 years of eligibility service.
Final Average Compensation (FAC)	Average of the final three calendar years of employment.
Benefit Service	Service performed on or after January 1, 2005.
Eligibility Service	Benefit service plus service in Old Local District Judges Plan.
Full Age & Service Retirement Benefit	2.50% of FAC times actual service.
Benefit Increases After Retirement	Annually, there will be a cost-of-living adjustment equal to 3% of the current benefit.
Member Contribution Rates	Active members contribute 5% of their salaries. If a member leaves service before becoming eligible to retire, accumulated contributions may be refunded.
Vested Retirement Benefits	8 years of eligibility service. Deferred full retirement benefit, based on benefit service and pay at termination, begins when member would have been eligible for voluntary retirement.
Total and Permanent Disability	An active member with 3 or more consecutive years of eligibility service who becomes totally and permanently disabled may be retired and receive a disability annuity computed in the same manner as an age and service annuity.
Death After Retirement	If the member was eligible for normal retirement at the time of death, an eligible beneficiary will begin receiving a 50% joint and survivor pension computed in the same manner as a service retirement pension as if the member had retired the last day of his life.

District Judges
Revenues and Expenditures
July 1, 2019 Through June 30, 2020
Market Value

	Plan		Totals
	New Plan and Paid-Off Old Plan	Still Paying Old Plan	
Balance 7/1/2019	\$ 21,731,314	\$ 2,777,735	\$ 24,509,049
Adjustment	-	-	-
Revenues			
Member contributions	196,116	-	196,116
Employer contributions	1,341,792	635,232	1,977,024
Other	-	-	-
Investment return	551,827	68,490	620,317
Total	\$ 2,089,735	\$ 703,722	\$ 2,793,457
Expenditures			
Benefits paid	1,341,036	771,904	2,112,940
Refunds	-	-	-
Investment Expenses	111,941	13,893	125,834
Administrative Expenses	28,833	3,579	32,412
Total	\$ 1,481,810	\$ 789,376	\$ 2,271,186
Preliminary Balance	\$ 22,339,239	\$ 2,692,081	\$ 25,031,320
Employer Paid Off Old Liability	101,110	(101,110)	-
Balance 6/30/2020	\$ 22,440,349	\$ 2,590,971	\$ 25,031,320

Note: Results may not total due to rounding.

Development of Funding Value of Assets New Plan and Paid-Off Old Plan June 30, 2020

Valuation Date June 30:	2018	2019	2020	2021	2022	2023
A. Funding Value Beginning of Year	\$ 19,346,829	\$ 21,881,408	\$ 23,349,843			
B. Market Value End of Year	20,984,906	21,731,314	22,440,349			
C. Market Value Beginning of Year	18,365,290	20,984,906	21,731,314			
D. Non-Investment Net Cash Flow	1,933,454	801,732	269,149			
E. Investment Income						
E1. Market Total: B - C - D	686,162	(55,324)	439,886			
E2. Assumed Rate	7.15%	7.15%	7.15%			
E3. Amount for Immediate Recognition	1,451,624	1,592,853	1,679,025			
E4. Amount for Phased-In Recognition	(765,462)	(1,648,177)	(1,239,139)			
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.25 x E4	(191,366)	(412,044)	(309,785)			
F2. First Prior Year	336	(191,366)	(412,044)	\$ (309,785)		
F3. Second Prior Year	(323,077)	336	(191,366)	(412,044)	\$ (309,785)	
F4. Third Prior Year	(336,392)	(323,076)	334	(191,364)	(412,045)	\$ (309,784)
F5. Total Phase-Ins	(850,499)	(926,150)	(912,861)	(913,193)	(721,830)	(309,784)
G. Preliminary Funding Value End of Year: A + D + E3 + F5	21,881,408	23,349,843	24,385,156			
H. Adjustment to Minimum of 75% of B, Maximum 125% of B	0	0	0			
I. Funding Value End of Year	21,881,408	23,349,843	24,385,156			
J. Difference Between Market & Funding Value	(896,502)	(1,618,529)	(1,944,807)			
K. Recognized Rate of Return	3.0%	3.0%	3.3%			
L. Market Rate of Return	3.5%	(0.3)%	2.0%			
M. Ratio of Funding Value to Market Value	104%	107%	109%			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (Line E4) are phased-in over a closed 4-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. If assumed rates are exactly realized for 3 consecutive years, Funding Value will become equal to Market Value.



District Judges Summary of Annuitants on Rolls

Retirees and beneficiaries on rolls included in the valuation totaled 172, involving monthly annuities of \$178,000, distributed as follows:

Plan	Number of Retired Records	Annuities Being Paid July 1, 2020	
		Monthly	Annualized
New Plan	37	\$ 46,158	\$ 553,896
Old Plan Paid Off	68	67,136	805,632
Still Paying Old Plan	67	64,706	776,472
Totals	172	\$ 178,000	\$ 2,136,000

A retiree's monthly benefit may be allocated to more than one employer or more than one plan. The actual number of retired members as of June 30, 2020 was reported to be 121, consisting of 106 original retirees and 15 survivors.

Actual Number of Retired Members: 121

Average Age: 74.1 years

Average Age at Retirement: 63.2 years

Average Years of Service: 9.5 years

Average Monthly Benefit: \$1,471.07

Inactive members, entitled to deferred annuities, included in the valuation totaled 93, involving estimated deferred monthly annuities of \$44,937 distributed as follows:

Plan	Number of Inactive Records	Estimated Deferred Annuities	
		Monthly	Annualized
New Plan	11	\$ 7,492	\$ 89,904
Old Plan Paid Off	42	23,788	285,456
Still Paying Old Plan	40	13,657	163,884
Totals	93	\$ 44,937	\$ 539,244

An inactive member's monthly benefit may be allocated to more than one employer or more than one plan. The actual number of deferred members as of June 30, 2020 was reported to be 80.

District Judges Detail by Employer

Employer	ER ID	Participants Covered		Retiree	Deferred	Retiree	Deferred	Total	Assets	Unfunded	15-year
		Deferred	Retired	Mon. Ben.	Mon. Ben.	Liability	Liability	Liability	Allocated	Actuarial	Payoff of
		Vested		7/1/2020	7/1/2020	6/30/2020	6/30/2020	6/30/2020	6/30/2020	Liability (UAL)	Unfunded Liability
Ashdown	90141	2	1	\$ 243.26	\$ 550.08	\$ 14,162	\$ 66,870	\$ 81,032	\$ 43,892	\$ 37,140	\$ 3,976
Ashdown (County)	90941	2	1	402.57	910.30	24,779	110,659	135,438	85,675	49,763	5,327
Batesville	90132	0	2	1,218.61	0.00	145,098	0	145,098	41,951	103,147	11,042
Benton District Court	90962	0	2	2,398.38	0.00	196,897	0	196,897	39,391	157,506	16,862
Biscoe	90159	0	1	150.00	0.00	18,233	0	18,233	476	17,757	1,901
Bryant	90133	0	1	517.50	0.00	37,751	0	37,751	(8,928)	46,679	4,997
Conway	90123	1	2	3,413.05	966.66	309,429	132,952	442,381	149,746	292,635	31,328
Dermott	90109	2	1	312.50	205.08	33,916	31,112	65,028	15,087	49,941	5,346
Dermott (County)	90909	2	1	312.50	205.08	33,916	31,112	65,028	15,087	49,941	5,346
Devalls Bluff	90359	0	1	225.00	0.00	27,705	0	27,705	946	26,759	2,865
Dewitt	90101	1	1	733.48	519.44	59,856	61,093	120,949	103,109	17,840	1,910
East Camden	90252	2	1	531.53	136.07	58,941	16,513	75,454	20,185	55,269	5,917
Greenwood	90265	0	1	771.00	0.00	83,631	0	83,631	(6,447)	90,078	9,643
Hamburg	90202	1	1	225.00	457.19	13,332	55,136	68,468	62,161	6,307	675
Helena	90154	2	0	0.00	27.72	0	2,366	2,366	(19,373)	21,739	2,327
Helena (County)	90954	2	0	0.00	27.72	0	2,366	2,366	(19,373)	21,739	2,327
Hope	90110	0	1	650.00	0.00	71,371	0	71,371	(19,466)	90,837	9,724
Hope (County)	90929	0	1	650.00	0.00	71,371	0	71,371	(11,563)	82,934	8,878
Lawrence County	90938	0	2	1,016.99	0.00	103,718	0	103,718	25,919	77,799	8,329
Little Rock	90260	10	14	20,369.63	4,366.32	2,170,306	575,887	2,746,193	939,111	1,807,082	193,455
Marked Tree	90256	0	1	948.14	0.00	61,567	0	61,567	(8,822)	70,389	7,535
Marshall	90964	0	1	701.31	0.00	62,246	0	62,246	10,339	51,907	5,557
Mt. Home	90103	0	2	2,844.09	0.00	289,190	0	289,190	50,508	238,682	25,552
Newport	90134	1	1	946.33	234.22	82,056	31,973	114,029	30,172	83,857	8,977
North Little Rock	90460	8	10	14,887.28	3,181.01	1,416,171	439,474	1,855,645	586,850	1,268,795	135,830
Ozark	90124	0	2	1,125.19	0.00	121,341	0	121,341	47,001	74,340	7,958
Ozark (County)	90924	0	2	1,125.19	0.00	121,341	0	121,341	45,307	76,034	8,140
Pocahontas	90161	0	2	676.25	0.00	90,197	0	90,197	26,206	63,991	6,850
Pocahontas (County)	90961	0	2	676.25	0.00	90,197	0	90,197	27,262	62,935	6,737



District Judges Detail by Employer

Employer	ER ID	Participants Covered		Retiree	Deferred	Retiree	Deferred	Total	Assets	Unfunded	15-year
		Vested	Retired	Mon. Ben. 7/1/2020	Mon. Ben. 7/1/2020	Liability 6/30/2020	Liability 6/30/2020	Liability 6/30/2020	Allocated 6/30/2020	Actuarial Liability (UAL)	Payoff of Unfunded Liability
Prairie Grove	90372	0	2	\$ 1,861.93	\$ 0.00	\$ 184,466	\$ 0	\$ 184,466	\$ (5,946)	\$ 190,412	\$ 20,384
Searcy	90273	1	2	1,383.33	1,179.36	100,150	137,061	237,211	108,697	128,514	13,758
Stuttgart	90201	1	2	704.61	530.85	45,626	68,121	113,747	63,269	50,478	5,404
Tyronza	90456	1	1	850.64	40.12	103,626	5,223	108,849	50,562	58,287	6,240
West Helena	90254	1	1	928.00	120.27	100,390	17,179	117,569	83,207	34,362	3,679
Wynne	90519	0	1	906.73	0.00	98,022	0	98,022	18,774	79,248	8,484
UAL>0 as of 6/30/2020		40	67	\$64,706.27	\$13,657.49	\$6,440,998	\$1,785,097	\$8,226,095	\$2,590,972	\$5,635,123	\$603,260

Totals may not add due to rounding.

NOTE: The City of Berryville (90108) was determined to have a negative UAL as of June 30, 2020 and therefore was removed from this schedule.



District Judges

Active Members in Valuation June 30, 2020 by Attained Age and Years of Eligibility Service

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									
20-24									
25-29									
30-34									
35-39									
40-44									
45-49				1				1	\$ 149,299
50-54									
55-59				2				2	298,598
60				2				2	171,943
61				1				1	81,727
62					1			1	149,299
63				2	1	1		4	437,429
64				1			1	2	186,602
65				1				1	149,299
66							1	1	28,686
67									
68					1			1	53,388
69					2			2	161,728
70 & over				2			2	4	597,196
Totals				12	5	1	4	22	\$2,465,194

Group Averages

Age:	64.2 years
Benefit Service:	15.5 years
Eligibility Service:	21.7 years
Annual Pay:	\$112,054

District Judges

Change in Unfunded Actuarial Accrued Liabilities During the Period July 1, 2019 to June 30, 2020

	New Plan and Paid Off Old Plan	Still Paying Old Plan	Total
(1) UAAL* at beginning of year	\$ 3,419,284	\$ 5,860,816	\$ 9,280,100
(2) Normal cost from last valuation	554,915	-	554,915
(3) Actual contributions	1,537,908	635,232	2,173,140
(4) Interest accrual: [(1) + ½[(2) - (3)]]x .0715	209,337	396,339	605,676
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	2,645,628	5,621,923	8,267,551
(6) Increase from benefit changes	-	-	-
(7) Changes from revised actuarial assumptions and methods	-	-	-
(8) Expected UAAL after changes: (5) + (6) + (7)	2,645,628	5,621,923	8,267,551
(9) Actual UAAL at end of year	3,228,589	5,635,127	8,863,716
(10) Gain/(Loss): (8) - (9)	\$ (582,961)	\$ (13,204)	\$ (596,165)

* Unfunded actuarial accrued liability.

District Judges Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Entry Age AAL (b)	UAAL (b)-(a)	Funded Ratio (a)/(b)	Annual Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b-a)/(c)]
12/31/04	\$ -	\$ -	\$ -	100.0%	\$ 1,841,022	0.0%
6/30/05	7,569,919	24,134,114	16,564,195	31.4%	3,222,495	514.0%
6/30/06	10,141,040	24,943,381	14,802,341	40.7%	3,313,454	446.7%
6/30/07	12,582,548	24,387,433	11,804,885	51.6%	3,366,861	350.6%
6/30/08 @	12,398,225	24,797,303	12,399,078	50.0%	3,526,319	351.6%
6/30/09	10,004,394	25,671,893	15,667,499	39.0%	3,368,169	465.2%
6/30/10	11,112,521	26,775,249	15,662,728	41.5%	3,554,044	440.7%
6/30/11	12,950,730	27,524,848	14,574,118	47.1%	3,345,497	435.6%
6/30/12	13,925,350	28,343,368	14,418,018	49.1%	3,374,982	427.2%
6/30/13 @	16,090,536	28,823,709	12,733,173	55.8%	2,989,465	425.9%
6/30/14 @	18,562,875	30,005,138	11,442,263	61.9%	3,108,024	368.2%
6/30/15 @	19,950,819	31,433,278	11,482,459	63.5%	3,173,245	361.9%
6/30/16	21,388,494	32,390,780	11,002,286	66.0%	3,328,256	330.6%
6/30/17 @	23,024,203	34,345,233	11,321,030	67.0%	2,278,470	496.9%
6/30/18	24,898,896	35,101,000	10,202,104	70.9%	2,437,807	418.5%
6/30/19	26,127,578	35,407,678	9,280,100	73.8%	2,458,323	377.5%
6/30/20	26,976,127	35,839,843	8,863,716	75.3%	2,465,194	359.6%

@ After changes in actuarial assumptions and methods.

SECTION E

ACTUARIAL METHODS AND ASSUMPTIONS AND OTHER TECHNICAL ASSUMPTIONS

Summary of Assumptions Used for APERS Actuarial Valuations Assumptions Adopted by Board of Trustees After Consulting with Actuary

In accordance with Section 24-4-105 of the Arkansas Code, the Board of Trustees adopts the actuarial assumptions used for actuarial valuation purposes.

The actuarial assumptions used in the valuation are shown in this section. Assumptions were established based upon an Experience Study covering the period July 1, 2012 through June 30, 2017 (please see our report dated May 14, 2018). The actuarial assumptions represent estimates of future experience.

Economic Assumptions

The investment return rate used in making the valuation was 7.15% per year, compounded annually (net after investment expenses). This rate of return is not the assumed real rate of return. The real rate of return is the portion of investment return which is more than the wage inflation rate. Considering the assumed wage inflation rate of 3.25%, the 7.15% investment return rate translates to an assumed net real rate of return of 3.90%. The wage inflation assumption was first used for the June 30, 2015 valuation, including also the District Judges division. The investment return assumption was first used for the June 30, 2017 valuation, including also the District Judges division.

Pay increase assumptions for individual active members are shown on pages E-8 and E-10. Part of the assumption for each age is for a merit and/or seniority increase, and the other 3.25% recognizes wage inflation. The wage inflation assumption consists of 2.50% for price inflation and 0.75% for real wage growth. These assumptions were first used for the June 30, 2018 valuation and for the District Judges division for the June 30, 2015 valuation.

Total active member payroll is assumed to increase 3.25% a year, which is the portion of the individual pay increase assumptions attributable to wage inflation. This assumption was first used for the June 30, 2015 valuation and for the District Judges division for the June 30, 2015 valuation.

The number of active members is assumed to continue at the present number.

Non-Economic Assumptions

The mortality tables used to measure retired life mortality were the RP-2006 Healthy Annuitant benefit weighted generational mortality tables for males and females. The disability post-retirement mortality tables used were the RP-2006 Disabled Retiree benefit weighted generational mortality tables for males and females. The death-in-service mortality tables used were the RP-2006 Employee benefit weighted generational mortality tables for males and females. Mortality rates are multiplied by 135% for males and 125% for females and are adjusted for fully generational mortality improvements using Scale MP-2017. This assumption was first used for the June 30, 2018 valuation.



Non-Economic Assumptions (Concluded)

The probabilities of retirement for members eligible to retire are shown on pages E-4 through E-7. These probabilities were first used for the June 30, 2018 valuation and for the June 30, 2007 valuation for the District Judges division.

The probabilities of withdrawal from service, death-in-service and disability are shown for sample ages on pages E-8 through E-10. These probabilities were first used for the June 30, 2018 valuation and for the District Judges division for the June 30, 2018 valuation.

The individual entry-age normal actuarial cost method of the valuation was used in determining liabilities and normal cost.

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 (principal and interest) which are level percent-of-payroll contributions. For the District Judges division, unfunded actuarial accrued liabilities are amortized as a level dollar contribution.

Recognizing the special circumstances of the General Assembly division, modifications of the above assumptions were made where appropriate.

Present assets (cash & investments) were valued on a market related basis in which differences between actual and assumed returns are phased-in over a four-year period (including District Judges New Plan and Paid Off Old Plan). The funding value of assets may not deviate from the market value of assets by more than 25%. District Judges Still Paying Old Plan present assets (cash & investments) were valued on a market value basis.

The data about persons now covered and about present assets were furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA).

**Single Life Retirement Values
Based on the RP-2006 Healthy Annuitant
Generational Mortality Tables
and 7.15% Interest
June 30, 2020**

Sample Attained Ages	Present Value of \$1.00 Monthly for Life		Present Value of \$1.00 Monthly for Life Increasing 3% Annually		Future Life Expectancy (Years) 2020 *	
	Men	Women	Men	Women	Men	Women
40	\$ 156.04	\$ 159.90	\$ 229.33	\$ 239.04	41.05	44.75
45	150.92	155.90	216.34	227.64	36.15	39.77
50	144.42	150.52	201.40	214.01	31.39	34.85
55	136.40	143.37	184.56	197.93	26.82	30.01
60	126.59	134.42	165.79	179.69	22.45	25.36
65	114.88	123.53	145.33	159.53	18.36	20.96
70	101.09	110.25	123.32	137.25	14.55	16.80
75	85.16	94.51	100.11	113.27	11.06	12.94
80	67.86	76.97	76.92	88.85	8.00	9.52
85	50.77	59.12	55.66	65.87	5.48	6.66

Sample Attained Ages	Benefit Increasing 3.0% Yearly	Portion of Age 60 Lives Still Alive *	
		Men	Women
60	\$100	100 %	100 %
65	116	93	96
70	134	84	89
75	155	72	80
80	180	56	66

* Applicable to calendar year 2020. Life expectancies and rates in future years are determined by the fully generational MP-2017 projection scale.

State and Local Government Division Age-Based Retirement June 30, 2020

Retirement Ages (with less than 28 years of service)	Percent of Eligible Active Members Retiring Within Next Year	
	Unreduced	Reduced
55		2.5 %
56		2.5
57		3.0
58		3.5
59		4.0
60		5.0
61		5.5
62		20.0
63		20.0
64		15.0
65	22.0 %	
66	25.0	
67	23.0	
68	18.0	
69	18.0	
70	18.0	
71	18.0	
72	18.0	
73	18.0	
74-84	20.0	
85 & Over	100.0	

A member was assumed eligible for unreduced retirement after attaining age 65 with 5 years of service or 28 years regardless of age. A member was assumed eligible for reduced retirement after attaining age 55 with 10 or more years of service.

**State and Local Government Division
Service-Based Retirement
June 30, 2020**

Service	Percent of Eligible Active Members Retiring Within Next Year
28	13 %
29	18
30	13
31	15
32	13
33	13
34	13
35	18
36	18
37	18
38	20
39	20
40 & Over	100

General Assembly Division Age-Based Retirement June 30, 2020

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year
50	30 %
51	30
52	30
53	30
54	30
55	30
56	30
57	30
58	30
59	30
60	30
61	30
62	50
63	30
64	30
65	50
66	30
67-79	20
80 & Over	100

Member may retire at age 50 with 20 or more years of service, age 60 with 16 or more years of service, or age 65 with 8 or more years of service.

District Judges Division Age-Based Retirement June 30, 2020

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year
50	10 %
51	10
52	10
53	10
54	10
55	12
56	12
57	14
58	14
59	14
60	18
61	18
62-73	30
74 & Over	100

Members may retire at age 50 with 20 or more years of service, age 60 with 16 or more years of service, or age 65 with 8 or more years of service.

State and Local Government Division Separations from Active Employment Before Service Retirement June 30, 2020

Sample Ages	Years of Service	Percent of Active Members Separating within the Next Year						Pay Increase Assumptions for an Individual Employee		
		Withdrawal		Death *		Disability		Merit & Seniority	Base (Economy)	Increase Next Year
		Men	Women	Men	Women	Men	Women			
	0	40.0 %	40.0 %							
	1	25.0	25.0							
	2	20.0	20.0							
	3	15.0	15.0							
	4	12.0	12.0							
20	5+	11.0	11.0	0.05 %	0.02 %	0.01 %	0.01 %	6.60 %	3.25 %	9.85 %
25		11.0	11.0	0.07	0.02	0.04	0.04	5.16	3.25	8.41
30		9.7	9.7	0.07	0.03	0.07	0.07	3.30	3.25	6.55
35		6.8	6.8	0.08	0.04	0.09	0.09	2.28	3.25	5.53
40		4.8	4.8	0.09	0.06	0.13	0.13	1.70	3.25	4.95
45		3.7	3.7	0.13	0.08	0.17	0.17	1.38	3.25	4.63
50		3.0	3.0	0.22	0.13	0.34	0.34	1.00	3.25	4.25
55		2.1	2.1	0.37	0.22	0.60	0.60	0.68	3.25	3.93
60		1.3	1.3	0.66	0.34	0.85	0.85	0.42	3.25	3.67

* Applicable to calendar year 2020. Rates in future years are determined by the above rates and the MP-2017 projection scale.

Pay increase rates are age based only, and not service based.



General Assembly Division

Separations from Active Employment Before Service Retirement

June 30, 2020

Sample Ages	Years of Service	Percent of Active Members Separating within the Next Year					
		Withdrawal		Death *		Disability	
		Men	Women	Men	Women	Men	Women
	0	30.0 %	30.0 %				
	1	25.0	25.0				
	2	20.0	20.0				
	3	15.0	15.0				
	4	12.0	12.0				
20	5+	9.0	9.0	0.05 %	0.02 %	0.06 %	0.06 %
25		8.3	8.3	0.07	0.02	0.06	0.06
30		5.3	5.3	0.07	0.03	0.06	0.06
35		3.0	3.0	0.08	0.04	0.06	0.06
40		2.6	2.6	0.09	0.06	0.16	0.16
45		2.4	2.4	0.13	0.08	0.22	0.22
50		1.1	1.1	0.22	0.13	0.39	0.39
55		0.8	0.8	0.37	0.22	0.71	0.71
60		0.8	0.8	0.66	0.34	1.13	1.13

* Applicable to calendar year 2020. Rates in future years are determined by the above rates and the MP-2017 projection scale.

District Judges

Separations from Active Employment Before Service Retirement

June 30, 2020

Sample Ages	Percent of Active Members Separating within the Next Year				Pay Increase Assumptions For An Individual Employee		
	Withdrawal		Disability		Merit & Seniority	Base (Economy)	Increase Next Year
	Men	Women	Men	Women			
20	2.0 %	2.0 %	0.08 %	0.08 %	2.70 %	3.25 %	5.95 %
25	2.0	2.0	0.08	0.08	2.60	3.25	5.85
30	2.0	2.0	0.08	0.08	2.20	3.25	5.45
35	2.0	2.0	0.08	0.08	1.90	3.25	5.15
40	2.0	2.0	0.20	0.20	1.40	3.25	4.65
45	2.0	2.0	0.27	0.27	1.20	3.25	4.45
50	2.0	2.0	0.49	0.49	0.70	3.25	3.95
55	2.0	2.0	0.89	0.89	0.70	3.25	3.95
60	2.0	2.0	1.41	1.41	0.00	3.25	3.25

Summary of Assumptions Used

June 30, 2020

Miscellaneous and Technical Assumptions

Marriage Assumption. 80% of males and 80% of females are assumed to be married for purposes of death-in-service benefits. District Judges division - 100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. 80% of males and 80% of females are assumed to be married for purposes of death-after-retirement benefits for active member valuation purposes.

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 of all types are assumed to occur mid-year.

Other Liability Adjustments. Active member non-refund normal costs and actuarial accrued liabilities were increased by 1.5% to reflect non-reported reciprocal service. Also, a 0.2% load to the normal cost and actuarial accrued liabilities is being used to account for survivor benefits payable if a retiree dies within the first year of retirement. Actuarial accrued liabilities were also increased by \$130 million to account for revisions to the data submitted and by \$60,000,000 for pending refunds.

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

Benefit Service. Exact fractional service is used to determine the amount of benefit payable.

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

Normal Form of Benefit. The assumed normal form of benefit is the straight life form.

District Judges Division Old Plan Deferred Members. For members that are eligible for a deferred benefit in the Old Plan and are currently active in the New Plan, it is assumed that the deferred benefit will commence at the first age at which the member is eligible to receive the benefit.

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. New entrant normal cost contributions are applied to the funding of new entrant benefits.

DROP Duration. Members participating in the DROP are not allowed to participate in the DROP for more than 7 years.

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



Summary of Assumptions Used

June 30, 2020

Miscellaneous and Technical Assumptions

DROP Interest Credit. The current interest rate credit for DROP accounts is assumed to be 3.0%.

Payroll for DROP Participants and Retired Members Returned to Work. Employers now contribute on the pays of DROP participants and retired members returned to work. For the June 30, 2020 valuation the reported payroll for these members was approximately \$131 million.

Pre-Retirement Mortality. The weighting of duty and ordinary deaths-in-service is 0%/100%.

Administrative Expenses. The normal cost was increased by 0.40% of payroll to fund administrative expenses.

SECTION F

FINANCIAL PRINCIPLES

Financial Principles and Operational Techniques of APERS

Promises Made, and To Be Paid For. As each year is completed, APERS in effect hands an “IOU” to each member then acquiring a year of service credit --- the “IOU” says: “The Arkansas Public Employees 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, years and often decades later?

The law governing APERS financing intends that this year’s taxpayers contribute the money to cover the IOUs being handed out this year. With this financial objective, **the employer contribution rate is expected to remain approximately level from generation to generation of taxpayers.**

There are systems which have a design for deferring contributions to future taxpayers. Lured by a lower contribution rate now, they put aside the consequence that the contribution rate must then relentlessly grow to a level much higher than would be required if a level contribution pattern were followed.

An inevitable by-product 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 actuarial accrued liabilities are the difference between: the actuarial accrued liabilities for service already rendered and the actuarial value of assets).

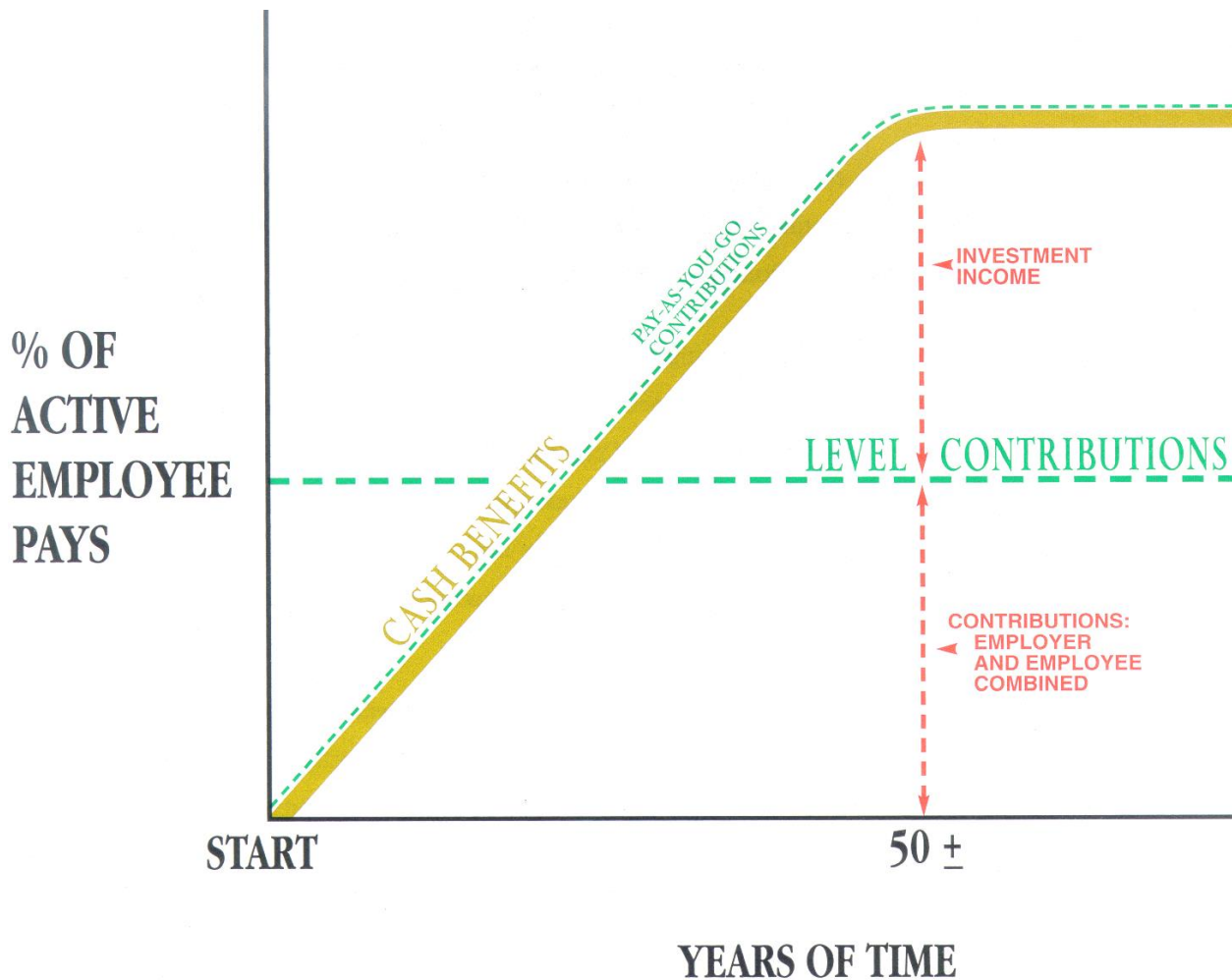
Computing Contributions to Support Fund Benefits. From a given schedule of benefits and from employee and asset data, the actuary calculates the contribution rates to support the benefits by means of ***an actuarial valuation and a funding method.***

An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment; 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. The assumptions are established by the Retirement Board after receiving the advice of the actuary.

Reconciling Differences Between Assumed Experience and Actual Experience. Once actual experience has occurred and has been observed, it will not coincide exactly with assumed experience, regardless of the skill of the actuary and the many calculations made. The future cannot be predicted with 100% precision.

APERS 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 ***continuing 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) which is thus an *increasing contribution method*; and, the *level contribution method* which attempts to equalize contributions between the generations.

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

- A. **Census Data**, including:
 - Retired lives now receiving benefits
 - Former employees with vested benefits not yet payable
 - Active employees

- B. + **Asset data** (cash & investments)

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

- D. + **Assumptions concerning future experience** in various risk areas

- 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

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.

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 a phase-in of differences between actual and assumed market rates of return.

Meaning of “Unfunded Actuarial Accrued Liabilities”

“Actuarial accrued liabilities” are **the present value of the portions of promised benefits that are not covered by future normal cost contributions** --- a liability has been established (“accrued”) because the service has been rendered but the resulting monthly cash benefit may not be payable until years in the future.

If “actuarial accrued liabilities” at any time exceed the plan’s accrued assets (cash & investments), the difference is **“unfunded actuarial accrued liabilities.”** This is the common condition. It is less common when a plan’s assets equal or exceed the plan’s “actuarial accrued liabilities.”

Each time a plan adds a new benefit which applies to service already rendered, an “actuarial accrued liability” is created, which is also an “unfunded actuarial accrued liability” because the plan can’t print instant cash to cover the value of the new benefit promises. Payment for such unfunded actuarial accrued liabilities is spread over a period of years, commonly in the 15-30 year range.

Unfunded actuarial accrued liabilities can occur in another way: if actual plan experience is less favorable than assumed, the difference is added to unfunded actuarial accrued liabilities. For example, in plans where benefits are directly related to an employee’s pay near time of retirement, unfunded actuarial accrued liabilities increased rapidly during the 1970’s because unexpected rates of pay increase created additional actuarial accrued liabilities which could not be matched by reasonable investment results. Most of the unexpected pay increases were the direct result of inflation, which is a very destructive force on financial stability.

The existence of unfunded actuarial accrued liabilities is not bad but the changes from year to year in the amount of unfunded actuarial accrued liabilities are important --- “bad” or “good” or somewhere in between.

Nor are unfunded actuarial accrued liabilities a bill payable immediately, but it is important that policy-makers prevent the amount from becoming unreasonably high and **it is vital for plans to have a sound method for making payments toward them** so that they are controlled.



November 13, 2020

Mr. Duncan Baird, Executive Director
Arkansas Public Employees Retirement System
One Union National Plaza
124 West Capitol, Suite 400
Little Rock, Arkansas 72201

Re: Report of the June 30, 2020 Actuarial Valuation and Gain/(Loss) Analysis of Financial Experience

Dear Duncan:

Enclosed are 40 copies of this report.

Sincerely,

A handwritten signature in black ink that reads "Mita Drazilov". The signature is written in a cursive, flowing style.

Mita D. Drazilov, ASA, FCA, MAAA

MDD:rmn
Enclosures

cc: David L. Hoffman, GRS