Preliminary Valuation Results
June 30, 2019

Arkansas Public Employees Retirement System

Board Summary
August 21, 2019

Executive Summary

Preliminary results for the June 30, 2019 actuarial valuation will be discussed. The June 30, 2019 valuation determines the employer contribution rate for the fiscal year beginning July 1, 2021. A range of preliminary employer contribution rates is shown on page 2. Board action is not necessary at this time. However, the valuation report cannot be finalized until a rate or direction is provided by the Board.

Pages 3, 4 and 5 cover the valuation asset derivation and then incorporates that into a near term projection of future employer contribution rates. No action items are associated with this discussion.

Page 6 displays historical census information for APERS. No action items are associated with this discussion.

Page 7 covers additional disclosures included in the Summary.

Preliminary Employer Contribution Rates
Computed as of June 30, 2019 (Effective July 1, 2021)

Contribution for	**Contributions Expressed as %'s of Active Payroll**
Normal Cost:	
Age and Service Annuities (including DROP and Reduced Retirement)	8.11%
Separation Benefits	2.05%
Disability Benefits	0.52%
Death-in-Service Annuities	0.31%
Administrative Expenses	0.40%
Total	11.39%
Member Contributions	3.63%
Employer Normal Cost	7.76%
Unfunded Actuarial Accrued Liabilities ($2.9 billion amortized over 24 years)	7.56%
Total Employer Contribution	**15.32%**

PERS Reserve Strength. As a by-product of achieving level contribution financing, the ratio of assets to actuarial accrued liabilities usually increases over a period of years. The PERS funded ratio is 79% (valuation assets of $8.74 billion and actuarial accrued lability of $11.13 billion). On a market value basis, the funded ratio is 79%. The ratios were 79% and 80%, respectively, in the previous valuation.

Amortization Period. The maximum permissible amortization period is 30 years. Staying well under 30 years in prior valuations when experience was favorable has provided a greater ability to maintain relative contribution rate stability during periods where experience is less favorable.

Alternate Employer Contribution Rate. The preliminary employer contribution rate we have shown above is unchanged from last year. This employer contribution rate results from decreasing the amortization period by two years, from 26 years to 24 years. Decreasing the amortization period by only one year, to 25 years, would result in an employer contribution rate of 15.14%. Using amortization periods of 23, 22 or 21 years would yield employer contribution rates of 15.53%, 15.76% or 16.01%, respectively.

Development of Funding Value of Assets (Excluding District Judges)

	Valuation Date June 30:	2017	2018	2019	2020	2021	2022
A.	Funding Value Beginning of Year	$ 7,768,871,751	$ 8,157,037,661	$ 8,416,354,234			
B.	Market Value End of Year	7,998,520,598	8,571,821,992	8,803,211,537			
C.	Market Value Beginning of Year	7,350,771,708	7,998,520,598	8,571,821,992			
D.	Non-Investment Net Cash Flow	(204,502,660)	(208,183,314)	(219,167,312)			
E.	Investment Income						
	E1. Market Total: B - C - D	852,251,550	781,484,708	450,556,857			
	E2. Assumed Rate	7.50%	7.15%	7.15%			
	E3. Amount for Immediate Recognition	575,088,960	575,871,296	594,024,272			
	E4. Amount for Phased-In Recognition	277,162,590	205,613,412	(143,467,415)			
F.	Phased-In Recognition of Investment Income						
	F1. Current Year: 0.25 x E4	69,290,648	51,403,353	(35,866,854)			
	F2. First Prior Year	(137,323,597)	69,290,648	51,403,353	$ (35,866,854)		
	F3. Second Prior Year	(91,741,812)	(137,323,597)	69,290,648	51,403,353	$ (35,866,854)	
	F4. Third Prior Year	177,354,371	(91,741,813)	(137,323,595)	69,290,646	51,403,353	$ (35,866,853)
	F5. Total Phase-Ins	17,579,610	(108,371,409)	(52,496,448)	84,827,145	15,536,499	(35,866,853)
G.	Preliminary Funding Value End of Year: A + D + E3 + F5	$ 8,157,037,661	$ 8,416,354,234	$ 8,738,714,746			
H.	Adjustment to Minimum of 75% of B, Maximum 125% of B	0	0	0			
I.	**Funding Value End of Year**	**$ 8,157,037,661**	**$ 8,416,354,234**	**$ 8,738,714,746**			
J.	Difference Between Market & Funding Value	(158,517,063)	155,467,758	64,496,791			
K.	**Recognized Rate of Return**	**7.7%**	**5.8%**	**6.5%**			
L.	Market Rate of Return@	11.8%	9.9%	5.3%			
M.	Ratio of Funding Value to Market Value	102%	98%	99%			

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.

@ Determined as follows: NIR / [(MV_{eoy} – MV_{boy} – NIR) / 2], where NIR is Net Investment Return.

Future Years

Under the APERS asset valuation method, market gains and losses are spread over a 4-year period. As of June 30, 2019, the market value of assets exceeds the funding value of assets by approximately $65 million. As this difference is fully realized and if near term experience matches expectations, the contribution rate is expected to be ultimately lower than the 2019 rate as shown under Scenario A on page 6. However, market returns are not knowable in advance. In order to gain a better understanding of the effect of market volatility, contribution rates were projected for four future years based on three scenarios:

Scenario (Proposed Economic Assumptions)

A. The market returns are 7.15% in the next 4 years.

B. The market returns are 2.0% in the next year and 7.15% in the 2nd, 3rd and 4th years.

C. The market returns are (4.0)% in the next year and 7.15% in the 2nd, 3rd and 4th years.

The projection results shown on the next page assume that the unfunded actuarial accrued liabilities would be amortized over a closed 24-year period.

State and Local
Arkansas Public Employees Retirement System
Projected Valuation Results

Based on a Closed 24-Year Amortization Period
7.15% Interest, 3.25% Wage Inflation

(Amounts in $ Millions)

	Accrued Liability	Valuation Assets	UAL	MV Return	MV-FV	Employer Rate	Funded Ratio
Scenario A: 7.15% Market Returns							
2019	$ 11,129	$ 8,739	$ 2,390	5.32 %	$ 65	15.32%	79%
2020	11,544	9,223	2,321	7.15 %	(17)	14.99%	80%
2021	11,983	9,672	2,312	7.15 %	(35)	14.89%	81%
2022	12,446	10,101	2,346	7.15 %	(2)	14.94%	81%
2023	12,937	10,596	2,341	7.15 %	(2)	14.90%	82%
Scenario B: 2.0% Market Return for Year Ended June 30, 2020; 7.15% Market Returns Thereafter							
2019	$ 11,129	$ 8,739	$ 2,390	5.32 %	$ 65	15.32%	79%
2020	11,544	9,111	2,433	2.00 %	(353)	15.35%	79%
2021	11,983	9,434	2,550	7.15 %	(277)	15.65%	79%
2022	12,446	9,723	2,723	7.15 %	(138)	16.15%	78%
2023	12,937	10,067	2,870	7.15 %	(24)	16.59%	78%
Scenario C: (4.0)% Market Return for Year Ended June 30, 2020; 7.15% Market Returns Thereafter							
2019	$ 11,129	$ 8,739	$ 2,390	5.32 %	$ 65	15.32%	79%
2020	11,544	8,980	2,563	(4.00)%	(744)	15.77%	78%
2021	11,983	9,156	2,827	7.15 %	(558)	16.59%	76%
2022	12,446	9,284	3,162	7.15 %	(298)	17.65%	75%
2023	12,937	9,451	3,486	7.15 %	(49)	18.70%	73%

Note: These projections are intended to show the near term effect on employer contributions of the phase-in of unrecognized gains and losses. The projection results do not consider non-investment gains and losses which can have a material effect on future valuation results.

Note that payroll growth at lower than assumed rates will generally result in employer contribution rates that are higher than shown above.

Note that rows may not total due to rounding.

History of Participants in Valuations

Active Members

		Annual Payroll*	Group Averages		
June 30	Number	$ Millions	Age	Service	Salary
2010	45,394	$1,522.7	44.8	9.3 yrs.	$33,544
2011	45,145	1,542.9	44.9	9.4	34,177
2012	45,937	1,606.1	45.0	9.3	34,962
2013	45,707	1,612.7	44.9	9.3	35,283
2014	45,841	1,638.0	44.9	9.3	35,733
2015	45,722	1,645.0	44.8	9.2	35,979
2016	45,676	1,645.0	44.7	9.2	36,015
2017	46,094	1,668.8	44.4	8.8	36,205
2018	46,207	1,723.6	44.3	8.7	37,303
2019	45,965	1,802.4	44.7	9.4	39,213

** Does not include DROP payroll.*

There are 37,053 members who participate in the New Contributory Plan. This total includes members who have made an election to participate in the New Contributory Plan.

There are an additional 1,511 members with a $94 million payroll who participate in the DROP plan (not included in table above). Employers will make contributions on the pay of these DROP participants.

Annuitants on Rolls and DROP Participants
($ in Millions)

	Annuitants on Rolls**				DROP Participants	
June 30	Number	Annual Annuities	% Active Payroll	No. Active Per Retired	Number	Annual Credits
2010	23,961	$ 289.0	19.1 %	1.9	1,811	$ 51.60
2011	26,191	322.9	20.9	1.7	1,817	53.50
2012	27,408	344.5	20.4	1.7	1,746	53.10
2013	28,672	370.3	23.0	1.6	1,733	53.90
2014	30,112	402.8	24.6	1.5	1,679	52.26
2015	31,411	432.8	26.3	1.5	1,576	49.19
2016	32,567	460.0	28.0	1.4	1,526	47.69
2017	34,729	500.7	29.1	1.3	1,412	44.65
2018	35,838	526.1	30.5	1.3	1,439	46.93
2019	36,914	544.8	30.2	1.2	1,511	50.35

*** Does not include members of the General Assembly.*

Disclosures

This presentation shall not be construed to provide tax advice, legal advice or investment advice.

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 purposes of the actuarial valuation are to measure the financial position of APERS, assist the Board in establishing employer contribution rates necessary to fund the retirement benefits provided by APERS, and provide actuarial reporting and disclosure information for the System's financial report.

The actuarial valuation was based upon information furnished by staff, concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided.

This is one of multiple documents comprising the actuarial report. Additional information regarding actuarial assumptions and methods, and important additional disclosures will be provided in the report titled "Annual Actuarial Valuation and Experience Gain/(Loss) Analysis June 30, 2019."

If you need additional information to make an informed decision about the contents of this presentation or if anything appears to be missing or incomplete, please contact us before using this presentation.

Future actuarial measurements may differ significantly from the current measurements presented in this presentation due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (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.