

**ARKANSAS STATE HIGHWAY
EMPLOYEES RETIREMENT
SYSTEM (ASHERS)**

ACTUARIAL VALUATION
AS OF JUNE 30, 2025

Osborn, Carreiro & Associates, Inc.

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October 15, 2025

Board of Trustees
Arkansas State Highway Employees
Retirement System (ASHERS)
P. O. Box 2261
Little Rock, AR 72203

RE: Actuarial Valuation as of June 30, 2025

Ladies and Gentlemen:

This report presents the results of our actuarial valuation of the assets and liabilities of the Arkansas State Highway Employees Retirement System (ASHERS) as of June 30, 2025. This valuation determines the contributions for the 2025-26 Plan Year (July 1, 2025 to June 30, 2026). The primary purposes of the valuation report are to determine the adequacy of the current employer contribution rate, to describe the current financial condition of ASHERS, and to analyze changes in the condition of the system.

This report together with the GASB report and the information presented in person to the board should be considered together as the complete report.

Actuarial Status of Plan

The funded status of the plan decreased from 83.60% to 81.11% this year (about 84% on a market value basis). This is the ratio of the actuarial value (smoothed) assets to the actuarial accrued liabilities of the plan. This was mostly due to recognition of the large investment loss that occurred during the 2022 fiscal year. This is detailed in the report. The equivalent funding period has increased from 18.5 to 21.05 years based on current contributions. The total contribution rate for fiscal 2026 is projected to be less than the Actuarially Determined and the 18-year period to fully fund the unfunded actuarial accrued liabilities.

Funding Policy

The Board adopted a funding policy which would define the Actuarially Determined Contribution on November 7, 2023 for use beginning with the 2023 valuation. It formalizes the definition of four metrics the Board will review each year. These metrics are included in the format of the Executive Summary and Discussion and the Determination of Contribution Rate.

Accounting Information

A separate report with the reporting standard of GASB Statement 67 and 68 based on the same assumptions and methods will be sent under separate cover.

Organization of Report

Following this cover letter and a table of contents, there is an Executive Summary of the results of the valuation as well as a discussion of the highlights. The Exhibits that follow show the details of the calculations. The Appendices disclose the plan provisions and assumptions used.

Assumptions

There were no changes in plan provisions or assumptions reflected in this valuation. The last change in assumptions was reflected in the June 30, 2021 actuarial valuation.

Statement of Qualifications

This report has been prepared by actuaries who have experience valuing public employee retirement systems, with the undersigned taking the primary responsibility. To the best of our knowledge, this report is complete and accurate and was completed in accordance with standards of practice promulgated by the Actuarial Standards Board and in conformance with applicable Arkansas law. The actuaries 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 in this report.

The actuaries know of no significant conflicts of interest with the plan sponsor. We have previously disclosed that we also serve the Bureau of Legislative Research by preparing reports for the Joint Retirement Committee. We do not view this relationship as a significant conflict of interest.

We look forward to discussing this report with you in detail. Please let us know if you have any questions or comments.

Sincerely,



Jody Carreiro, FCA, ASA, EA, MAAA
Actuary

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EXECUTIVE SUMMARY

A brief summary of the more important figures developed in this valuation, with comparable results from prior reports, follows:

	<u>6/30/2023</u>	<u>6/30/2024</u>	<u>6/30/2025</u>
Number in Plan			
a) Active Members	3,418	3,597	3,819
b) Members in DROP	293	275	262
c) Members Receiving Benefits	3,599	3,625	3,662
d) Inactive Members	355	383	393
Market Value of Assets	\$ 1,504,601,737	\$ 1,612,068,530	\$ 1,643,132,180
Actuarial Value of Assets	\$ 1,580,781,920	\$ 1,606,778,467	\$ 1,589,888,199
Actuarial Accrued Liability	\$ 1,876,793,868	\$ 1,922,066,478	\$ 1,960,160,814
Unfunded Actuarial Accrued Liability	\$ 296,011,947	\$ 315,288,011	\$ 370,272,615
Funded Percentage (Based on Actuarial Assets)	84.23%	83.60%	81.11%
Funded Percentage (Based on Market Value of Assets)	80.17%	83.87%	83.83%
Contribution Rates for the year beginning On the Valuation Date			
Employee	7.00%	7.00%	7.00%
Employer	14.90%	14.90%	14.90%
Total	21.90%	21.90%	21.90%
Actuarially Determined Contribution Rate	21.94%	22.14%	23.59%
Needed to Fund UAAL in 18 years	22.37%	22.12%	23.12%
Equivalent Funding Period	19.1 years	18.5 years	21.0 years

Discussion

Introduction

The results of the June 30, 2024 actuarial valuation of the Arkansas State Highway Employees Retirement System (ASHERS) performed by Osborn, Carreiro & Associates, Inc. are summarized in this report. The purpose of any actuarial valuation is to provide an estimate of how well the employer is meeting its emerging pension liabilities.

We have relied on the employee data and asset information provided by the staff of ASHERS. While not auditing or verifying the data at the source, we have performed such tests for consistency and reasonableness as has been deemed necessary to be satisfied with the appropriateness of using the data supplied. There were no significant adjustments made to the data that was supplied by staff. We did remove the seasonal workers that were included in the file we received.

Key Metrics

The key metrics that the Board has agreed to review are outlined in the funding policy adopted in 2023. The Board adopted a traffic signal approach to be used in judging these metrics, as follows:

Funded Percentage	Under 75%	75% to 82%	Over 82%
Equivalent Funding Period	Over 20 Years	17 to 20 Years	Under 17 Years
Cash Flow Percentage	Over 7.0%	6.5% to 7.0%	Under 6.5%
Actual to ADC	Under 95%	95% to 100%	Over 100%

Funded Status

The Funded Status of the plan is typically discussed in terms of the Funded Percentage. The Funded Percentage is 81.11% as of the valuation date compared with 83.60% last year. This decrease from last year is mainly due to recognizing the investment losses from 2022 fiscal year.

The breakdown for this metric is over 82% (green) and under 75% (red) and between those two yellow. The Funded Percentages for the past few years are as follows:

Valuation Date	Based on Actuarial Value	Based on Market Value
6/30/2020	82.35%	80.78%
6/30/2021	88.88%	96.14%
6/30/2022	86.20%	80.28%
6/30/2023	84.23%	80.17%
6/30/2024	83.60%	83.87%
6/30/2025	81.11%	83.83%

The Funded Status of a plan is more than just a measurement of the Funded Percentage. We also need to consider whether the contribution policy will provide funding for the long term. Beginning July 1, 2020, the employees contribute 7.0% and the employer contributes 14.9% of pay for a total 21.9% of pay. Beginning July 1, 2021, the employer contributions are 14.9% for all members on DROP.

Discussion (Continued)

We develop in this report an Actuarially Determined Contribution (ADC) as a help in knowing if the current contribution structure will continue to move the plan consistently toward being fully funded. The next two metrics point to that goal.

Equivalent Funding Period

The Equivalent Funding Period is a measurement of the number of years under current assumptions that the current contribution structure will need to fully fund the Unfunded Actuarial Accrued Liability (UAAL). The goal of the Board is under 17 years (green). If the metric is over 20 years (red) it deserves attention and between these amounts (yellow) it deserves monitoring. The measure of this metric for the past few years is as follows:

Valuation Date	Equivalent Funding Period
6/30/2020	39.5 years
6/30/2021	12.5
6/30/2022	18.0
6/30/2023	19.1
6/30/2024	18.5
6/30/2025	21.0

Actual to Actuarially Determined Contributions

The other metric that is developed in Exhibit 2 is the Actuarially Determined Contribution. This amount is based on the funding policy and is a contribution that relies on level funding principles to fully fund the UAAL in a reasonable period of time. In general, the layers of amortization are funded over 18 years. The concept is to fund at least the ADC, so that over 100% is considered green. If this ratio falls below 95% (red), then it deserves immediate discussion.

Since this is a new calculation, we only show this metric starting with the 6/30/2021 valuation. The calculation for this ratio for the past few years is as follows:

Valuation Date	Ratio of Actual Contributions To ADC
6/30/2021	113%
6/30/2022	101.2%
6/30/2023	97.4%
6/30/2024	98.8%
6/30/2025	90.7%

Discussion (Continued)

The changes in Funded Percentage and the contribution measurements all stem from the calculation of the Actuarial Value of Assets (AVA). The formula “saves up” gains to offset future losses and since all of the loss pieces have now been fully recognized, the formula has “pushed” down the AVA to be somewhat lower than the market value. *If the market value had been used in place of the AVA, all three of these metrics would be improved, one yellow and two green. Therefore, I recognize that we aren’t meeting all of our goals quite as well as the past three years, but I don’t think that it is a sign of falling behind in our funding goals.*

Cash Flow Percentage

The other metric that is to be reviewed in each valuation is the Cash Flow Percentage. This amount is developed in Exhibit 3 and shows a longer history. If the non-investment cash flows are over 7.0% of the market value of assets (red), then the plan would need to payout almost all of their assumed investment earnings. The plan is mature, so we expect to be paying out more, but if this goes too high the Board should be concerned. The goal is to keep this ratio below 6.5% (green) and to monitor when between 6.5% and 7.0% (yellow). The ratio for the past several years is as follows:

Valuation Date	Cash Flow Percentage
6/30/2020	7.0%
6/30/2021	5.8%
6/30/2022	6.6%
6/30/2023	6.6%
6/30/2024	6.2%
6/30/2025	6.2%

Legislative Changes

There were no legislative changes that were included to change the plan provisions for this valuation report, that is, the legislative session this year did not change any benefit provisions.

EXHIBIT 1
COSTS AND LIABILITIES

ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS

	<u>6/30/2024</u>	<u>6/30/2025</u>
A. <u>Active Members</u>		
1. Retirement Benefits	\$ 477,999,433	\$ 499,099,565
2. Disability Benefits	62,810,425	66,246,404
3. Death Benefits	2,998,852	3,111,410
4. Deferred Termination Benefits	19,809,946	21,363,617
5. Refunds of Contributions	4,625,685	5,678,538
6. Total Active Members	\$ 568,244,341	\$ 595,499,534
B. <u>Deferred Retirement Option Plan (DROP)</u>		
1. Future DROP Deposits and Retirement Benefits	\$ 137,817,738	\$ 131,852,896
2. Expected Payouts of Current DROP Deposits	241,376,618	250,798,593
3. Total DROP Members	\$ 379,194,356	\$ 382,651,489
C. <u>Inactive Members</u>		
1. Vested Terminations	\$ 10,705,505	\$ 11,381,175
2. Non-vested Terminations	3,135,476	3,298,240
3. Total Inactive Members	\$ 13,840,981	\$ 14,679,415
D. <u>Retired Members Receiving Benefits</u>		
1. Service Retirements	\$ 1,006,595,807	\$ 1,025,757,288
2. Disability Retirements	74,931,699	75,280,889
3. Beneficiaries	83,726,495	89,118,383
4. Total Retired Members	\$ 1,165,254,001	\$ 1,190,156,560
E. Total Actuarial Present Value of Future Benefits (A6 + B3 + C3 + D4)	\$ <u>2,126,533,679</u>	\$ <u>2,182,986,998</u>

EXHIBIT 1 (continued)

ANALYSIS OF NORMAL COST

	<u>6/30/2024</u>	<u>6/30/2025</u>
A. <u>Normal Cost (to fund current Active Members)</u> (Percentage of Payroll)		
1. Retirement Benefits	8.05%	8.06%
2. Disability Benefits	1.80%	1.78%
3. Death Benefits	0.08%	0.08%
4. Deferred Termination Benefits	1.24%	1.24%
5. Refunds of Contributions	0.58%	0.58%
6. Total Normal Cost	<u>11.75%</u>	<u>11.74%</u>
B. <u>Present Value of Future Normal Costs</u>		
1. Annualized Salaries (excludes DROPs)	\$ 198,759,297	\$ 216,794,889
2. Projected Payroll for upcoming Fiscal Year	211,198,503	231,475,443
3. Present Value of Future Salaries	1,581,661,237	1,734,607,966
4. Dollar Value of Normal Cost (A6 X B2)	24,817,997	27,181,976
5. Present Value of Future Normal Costs (A6 X B3)	185,845,195	203,642,975

EXHIBIT 1 (continued)**DEVELOPMENT OF UNFUNDED ACTUARIAL LIABILITY**

	<u>6/30/2024</u>	<u>6/30/2025</u>
A. Actuarial Accrued Liabilities – Active Members		
1. Present Value of Future Benefits	\$ 568,244,341	\$ 595,499,534
2. Less Present Value of Future Normal Costs	<u>185,845,195</u>	<u>203,642,975</u>
3. Accrued Liability – Actives	\$ 382,399,146	\$ 391,856,559
B. Actuarial Accrued Liabilities – DROP Members		
1. Present Value of Future Benefits	\$ 379,194,355	\$ 382,651,489
2. Less Present Value Future DROP Contributions	<u>18,622,005</u>	<u>19,183,209</u>
3. Accrued Liability – DROP	\$ 360,572,350	\$ 363,468,280
C. Actuarial Accrued Liabilities – Inactive Members	\$ 13,840,981	\$ 14,679,415
D. Actuarial Accrued Liabilities – Retired Members	\$ 1,165,254,001	\$ 1,190,156,560
E. Total Actuarial Accrued Liabilities (A3 + B3 +C + D)	<u>\$ 1,922,066,478</u>	<u>\$ 1,960,160,814</u>
F. Actuarial Value of Assets (Developed in Exhibit 3)	1,606,778,467	1,589,888,199
G. Unfunded Actuarial Accrued Liability (E – F)	<u>\$ 315,288,011</u>	<u>\$ 370,272,615</u>

EXHIBIT 1 (continued)

Actual Versus Expected Actuarial Assets

	<u>6/30/2024</u>	<u>6/30/2025</u>
1. Actuarial assets, beginning of year	\$ 1,580,781,920	\$ 1,606,778,467
2. Total contributions during year	44,678,750	49,741,461
3. Benefits paid during year	(133,755,140)	(139,144,763)
4. Refunds paid during year	(2,216,775)	(2,311,226)
5. Assumed net investment income at 7.5%		
a. Beginning of year assets	118,558,644	120,508,385
b. Contributions	1,675,453	1,865,305
c. Benefits	(5,015,818)	(5,217,929)
d. Refunds	(83,129)	(86,671)
e. Total	\$ 115,135,150	\$ 117,069,090
6. Expected actuarial assets, end of year (Sum of items 1 through 5)	1,604,623,905	1,632,133,030
7. Actuarial Value of Assets, end of year	1,606,778,467	1,589,888,199
8. Asset gain/(loss) for year (7 – 6)	2,154,562	(42,244,831)
9. Asset gain/(loss) as a percentage of end of year assets (8 / 7)	0.13%	(2.66%)

EXHIBIT 1 (continued)**ACTUARIAL GAIN OR LOSS FOR THE YEAR**

	<u>6/30/2024</u>	<u>6/30/2025</u>
A. Calculation of actuarial gain or loss		
1. Unfunded actuarial liability (UAAL), previous year	\$ 296,011,947	\$ 315,288,011
2. Normal cost for the year	21,954,827	24,817,997
3. Contributions for the year	(44,678,750)	(49,741,461)
4. Interest at 7.5%		
a. On UAAL	\$ 22,200,896	\$ 23,646,601
b. On normal cost	823,306	930,675
c. On contributions	(1,675,453)	(1,865,305)
d. Total	\$ 21,348,749	\$ 22,711,971
5. Expected UAAL (sum of items 1 – 4)	294,636,773	313,076,518
6. Actual UAAL	315,288,011	370,272,615
7. Gain (loss) for the year (item 5 – item 6)	\$ (20,651,238)	\$ (57,196,097)
B. Source of gains and losses		
8. a. Asset gain (loss) for the year	\$ 2,154,562	\$ (42,244,831)
b. Gain (loss) from change in assumption	0	0
c. Gain (loss) from change in method/discount	0	0
d. Gain (loss) from Legislative change	0	0
e. Gain (loss) from COLA different than exp.	(9,166,733)	(6,489,549)
f. Gain (loss) from active salary above exp.	(15,748,588)	2,569,712
g. Other gain (loss) from liability experience (balancing item)	2,109,521	(11,031,429)
h. Total Gain (loss) for the year (Total all item 8 amounts)	\$ (20,651,238)	\$ (57,196,097)
9. Total Actuarial Accrued Liabilities (end of year)	\$ 1,922,066,478	\$ 1,960,160,814

EXHIBIT 2

DEVELOPMENT OF CONTRIBUTION RATES

	<u>6/30/2024</u>	<u>6/30/2025</u>
A. <u>Expected Contributions</u>		
1. Annualized salaries (excludes DROPs)	\$ 198,759,297	\$ 216,794,889
2. Projected payroll for upcoming fiscal year	211,198,503	231,475,443
3. Current Employee Contribution Rate	7.00%	7.00%
4. Current Employer Contribution Rate	14.90%	14.90%
5. Total Contribution Rate	21.90%	21.90%
6. Contribution in Dollars (A2 X A5)	46,252,472	50,693,122
7. Expected Contribution from DROP Salary	3,609,581	3,610,157
8. Total Expected Contributions	49,862,053	54,303,279
B. <u>Unfunded Actuarial Accrued Liability</u>	\$ 315,288,011	\$ 370,272,615
C. <u>Calculation of Actuarially Determined Contribution</u>		
1. Scheduled Amortization of UAAL at mid-year	\$ 26,865,389	\$ 32,665,836
2. Normal Cost Rate	11.75%	11.74%
3. Normal Cost Amount (C2 X A2)	24,815,824	27,175,217
4. Total Actuarially Determined Contribution	51,681,213	59,841,053
5. Expected Total Contribution A8	49,862,053	54,303,279
6. Actual to ADC Ratio	96.5%	90.7%
7. Actuarially Determined Contribution Rate	22.14%	23.59%
D. <u>Calculation of 18-year Payoff Rate</u>		
1. 18-year Amortization of UAAL at mid-year	\$ 25,506,051	\$ 29,954,175
2. Less Expected DROP Contributions	3,609,581	3,610,157
3. Contribution Needed to meet goal (D1 – D2)	21,896,470	26,344,017
4. D3 as percentage of payroll (D3/A2)	10.37%	11.38%
5. Normal Cost	11.75%	11.74%
6. Total Contribution Needed to meet goal	22.12%	23.12%
E. <u>Calculation of Funding Period</u>		
1. Total Expected Contributions (A8)	\$ 49,862,053	\$ 54,303,279
2. Amount needed to pay Normal Cost	24,815,824	27,175,217
3. Amount remaining to payoff UAAL (E1 – E2)	25,046,229	27,128,062
4. Years to fund UAAL using amount in E3 Based on 3% payroll growth	18.48 years	20.99 years

EXHIBIT 2 (continued)

AMORTIZATION SCHEDULE

Based on the Funding Policy adopted by the Board beginning with the June 30, 2023 valuation, the below table shows the layers of UAAL that are being amortized for the current valuation period.

Description	Date Added	Initial Balance	Initial Period	Remain Period	Remaining Balance	Amortization Payment
Initial Layer	6/30/2021	198,449,851	20	16	192,537,021	16,864,670
2022 Gain/Loss	6/30/2022	55,817,062	18	15	53,790,491	4,930,949
2023 Gain/Loss	6/30/2023	44,056,499	18	16	42,799,643	3,943,734
2024 Gain/Loss	6/30/2024	23,230,347	18	17	21,952,829	1,931,998
2025 Gain/Loss	6/30/2025	51,192,631	18	18	<u>59,192,631</u>	<u>4,994,486</u>
					370,272,615	32,665,836
Unfunded Actuarial Accrued Liability					370,272,615	
Average Funding Period					15.84	

EXHIBIT 3

SUMMARY OF FINANCIAL INFORMATION

(Items D-E determined by Osborn, Carreiro and Associates, Inc.)

	Plan Year Ended		
	<u>6/30/2023</u>	<u>6/30/2024</u>	<u>6/30/2025</u>
A. <u>INCOME</u>			
1. <u>Contributions</u>			
Employee	\$ 12,688,641	\$ 13,409,742	\$ 15,093,054
State	29,711,732	31,269,008	34,648,407
Other	20,854	3,745	16,221
2. <u>Investment Income</u>			
Interest/Dividends	30,372,451	35,387,945	34,374,117
Net Income-Securities Lending			357,048
Realized Gain	(14,580,033)	132,166,176	58,289,455
Unrealized Gain	118,819,522	40,601,010	39,160,139
Investment Expense	<u>(9,293,449)</u>	<u>(9,293,267)</u>	<u>(9,298,377)</u>
Net Investment Income	125,318,491	198,861,864	122,882,382
3. Adjustment to Previous Year	0	0	0
TOTAL INCOME	<u>\$ 167,739,718</u>	<u>\$ 243,544,359</u>	<u>\$ 172,640,064</u>
B. <u>EXPENSES</u>			
1. <u>Administrative</u>			
	\$ 167,034	\$ 105,651	\$ 120,425
2. <u>Benefit Payments</u>			
Contribution Refunds	2,459,421	2,216,775	2,311,226
Death Benefits	900,000	1,035,000	900,000
DROP Payouts	17,966,924	20,313,055	22,254,068
Monthly Benefits	<u>110,482,673</u>	<u>112,407,085</u>	<u>115,990,695</u>
	131,809,018	135,971,915	141,455,989
TOTAL EXPENSES	<u>\$ 131,976,052</u>	<u>\$ 136,077,566</u>	<u>\$ 141,576,414</u>
TOTAL INCOME OVER EXPENSES	\$ 35,763,666	\$ 107,466,793	\$ 31,063,650

EXHIBIT 3 (Continued)

	<u>6/30/2023</u>	<u>6/30/2024</u>	<u>6/30/2025</u>
C. <u>ASSETS</u> (Market)			
1. <u>Short Term</u>			
Cash	\$ 258,309	\$ 392,437	\$ 321,592
Money Market	127,029,813	173,069,692	108,103,293
2. <u>Corporate Bonds</u>	93,968,130	186,393,185	195,834,360
3. <u>Common Stocks</u>	911,841,371	948,392,797	1,016,137,327
4. <u>U.S. Government Agency Obligations</u>	368,370,565	301,556,311	319,475,907
5. <u>Net Securities Lending</u>	(538,820)	(24,394)	(4,568)
6. <u>Receivables</u>			
Member contributions	516,696	535,550	692,991
State contributions	1,186,047	1,248,906	1,549,279
Interest and dividends	2,998,787	2,675,278	2,163,192
Miscellaneous	57,282	91,062	54,963
7. <u>Liabilities</u>	(1,086,443)	(2,262,294)	(1,196,156)
	<hr/>	<hr/>	<hr/>
TOTAL ASSETS	\$ <u>1,504,601,737</u>	\$ <u>1,612,068,530</u>	\$ <u>1,643,132,180</u>
D. <u>RATIO OF ASSETS TO ANNUAL EXPENSES:</u>	11.40	11.85	11.61
E. <u>INVESTMENT RETURN:</u>			
Gross	9.48%	14.31%	8.46%
Net of Investment Expense	8.80%	13.63%	7.85%
Return on Actuarial Value of Assets:	6.09%	7.65%	4.80%

EXHIBIT 3 (Continued)

	<u>7/1/2023</u>	<u>7/1/2024</u>	<u>7/1/2025</u>
F. DEVELOPMENT OF			
<u>ACTUARIAL VALUE OF ASSETS</u>			
1. Investment income for year	\$ 125,318,491	\$ 198,861,863	\$ 122,882,382
1b. Adjustment for change in discount	0	0	0
2. Expenses and fees for year	<u>146,180</u>	<u>101,905</u>	<u>104,204</u>
3. Actual net investment income	125,172,311	198,759,958	122,778,178
4. Market Value (beginning of year)	1,468,838,071	1,504,601,737	1,612,068,530
5. Contributions during year	42,400,373	44,678,750	49,741,461
6. Benefits paid during year	131,809,018	135,971,915	141,455,989
7. Expected investment income at 7.5% (after 2021)			
Market Value	110,162,855	112,845,130	120,905,140
Contributions	1,590,014	1,675,453	1,865,305
Benefits	<u>- 4,942,838</u>	<u>- 5,098,947</u>	<u>- 5,304,600</u>
Total	106,810,031	109,421,636	117,465,845
8. Investment gain for year	18,362,280	89,338,322	5,312,333
9. Deferral of investment gain			
Current year (75%)	13,771,710	67,003,742	3,984,250
Current year – 1 (50%)	(141,789,639)	9,181,140	44,669,161
Current year – 2 (25%)	<u>51,837,746</u>	<u>(70,894,819)</u>	<u>4,590,570</u>
Total	(76,180,183)	5,290,063	53,243,981
10. Market value (end of year)	1,504,601,737	1,612,068,530	1,643,132,180
11. Preliminary AVA (end of year) (10) – (9)	1,580,781,920	1,606,778,467	1,589,888,199
12. Final AVA within 20% corridor	<u>\$ 1,580,781,920</u>	<u>\$ 1,606,778,467</u>	<u>\$ 1,589,888,199</u>

EXHIBIT 3 (Continued)**HISTORY OF CASH FLOW**Expenditures During the Year

Year Ending June 30	Contributions for the Year	Benefit Payments	Refund of Contributions	Expenses	Total	External Cash Flow for the Year	Market Value of Assets	External Cash Flow as Percent of Market Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1997	21,897,263	(23,593,197)	(902,144)	(1,274,552)	(25,770,613)	(3,873,350)	629,060,314	(0.6%)
1998	20,633,572	(26,568,398)	(1,136,696)	(1,443,527)	(29,148,321)	(8,514,749)	758,971,958	(1.1%)
1999	21,460,290	(27,868,587)	(1,218,372)	(1,776,862)	(30,863,821)	(9,403,531)	870,332,321	(1.1%)
2000	20,635,998	(32,437,078)	(860,532)	(2,231,766)	(35,529,375)	(14,893,377)	1,020,171,033	(1.5%)
2001	21,319,262	(35,505,451)	(1,134,443)	(3,179,023)	(39,818,918)	(18,499,656)	998,671,310	(1.9%)
2002	23,395,271	(40,606,836)	(658,917)	(3,545,184)	(44,810,937)	(21,415,666)	875,304,832	(2.4%)
2003	23,656,596	(48,128,153)	(907,236)	(4,056,463)	(53,091,851)	(29,435,255)	891,122,027	(3.3%)
2004	23,623,171	(51,764,755)	(604,562)	(3,736,002)	(56,105,319)	(32,482,148)	981,026,764	(3.3%)
2005	23,814,179	(53,952,761)	(974,389)	(4,157,579)	(59,084,730)	(35,270,551)	1,041,898,315	(3.4%)
2006	23,956,626	(57,570,547)	(790,218)	(4,295,209)	(62,655,974)	(38,699,348)	1,098,788,670	(3.5%)
2007	23,742,542	(62,317,277)	(1,243,841)	(4,458,889)	(68,020,007)	(44,277,465)	1,186,151,377	(3.7%)
2008	24,286,799	(65,483,982)	(1,154,502)	(4,584,201)	(71,222,685)	(46,935,886)	1,242,354,294	(3.8%)
2009	24,730,528	(69,635,808)	(861,725)	(4,726,929)	(75,224,462)	(50,493,934)	994,466,871	(5.1%)
2010	26,691,696	(73,650,896)	(803,288)	(4,176,401)	(78,630,585)	(51,938,889)	1,052,235,399	(4.9%)
2011	26,574,184	(77,553,673)	(960,668)	(5,253,653)	(83,767,994)	(57,193,810)	1,298,501,306	(4.4%)
2012	26,521,075	(82,216,303)	(912,512)	(5,861,735)	(88,990,550)	(62,469,475)	1,230,012,388	(5.1%)
2013	26,712,669	(89,037,077)	(1,084,539)	(6,542,055)	(96,663,601)	(69,950,932)	1,326,032,436	(5.3%)
2014	27,499,336	(93,712,721)	(1,741,876)	(6,650,036)	(102,104,633)	(74,605,297)	1,492,232,422	(5.0%)
2015	28,197,463	(100,328,585)	(1,917,221)	(7,883,940)	(110,129,746)	(81,932,283)	1,443,476,293	(5.7%)
2016	28,611,588	(105,056,553)	(1,699,287)	(8,127,098)	(114,882,938)	(86,271,350)	1,304,869,720	(6.6%)
2017	28,318,809	(109,874,806)	(2,029,791)	(8,211,585)	(120,116,182)	(91,797,373)	1,354,321,200	(6.8%)
2018	28,457,459	(113,476,915)	(2,270,815)	(8,312,995)	(124,060,725)	(95,603,266)	1,472,472,865	(6.5%)
2019	28,531,322	(117,889,214)	(1,523,052)	(8,741,812)	(128,154,078)	(99,622,756)	1,386,076,598	(7.2%)
2020	33,474,207	(120,815,379)	(1,974,259)	(8,733,902)	(131,523,540)	(98,049,333)	1,407,173,769	(7.0%)
2021	35,519,843	(123,682,368)	(2,054,337)	(8,766,468)	(134,503,173)	(98,983,330)	1,715,093,810	(5.8%)
2022	39,927,660	(125,578,090)	(2,357,761)	(9,224,154)	(137,160,005)	(97,232,345)	1,468,838,071	(6.6%)
2023	42,400,373	(129,349,597)	(2,459,421)	(9,439,629)	(141,248,647)	(98,848,274)	1,504,601,737	(6.6%)
2024	44,678,750	(133,755,140)	(2,216,775)	(9,398,917)	(145,370,832)	(100,692,082)	1,612,068,530	(6.2%)
2025	49,741,461	(139,144,763)	(2,311,226)	(9,402,581)	(150,858,570)	(101,117,109)	1,643,132,180	(6.2%)

Column (2) includes employee and employer contributions, as well as any account reinstatement receipts during the year.

Column (5) includes both administrative and investment expenses; Column (7) = Column (2) + Column (6)

EXHIBIT 4

EMPLOYEE PROFILE

Employee data needed for the valuation was obtained from the records furnished by the system. The following table shows a detailed breakdown of the included participants and salaries by age and years of actual ASHERS credited service. This does not include reciprocal service which determines eligibility.

All Actives – Actual Service

Age		Years of Service						Total	
		0-4.9	5-9.9	10-14.9	15-19.9	20-24.9	25-29.9		Over 30
Under 25	Count	490	5						495
	Salary	22,884,074	246,224						23,130,298
25-29	Count	329	102	4					435
	Salary	16,691,299	5,838,191	224,079					22,753,569
30-34	Count	227	133	75	4				439
	Salary	11,148,807	8,475,953	5,008,175	229,746				24,862,681
35-39	Count	158	101	90	33	8			390
	Salary	7,728,384	5,801,600	6,736,215	2,477,170	508,918			23,252,287
40-44	Count	195	91	64	57	63	7		477
	Salary	9,620,286	5,143,888	4,441,004	4,434,781	4,752,581	525,465		28,918,005
45-49	Count	144	88	53	65	86	43		479
	Salary	6,956,206	4,985,588	3,262,207	4,600,283	7,025,798	3,475,238		30,305,320
50-54	Count	134	76	64	55	59	48	1	437
	Salary	6,148,146	4,193,678	4,148,845	3,477,920	4,865,897	4,322,069	94,161	27,250,716
55-59	Count	124	72	66	35	60	33	2	392
	Salary	5,906,730	3,754,526	3,685,943	2,251,296	4,103,027	2,276,271	236,476	22,214,269
60-64	Count	91	57	47	27	3	4	1	230
	Salary	4,206,625	2,948,190	2,561,490	1,664,853	182,566	217,975	43,991	11,825,690
65-69	Count	20	11	5	1				37
	Salary	973,751	661,513	266,610	25,902				1,927,776
70 & Over	Count	5	1	1				1	8
	Salary	173,789	40,288	41,520				98,681	354,278
Total	Count	1,917	737	469	277	279	135	5	3,819
	Salary	92,438,097	42,089,639	30,376,088	19,161,951	21,438,787	10,817,018	473,309	216,794,889

Average Attained Age: 41.2 years
 Average Actual Service: 7.8 years
 Average Salary: \$ 56,767

EXHIBIT 4

RETIREE PROFILE

Retiree data needed for the valuation was obtained from the records furnished by the administrator. The following table shows a detailed breakdown of the included retirees and beneficiaries by age and years since retirement. Benefits listed are annual amounts of annuities paid monthly.

All Regular Retirees Receiving Annuities

Age		Years since Retirement							Total
		0-.9	1-1.9	2-2.9	3-3.9	4-4.9	5-9.9	Over 10	
Under 45	Count								-
	Benefit								-
45-49	Count	4	1		1				6
	Benefit	109,118	24,064		44,035				177,217
50-54	Count	8	7		8	3	9		35
	Benefit	363,644	209,280		353,070	134,834	352,284		1,413,112
55-59	Count	15	16	10	17	14	22	8	102
	Benefit	616,699	697,800	417,875	770,394	673,570	976,280	323,151	4,475,769
60-64	Count	54	58	46	36	44	90	38	366
	Benefit	1,576,674	1,668,264	1,209,331	1,145,864	1,945,313	3,375,707	1,530,635	12,451,788
65-69	Count	35	39	44	63	70	184	191	626
	Benefit	507,600	788,612	960,197	1,503,010	1,845,790	5,992,290	8,180,670	19,778,169
70-74	Count	8	9	6	16	19	218	374	650
	Benefit	37,333	89,916	33,320	189,267	258,769	5,890,813	15,290,877	21,790,295
75-79	Count		2		1	2	29	464	498
	Benefit		23,442		10,075	25,765	456,174	17,416,364	17,931,820
80-84	Count	1					1	255	257
	Benefit	792					13,007	10,211,460	10,225,259
85 & Over	Count	1						174	175
	Benefit	3,399						7,071,269	7,074,668
Total	Count	126	132	106	142	152	553	1,504	2,715
	Benefit	3,215,259	3,501,378	2,620,723	4,015,715	4,884,041	17,056,555	60,024,426	95,318,097

Average Attained Age: 72.1 years
Average Years since Retirement: 12.1 years
Average Annual Benefit: \$35,108

EXHIBIT 4

DISABLED PROFILE

Retiree data needed for the valuation was obtained from the records furnished by the administrator. The following table shows a detailed breakdown of the included retirees and beneficiaries by age and years since retirement. Benefits listed are annual amounts of annuities paid monthly.

All Disability Retirees Receiving Annuities

Age		Years since Retirement							Total
		0-9	1-1.9	2-2.9	3-3.9	4-4.9	5-9.9	Over 10	
Under 45	Count				1		1		2
	Benefit				25,567		4,754		30,321
45-49	Count	1		1	2	1	3	3	11
	Benefit	29,130		19,653	42,188	10,113	27,447	29,066	157,597
50-54	Count	2		3	3	1	3	11	23
	Benefit	46,436		56,333	51,454	32,138	25,507	187,566	399,434
55-59	Count	4	5	3	3	4	23	20	62
	Benefit	108,805	95,074	47,104	84,023	55,259	319,753	314,102	1,024,120
60-64	Count		2	3	1	4	19	38	67
	Benefit		14,236	22,945	12,402	52,420	254,263	677,014	1,033,280
65-69	Count				1	3	17	54	75
	Benefit				5,329	25,677	188,907	831,888	1,051,801
70-74	Count						4	65	69
	Benefit						35,209	1,249,325	1,284,534
75-79	Count							52	52
	Benefit							994,626	994,626
80-84	Count							20	20
	Benefit							488,270	488,270
85 & Over	Count							8	8
	Benefit							219,679	219,679
Total	Count	7	7	10	11	13	70	271	389
	Benefit	184,371	109,310	146,035	220,963	175,607	855,840	4,991,536	6,683,662

Average Attained Age: 66.9 years
 Average Years since Retirement: 15.4 years
 Average Annual Benefit: \$17,182

EXHIBIT 4

SURVIVOR PROFILE

Retiree data needed for the valuation was obtained from the records furnished by the administrator. The following table shows a detailed breakdown of the included retirees and beneficiaries by age and years since retirement. Benefits listed are annual amounts of annuities paid monthly.

All Survivors Receiving Annuities

Age		Years since Retirement							Total
		0-.9	1-1.9	2-2.9	3-3.9	4-4.9	5-9.9	Over 10	
Under 45	Count	4	2	4	6	3	1		20
	Benefit	46,086	22,785	36,808	91,932	18,131	15,936		231,678
45-49	Count	3		1	1	1			6
	Benefit	47,995		2,018	24,134	3,951			78,098
50-54	Count	2	1	1	2	4	6	3	19
	Benefit	28,863	18,160	17,045	26,922	38,213	69,338	24,902	223,443
55-59	Count	3	2	3	1	4	5	4	22
	Benefit	62,206	20,182	31,939	23,758	26,496	126,297	33,918	324,796
60-64	Count	5	2	3	3	3	11	15	42
	Benefit	82,513	31,903	44,318	42,295	32,541	128,895	220,526	582,991
65-69	Count	7	8	2	7	9	21	38	92
	Benefit	77,727	93,197	40,034	75,284	121,957	378,833	594,056	1,381,088
70-74	Count	12	15	7	10	8	18	32	102
	Benefit	292,801	237,879	125,841	193,593	121,069	261,129	464,697	1,697,009
75-79	Count	7	8	9	5	3	29	32	93
	Benefit	130,893	188,983	243,564	64,536	52,925	517,360	488,679	1,686,940
80-84	Count	3	8	5	6	2	21	35	80
	Benefit	72,135	165,585	90,451	133,273	1,091	353,543	717,741	1,533,819
85 & Over	Count	3	7	3	2	7	14	46	82
	Benefit	95,070	171,653	40,967	10,143	203,025	292,999	951,614	1,765,471
Total	Count	49	53	38	43	44	126	205	558
	Benefit	936,289	950,327	672,985	685,870	619,399	2,144,330	3,496,133	9,505,333

Average Attained Age:	72.8 years
Average Years since Retirement:	9.1 years
Average Annual Benefit:	\$17,035

EXHIBIT 4

DROP PROFILE

Retiree data needed for the valuation was obtained from the records furnished by the administrator. The following table shows a detailed breakdown of the included retirees and beneficiaries by age and years since retirement. Benefits listed are annual amounts of the current DROP deposits paid monthly.

All Current DROP Participants

Age		Years since Retirement							Total
		0-.9	1-1.9	2-2.9	3-3.9	4-4.9	5-9.9	Over 10	
Under 45	Count								-
	Benefit								-
45-49	Count								-
	Benefit								-
50-54	Count	9	8	4	5	6	2		34
	Benefit	443,668	281,284	182,934	184,300	242,155	48,149		1,382,490
55-59	Count	5	5	13	8	9	13		53
	Benefit	200,316	157,989	691,201	437,934	375,068	572,044		2,434,552
60-64	Count	37	27	22	23	5	26	6	146
	Benefit	845,520	614,068	529,380	703,678	156,323	1,126,095	189,686	4,164,750
65-69	Count	6	8	5	2	6			27
	Benefit	52,249	107,905	40,850	16,348	96,850			314,202
70-74	Count		1		1				2
	Benefit		9,372		11,778				21,150
75-79	Count								-
	Benefit								-
80-84	Count								-
	Benefit								-
85 & Over	Count								-
	Benefit								-
Total	Count	57	49	44	39	26	41	6	262
	Benefit	1,541,753	1,170,618	1,444,365	1,354,038	870,396	1,746,288	189,686	8,317,144

Average Attained Age:	60.6 years
Average Years since DROP:	3.2 years
Average Annual Benefit:	\$31,745

EXHIBIT 4

VESTED TERMINATED MEMBERS

Vested Terminated Member data needed for the valuation was obtained from the records furnished by the administrator. These are the members who have left employment, did not withdraw their employee contributions, and are eligible for a benefit that begins later, typically age 65. The following table shows a detailed breakdown of the included members and beneficiaries by time until benefit commencement. Benefits listed are annual amounts of the benefits payable.

Benefits Commence Within number <u>of years</u>	Number of <u>Members</u>	Annual <u>Benefit</u>
1 year	15	53,454
2 years	9	43,255
3 years	6	29,782
4 years	9	57,186
5 years	8	57,940
5 to 10 years	59	452,861
Over 10 years	<u>287</u>	<u>2,133,821</u>
Total	393	2,828,299

Average Attained Age:	47.0 years
Average Years until Benefit Commencement:	18.1 years
Average Annual Benefit:	\$ 7,197

EXHIBIT 5

REVIEW OF FUTURE UNCERTAINTIES

Introduction

The calculations in this report are based on the data and assumptions as outlined. This report is based on the participant and financial data supplied by the plan sponsor. We did not audit this data, although we did review it for reasonableness and consistency. We have relied on the data provided to us. If any of this data is incorrect or incomplete, the results of our calculations could be materially different.

The funding policy gives the Board a path of contributions that lead to full funding. Actual future measurements of the Actuarially Determined Contributions and funded status may differ significantly from expected future measurements. There are several areas of risk that may cause the calculations to differ, including: plan experience differing from the anticipated economic assumptions (investment return, inflation, and salary increases), plan experience differing from the expected demographic assumptions (rates of termination, disability, retirement and death). The user should understand the ongoing risks involved in using these results.

This section of the report provides additional information to help the user of the report understand the uncertainties involved with this type of actuarial valuation.

Plan Maturity

A significant issue that the plan has to deal with is the maturity of the plan. This means that the plan is at a point where there are significant benefits being paid by the plan. This has happened while the total active population has remained fairly level. This is illustrated below:

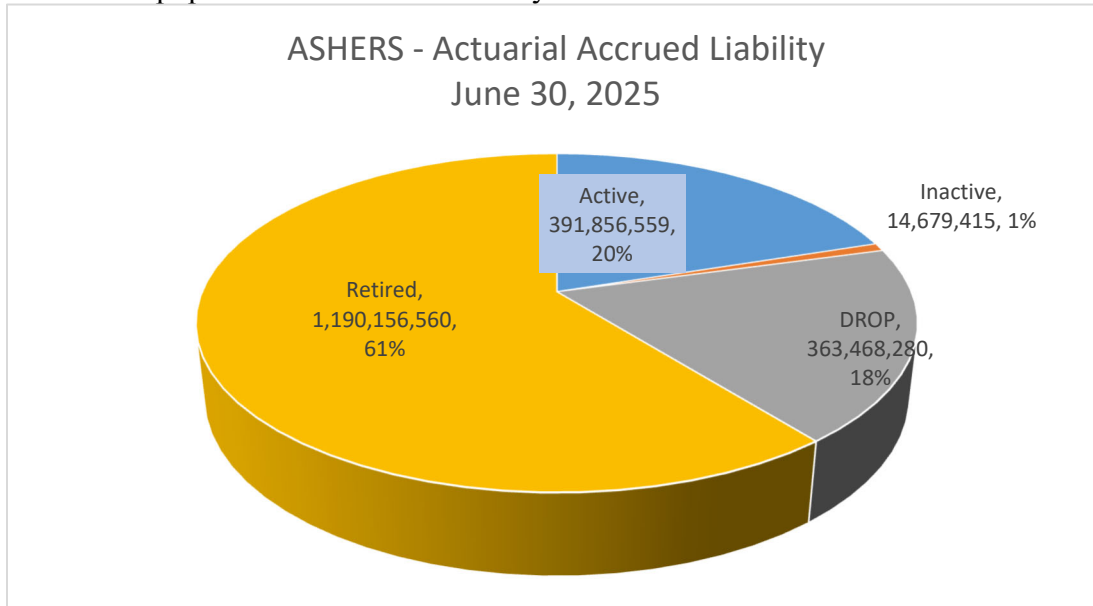


Exhibit 5 (Continued)

As seen in the nearby graph, over 60% of the liabilities of the plan are associated with participants who are currently receiving benefits. The DROP participants and former participants who still have balances make up 20% of the liabilities. This means that 80% of the liabilities of the plan are “locked in”, that is, they have been fully determined and are awaiting payout. This means that changes in assumptions and most changes in plan provisions do not alter these liabilities. This makes it difficult to make small changes to affect the plan.

This is the reason the Board puts so much emphasis on the Cash Flow Percentage, one of the funding policy’s key metrics. The history of this ratio has already been reported here on page 16. As discussed, if this ratio becomes too high it is hard to manage investment policy and curtail UAAL growth.

Asset Smoothing

We have discussed in meetings and will note here that 2022 produced a significant investment loss that was ultimately absorbed into the Actuarial Value of Assets in this report. There have been gains in the past 3 years, but the plan absorbed the final \$57 million of those losses in the Actuarial Value of Assets this year. Positively, the AVA has \$53 million of gains to recognize in the next 3 years.

Future Investment Returns

The biggest risk in managing ongoing contribution rates is the uncertainty of future investment returns. The Board and Actuary are comfortable with the long term assumption at this time, but variations in the actual results are inevitable. We can see one illustration of this in the GASB Disclosure Report. In that report, we calculate the amount of the liabilities and Unfunded Actuarial Accrued Liability assuming the assumed return is one percent higher and lower. If the plan earned 6.5% over the long term instead of 7.5%, then the liabilities of the plan would be about \$203 million higher. That is, \$2,163 million compared to the reported amount of \$1,960 million.

The Actuarial Standards of Practice #4 also requires that we convey the liability if the liability were calculated using a low default risk obligation measurement. In other words, a measurement where we use a discount rate that is generally similar to the rate that governments can borrow. This report uses the same index as the GASB report which for June 30, 2025 is 4.81%. If liabilities were calculated using that discount rate, they would be about \$2,570 million. This does not change our strong funding policy which will fully fund all benefits as time passes and can adjust for future uncertainties. Another way to view this information is that the roughly \$600 million difference is the added value of a diversified portfolio over a fully immunized portfolio.

APPENDIX 1

PRINCIPAL PROVISIONS OF THE PLAN

<u>EFFECTIVE DATE:</u>	July 1, 1949.
<u>EMPLOYEE:</u>	Employees of the Arkansas State Highway System.
<u>EMPLOYER:</u>	Arkansas State Highway System.
<u>PLAN YEAR:</u>	July 1 to June 30.
<u>PARTICIPATION:</u>	Immediate upon full-time employment.
<u>EMPLOYER CONTRIBUTIONS:</u>	The State contributes 14.90% (beginning 7/1/2019, previously 12.90%) of the total payroll earnings of members. Beginning 7/1/2021, a contribution is made for salaries of those members on DROP. Previously, the State did not contribute for members in the Tier I portion of DROP and contributed 6.9% of payroll for members in the Tier II portion of DROP.
<u>EMPLOYEE CONTRIBUTIONS:</u>	<ol style="list-style-type: none">1. Each Member must contribute 7.0% (for 7/1/2020 and after) of his annual Compensation while in the service of the Employer. During participation in the Tier I portion of DROP a member's contributions are suspended.2. Within certain terms, conditions, and limitations, a Member voluntarily may make additional contributions in order to obtain creditable service for prior service.
<u>COMPENSATION:</u>	The total remuneration earned by an employee for services rendered during any consecutive twelve (12) months or fraction thereof.
<u>FINAL AVERAGE COMPENSATION:</u>	Average compensation over 60 consecutive months that produces the highest average. This changed beginning 7/1/2021 and the 36 month average is maintained until the 60 month average is greater.
<u>CREDITED SERVICE:</u>	Completed years and days of service since date of hire.
<u>RECIPROCAL SERVICE:</u>	Service completed in any reciprocal state system as defined by law. Used to determine eligibility for benefits.

Appendix 1 (Continued)

NORMAL RETIREMENT:

Eligibility:

Earliest of the following:

- (a) Completion of 28 years of creditable service,
- (b) Age 60 and 20 years of creditable service,
- (c) Age 62 and 15 years of creditable service,
- (d) Age 65 and 5 years of creditable service.

Benefit Formula:

Years of credited service times 2.2% of Final Average Compensation, plus post-retirement health care supplements. The minimum annual normal retirement benefit is \$1,800. The health care supplements are depended on years of service at retirement, the benefits are provided as follows:

- (a) For members who retired before or on June 30, 2009: \$1,500 health care offset amount will be provided.
- (b) For members who retire after June 30, 2009:
 - 1. With less than 10 years of accrued service: No health care offset amount will be provided.
 - 2. With 10 or more years of accrued service but less than 15 years of accrued service at retirement: \$900 health care offset amount will be provided.
 - 3. With 15 or more years of accrued service but less than 20 years of accrued service at retirement: \$1,200 health care offset amount will be provided.
 - 4. With 20 or more years of accrued service at retirement: \$1,500 health care offset amount will be provided.

For members who retire after June 30, 2013 the health care offset is prorated for any service earned with a reciprocal retirement system.

Those who elect DROP after July 1, 2021 will not be paid a health care offset during the DROP period. It will begin upon ultimate retirement.

Appendix 1 (Continued)

Normal Form: Monthly benefit for life of Member plus, upon death, a refund of the excess (if any) of (i) the Member's accumulated contribution account at time of retirement over (ii) the total annuity payments received.

Optional Form: Option A: 10 years certain or life, or

Option B: Joint & 50% contingent survivor, with a pop up to the life only amount if the joint pensioner predeceases the member.

DEFERRED RETIREMENT OPTION PLAN (DROP):

Eligibility: Earliest of the following:

- (a) Completion of 30 years of creditable service,
- (b) Age 60 and 20 years of creditable service,
- (c) Age 62 and 15 years of creditable service,
- (d) Age 65 and 5 years of creditable service.

Benefit: Active members eligible for normal retirement are eligible to participate in the DROP program while continuing active employment. During DROP, the member will receive the regular retiree cost of living adjustments. A member can remain in DROP to the later of age 65 or the completion of five years of participation in DROP. DROP is divided into Tier I and Tier II. Tier I consists of the first five years of DROP participation, while Tier II is the remaining period. In Tier I, 90% of the retirement annuity will be deposited in the DROP account, whereas in Tier II, 79% of the retirement annuity will be deposited. The DROP account is credited with interest in Tier I and Tier II (as set by the Board, currently 6%).

The member contributions, for those hired before July 1, 2021, cease during DROP until the member enters Tier II. For those hired July 1, 2021 and after, the employee contribution will continue during the entire DROP period. While on DROP, the employer contributes the employer rate, currently 14.90% (beginning July 1, 2021). At actual retirement, the member will receive the DROP balance and commence receiving the regular annuity payments.

Appendix 1 (Continued)

EARLY RETIREMENT:

Eligibility: Age 55 with 5 or more years of creditable service.

Benefit: Normal retirement benefit earned to the date of retirement, reduced .8% for each of the first 60 months and .3% for each of the next 60 months that the early retirement date precedes the normal retirement date. The minimum annual early retirement benefit is \$1,800.

DISABILITY BENEFITS:

- Benefit:
1. Less than 1 Year of Creditable Service: Refund of member contributions without interest.
 2. At least 1 Year of Creditable Service: Refund of member contributions with interest. Interest credits are currently 3% per annum.
 3. At least 5 or more Years of Creditable Service: If he leaves his contribution account on deposit, a monthly annuity payable to the member for life based upon his years of creditable service and commencing upon disability.

TERMINATION OF SERVICE:

1. Less than 1 Year of Creditable Service: Refund of member contributions without interest.
2. At least 1 Year of Creditable Service: Refund of member contributions with interest. Interest credits are currently 3% per annum.
3. At least 5 or more Years of Creditable Service: If he leaves his contribution account on deposit, a monthly annuity payable to the member for life based upon his years of creditable service and commencing upon eligibility for retirement.

Appendix 1 (Continued)

DEATH BEFORE RETIREMENT:

1. Less than 1 Year of Creditable Service: Refund of member contributions without interest.
2. At least 1 Year of Creditable Service: Refund of member contributions with interest.
3. At least 5 Years of Creditable Service: If the beneficiary leaves the Member's contribution account on deposit, an annuity payable under either Option A or B as elected by the beneficiary and commencing at the time the Member would have become eligible for retirement.
 - (a) Option A: A reduced annuity payable for 10 years in an amount equal to what the member would have received under retirement Option A.
 - (b) Option B: An annuity payable for the life of the beneficiary in an amount equal to 50% of what the member would have received under retirement Option B.
4. An additional lump sum death benefit equal to \$15,000.

DEATH AFTER RETIREMENT:

If no option was elected, refund of the excess (if any) of (i) the Member's accumulated account (including interest) at retirement over (ii) the total annuity payments received. If an option is elected, death benefits are payable in accordance with such option.

An additional lump sum death benefit of \$7,500 is provided for retirees (not beneficiaries).

Appendix 1 (Continued)

**AUTOMATIC
POST RETIREMENT
INCREASES:**

Effective July 1 2017, the benefit increase will be the lesser of 3% or the percentage change in the Consumer Price Index for Urban Wage Earners and Clerical Workers as determined by the United States Department of Labor over the one-year period ending in the December immediately preceding the date of which the redetermined amount is being calculated. However, the redetermined amount of the benefit to be paid shall not be less than the redetermined amount of the benefit paid in the preceding year.

Previously, benefits increase by 1 1/2% of the base benefit each year after June 30, 1976 through June 30, 1978, by 3% of the base benefit each year after June 30, 1978, through June 30, 1995, and by 3% of the previous year's benefit each year after June 30, 1995 for those who are retired for at least one year on the July 1 determination date. This benefit was limited by the Consumer Price Index until June 30, 1999. Effective July 1, 1999, the benefit increase is 3% with no ties to the Consumer Price Index.

Effective July 1, 2019, the amount of the health care offset described above is not eligible for a cost of living increase. All cost of living increases granted before July 1, 2019 on the health care offset remain in place.

Recent COLA amounts are as follows:

1999-2016	3.00%
2017	2.07%
2018	2.18%
2019	1.77%
2020	2.31%
2021	1.45%
2022	3.00%
2023	3.00%
2024	2.77%

APPENDIX 2

LEGISLATED PLAN CHANGES ENACTED BY THE LEGISLATURE OF THE STATE OF ARKANSAS

Session

Year:

- | | | |
|-------------|------------|--|
| 1991 | 1. ACT 198 | Provide a one-time payment equal to 3.0% of the July 1, 1991 annualized annuity for members retired on or prior to January 1, 1990. |
| | 2. ACT 243 | Permit members to accrue more than 35 years of creditable service. (Retroactively applied). |
| | 3. ACT 245 | Effective July 1, 1991, increase annuities by the sum of \$50 per month for members receiving benefits prior to, on, or subsequent to July 1, 1991. The increase is also added to the base annuity. |
| | 4. ACT 246 | Effective July 1, 1991, increase the benefit formula multiplier to 2.06% of average compensation times number of years of creditable service. |
| | 5. ACT 380 | 4.0% ad hoc increase payable on July 1, 1991 for those members retired on June 1, 1991, based on benefit payable on June 1, 1991. The increase is also added to the base annuity. |
| | 6. ACT 381 | Benefits from reciprocal retirement systems are to be based on the highest final average salary at the time of retirement. (Retroactively applied). |
| 1993 | 1. ACT 929 | 2.9% ad hoc increase payable on July 1, 1993 for those members retired on June 1, 1993, based on benefits payable June 1, 1993. The increase is also added to the base annuity. |
| | 2. ACT 930 | Effective July 1, 1993, the average compensation is based on a forty-eight (48) month averaging period. (Previously sixty (60) months.) |
| 1995 | 1. ACT 407 | Cost of living increase up to 3% of the member's previous year's benefit for those members retired for at least twelve full months after the effective date of each increase. Increases are effective July 1 and will be limited to the lesser of 3% or the Consumer Price Index but may not result in a decrease in benefits otherwise payable. |

Appendix 2 (Continued)

- | | | | |
|-------------|----|----------|--|
| 1997 | 1. | ACT 1067 | Creates an active member death benefit of 10 years certain and life. Five years of service eligibility for benefit. |
| | 2. | ACT 1089 | Creates a \$15,000 death benefit for active and vested-terminated members. |
| | 3. | ACT 1073 | Creates a DROP program for active members eligible for normal retirement. |
| | 4. | ACT 386 | Increases the multiplier from 2.06% to 2.10%. Grants 2.0% ad hoc to retirees. |
| | 5. | ACT 349 | Changes 48-month FAE to 36 months. Grants 2.2% ad hoc to retirees. |
| | 6. | ACT 347 | Changes 10-year vesting requirement to 5 years. |
| 1999 | 1. | ACT 311 | Increases the \$50 per month supplement to \$125 per month to current and future retirees. |
| | 2. | ACT 1325 | Active members can retire with full benefit if they have 28 years of creditable service. |
| | 3. | ACT 335 | Cost of living increase will be 3% and is not limited by the Consumer Price Index. |
| 2001 | 1. | ACT 482 | Provides \$7,500 lump sum death benefit for retirees (not beneficiaries). |
| | 2. | ACT 539 | Increases the multiplier from 2.1% to 2.2%. Grant 4.8% ad hoc to retirees. |
| 2003 | 1. | ACT 776 | Allows members who enter DROP prior to age 60 to remain in DROP until age 65, beyond the five-year limit previously set. During this time, known as Tier II DROP, 79% of the retirement annuity will be deposited in the DROP account. Furthermore, the member contributes 6.00% of their total payroll earnings and the employer contributes 6.90%. |
| | 2. | ACT 205 | Changes the factors used for determining optional forms of payment to actuarially equivalent factors. Current retirees had their benefits increased to reflect the new factors effective July 1, 2003. |

Appendix 2 (Continued)

- 2009**
1. ACT 439 Changes from 5 years vesting requirement to 10 years vesting requirement on health care coverage. Prorated the \$125 per month health care supplements as follows:
 - a. With less than 10 years of service at retirement: No health care supplements.
 - b. With 10 or more years of service but less than 15 years of service at retirement: \$75/month (or 60% of \$125/month).
 - c. With 15 or more years of service but less than 20 years of service at retirement: \$100/month (or 80% of \$125/month).
 - d. With 20 or more years of service at retirement: \$125/month (or 100% of \$125/month).
 2. Trustees used provision of Act 1073 of 1997 to reduce the interest credited on DROP accounts to 6%, effective 7/1/2009.
- 2011**
1. ACT 564 Establishes the cost for purchasing service credit as the actuarial equivalent cost. This applies to all types of service credit including military service, service with another State agency, and reinstatement of forfeited service.
- 2013**
1. ACT 309 Prorates the Health Care Offset paid by the Arkansas State Highway Employees Retirement System (ASHERS), for members who also have service in a reciprocal retirement system.
 2. ACT 310 Excludes lump sum termination payments (accrued leave, compensation, etc.) from inclusion in the Average Compensation and credited service used in the determination of retirement benefits paid by the Arkansas State Highway Employees Retirement System (ASHERS).
- 2017**
1. ACT 610 Cost of living increase will be the lesser of 3% or the percentage change in the Consumer Price Index for Urban Wage Earners and Clerical Workers as determined by the United States Department of Labor over the one-year period ending in the December immediately preceding the date of which the redetermined amount is being calculated. However, the redetermined amount of the benefit to be paid shall not be less than the redetermined amount of the benefit paid in the preceding year.

Appendix 2 (Continued)

2. ACT 461 A member of the Arkansas State Highway Employees' Retirement System may purchase creditable service in the retirement system, without interest, for a period not to exceed five years of service for active service by the member in the United States Armed Forces if the member (1) has five years of actual service in the system as of August 20, 2015; and (2) shows that he or she relied upon the ten-year service time requirement before applying to purchase military service credit under this ACT. The purchase of military service credit under this ACT shall be made in the form of a cash payment or automatic payroll deductions for period not to exceed three years.
- 2019**
1. ACT 294 Effective July 1, 2019, the amount of the health care offset (also called supplement) is not eligible for a cost of living increase. All cost of living increases granted before July 1, 2019 on the health care offset remain in place.
2. ACT 295 Effective July 1, 2019, the employee contribution maximum is 7% of compensation. This can only increase by 0.5% per year, so the rate beginning July 1, 2019 will be 6.5% and the rate beginning July 1, 2020 will be 7.0% of compensation. The employer rate increased to a maximum of 14.9% and that increase was effective July 1, 2019.
- 2021**
1. ACT 137 The employer contribution rate will be based on the recommendation of the actuary and then presented for approval to the Commission.
2. ACT 138 The employer contribution beginning July 1, 2021 will apply to salaries for Tier 1 and Tier 2 DROP participants. Those hired 7/1/2021 and after will pay employee contributions on DROP salaries.
3. ACT 139 The length of time to be married before being eligible for survivor benefits was reduced from 2 years to 1 year.
4. ACT 149 The definition of final average compensation went from 3 years to 5 years. There is a provision so that those employed at 7/1/2021 do not see a decrease in final average compensation.
5. ACT 150 Those who elect DROP after July 1, 2021 will not be paid a health care offset during the DROP period. It will begin upon ultimate retirement.
6. ACT 711 There were various changes in reciprocal service beginning 7/1/2021. ASHERS benefits for those who begin reciprocal service after 7/1/2021 will be based on the ASHERS definition of final average compensation.

APPENDIX 3

ACTUARIAL COST METHODS AND ASSUMPTIONS

INVESTMENT
YIELD RATE: 7.5% per annum, compounded annually. (Effective June 30,2021)
The expected rate of return on pension plan investments for the purpose of GASB is also 7.50%.

MORTALITY:

- a. Healthy Post-retirement (Effective June 30, 2021)
 - Male: Pub-2010 Public Retirement Plans for males, amount weighted Mortality Table for General employees with below median income, scaled at 105% with no setback. Generational mortality improvements are in accordance with MP-2020 from the table's base year of 2010 (both before and after the measurement date)
 - Female: Pub-2010 Public Retirement Plans for females, amount weighted Mortality Table for General employees with below median income, scaled at 105% with no setback. Generational mortality improvements are in accordance with MP-2020 from the table's base year of 2010 (both before and after the measurement date)
- b. Disabled Post-retirement (Effective June 30, 2021)
 - Male: Pub-2010 Public Retirement Plans for disabled males, amount weighted Mortality Table for General employees with below median income, with no scale and no setback. Generational mortality improvements are MP-2020 from the table's base year of 2010 (both before and after the measurement date)
 - Female: Pub-2010 Public Retirement Plans for disabled females, amount weighted Mortality Table for General employees with below median income, with no scale and no setback. Generational mortality improvements are MP-2020 from the table's base year of 2010 (both before and after the measurement date)
- c. Healthy Pre-retirement (Effective June 30, 2021)
 - Male: Pub-2010 Public Retirement Plans for male employees, amount weighted Mortality Table for General employees with below median income, no scale, no setback. Generational mortality improvements are in accordance with MP-2020 from the table's base year of 2010 (both before and after the measurement date)
 - Female: Pub-2010 Public Retirement Plans for female employees, amount weighted Mortality Table for General employees with below median income, no scale, no setback. Generational mortality improvements are in accordance with MP-2020 from the table's base year of 2010 (both before and after the measurement date)

Appendix 3 (Continued)

RETIREMENT RATES (Continued Effective June 30, 2021):

The following probabilities of retirement were assumed for members eligible to retire:

<u>Age</u>	<u>Early Retirement Rate</u>	<u>Normal Retirement Rate</u>	
	<u>Males and Females</u>	<u>Males</u>	<u>Females</u>
48		5.0%	5.0%
49		5.0%	5.0%
50		6.5%	5.0%
51		8.0%	6.0%
52		9.5%	7.0%
53		11.0%	8.0%
54		12.5%	9.0%
55	1.0%	14.0%	10.0%
56	1.0%	15.5%	15.0%
57	2.0%	20.0%	15.0%
58	2.0%	25.0%	25.0%
59	3.0%	25.0%	25.0%
60	3.0%	15.0%	15.0%
61	8.0%	20.0%	20.0%
62	20.0%	45.0%	45.0%
63	20.0%	25.0%	25.0%
64	15.0%	25.0%	25.0%
65		40.0%	40.0%
66		40.0%	40.0%
67		40.0%	40.0%
68		40.0%	40.0%
69		40.0%	40.0%
70		100.0%	100.0%

Appendix 3 (Continued)

DISABILITY RATES (Continued Effective June 30, 2021):

Rates based on the experience of other large public sector retirement systems through age 82; thereafter, Non-Disabled Mortality is assumed.

<u>Age</u>	<u>Rates of Decrement Due to Disability</u>
20	.00192
25	.00192
30	.00192
35	.00192
40	.00480
45	.00624
50	.01176
55	.02136
60	.03384
65	.03984

WITHDRAWAL RATES (for causes other than death, disability, or retirement)

(Effective June 30, 2021):

Select and ultimate rates are used based on age and service. Sample rates are shown.

Probability of Decrement Due to Withdrawal

Years of Service

Male Members

<u>Age</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5+</u>
20	.4306	.2764	.1850	.1357	.1323	.1095
30	.2984	.2268	.1431	.0991	.0869	.0607
40	.2368	.1815	.0983	.0743	.0549	.0274
50	.1677	.1279	.0983	.0599	.0379	.0164
60	.0138	.1275	.0971	.0770	.0476	.0311

Female Members

<u>Age</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5+</u>
20	.4672	.3279	.2363	.1539	.1099	.0776
30	.2875	.2404	.1681	.1115	.0803	.0582
40	.2138	.1750	.1030	.0767	.0504	.0373
50	.1766	.1288	.0949	.0561	.0353	.0174
60	.2045	.1433	.0842	.0491	.0242	.0007

Appendix 3 (Continued)

SALARY SCALES (Effective June 30, 2021):

Future compensation is assumed to increase by an inflation (growth) increase rate of 2.5% plus a productivity component of 1.00%, and plus a step-rate/promotional component based on service. Rates are illustrated below:

<u>Years of Service</u>	<u>Step-rate/ Promotional Component</u>	<u>Total Salary Scale</u>
0	9.00%	12.00%
1	7.00%	10.00%
2	4.50%	7.50%
3	2.00%	5.00%
4-6	1.50%	4.50%
7-10	1.00%	4.00%
11-13	0.75%	3.75%
14-16	0.50%	3.50%
17-19	0.50%	3.25%
20+	0.00%	3.00%

FUTURE INCREASE IN TOTAL PAYROLL (Effective June 30, 2021):

3.0% per annum. Used for purposes of funding the Unfunded Actuarial Accrued Liability.

COST OF LIVING INCREASE (Effective June 30, 2021):

All benefit in pay status are assumed to be increased by 2.25% annually.

PROVISION FOR EXPENSE (Effective June 30, 1997):

The assumed investment return rate represents the anticipated net rate of return after payment of all administrative and investment expenses.

ELECTION RATES (Effective June 30, 2004):

After their initial vesting, members are assumed to elect the greater value of their deferred annuity or a refund of their account balances. 100% of non-vested members are assumed to take a refund.

ELECTION OF DROP ENTRY (Effective June 30, 2015):

100% of participants who are eligible to enter DROP are assumed to elect to participate in DROP, except as noted below. Members who elect into DROP are assumed to retire at the normal retirement patterns. Members who first become eligible to DROP prior to age 60 (at 30 years of service) are assumed to enter DROP after attaining 31 years of service. Members past their first eligibility are assumed to enter DROP immediately.

Appendix 3 (Continued)

INTEREST CREDITING RATE ON DROP ACCOUNTS (Effective June 30, 2012):

6.0% interest credit on DROP accounts.

DROP ACCOUNTS PAYOUT PERIOD (Effective June 30, 2015):

It is assumed that members who participate in DROP will receive their DROP accounts in equal installments over a 10-year period.

ASSET VALUATION METHOD (Adopted June 30, 2021):

The actuarial value of assets is equal to the market value of assets less a four-year phase-in of the excess (shortfall) between expected investment return and actual income with the resulting value not being less than 80% or more than 120% of the market value of assets.

The actuarial value of assets was marked to the market for June 30, 2012 valuation. This was done to prevent an expected divergence away from the market value of assets.

The return for 2021 was reduced by the amount of the liability change due to change in discount rate. This made a one time additional recognition of market return.

ACTUARIAL COST METHOD:

The funding period required to amortize the unfunded actuarial accrued liability (UAAL) is determined using the Entry Age Actuarial Cost Method.

The Individual Entry Age Normal actuarial cost method assigns the Plan's total unfunded liabilities (the actuarial present value of future benefits less the actuarial value of assets) to various periods. The unfunded actuarial accrued liability is assigned to years prior to the valuation, and the normal cost is assigned to the year following the valuation. The remaining costs are the normal costs for future years. Then each year's contribution is composed of (i) that year's normal cost, plus (ii) a payment used to reduce the unfunded actuarial accrued liability.

The normal contribution is determined using the Entry Age Normal method. Under this method, a calculation is made to determine the rate of contribution which, if applied to the compensation of each individual member during the entire period of anticipated covered service (prior to DROP entry), would be required to meet the cost of all benefits payable on his behalf. The salary-weighted average of these rates is the normal cost rate. This calculation reflects the plan provisions that apply to each individual member. The employer normal cost rate is equal to (i) the normal cost rate, minus (ii) the member contribution rate.

Appendix 3 (Continued)

The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs. The unfunded actuarial accrued liability (UAAL) is the excess of the actuarial accrued liability over the actuarial value of assets.

Since the State statutes governing the System establish the current employee and State contribution rates, the actuarial valuation determines the number of years required to amortize (or fund) the UAAL on a level percentage of payroll basis, taking into account the payroll growth assumption and the normal cost expressed as a percent of pay. Because of this amortization procedure, any change in the unfunded actuarial accrued liability due to (i) actuarial gains and losses, (ii) changes in actuarial assumptions, or (iii) amendments, affects the funding period.

FUNDING OF UNFUNDED ACTUARIAL ACCRUED LIABILITY:

The total normal cost for benefits provided by the System is 11.75% of payroll, which is 10.15% of payroll less than the total contributions scheduled for the year under current law (14.90% from Employer plus 7.0% from employees). This remaining 10.15% of payroll along with any contributions received on behalf of members on DROP are assumed to be utilized to fund the unfunded actuarial accrued liability over a period of years in the future, assuming that total payroll is increased by 3.0% per year. The calculation is detailed in Exhibit 2 of this report.

APPENDIX 4

DEFINITION OF ACTUARIAL TERMS

ACTUARIAL ACCRUED LIABILITY:

The present value of benefits payable in the future less the present value of future normal costs for present members.

ACTUARIAL ASSUMPTIONS:

Assumptions as to future experience under the System. Assumptions include future fund earnings rates, rates of future salary increases, and rates of death (both before and after retirement), disability, retirement, and withdrawal.

ACTUARIAL GAIN OR ACTUARIAL LOSS:

A measure of the difference between actual experience and assumed experience of the System. The actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, actuarial liabilities emerge which may be the same as forecasted or they may be larger or smaller than projected. Actuarial gains are due to favorable experience, i.e., actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains or losses will be amortized according to the plan's funding policy.

ACTUARIAL LIABILITIES:

The actuarially determined present value of future benefits to be provided by the System. Separate actuarially determined present values are calculated for retired members and non-retired members. When applied to active members, benefits which will be earned through future service and future salary increases are taken into account as defined by the actuarial cost method.

ACTUARIAL VALUE OF ASSETS:

The market value of assets of the System adjusted to recognize investment earnings above or below the investment return assumption uniformly over a four-year period.

ACTUARIALY DETERMINED:

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

ACTUARIALY DETERMINED CONTRIBUTION (ADC):

The contribution amount expressed as a percentage of payroll that will fund the normal cost of the plan as well as the amortization of the UAAL according to the funding policy of the plan.

APPENDIX 4 (Continued)

DEFINED BENEFITS:

Benefits which are defined by a specific formula applied to a specific member's compensation and specific years of service. The amount of the benefit is not a function of contributions or actual earnings on those contributions.

EQUIVALENT FUNDING PERIOD:

The number of years in the future that will be required to fund (i.e., pay off or fully fund) the unfunded actuarial accrued liability, based on the actuarial assumptions and assuming no future actuarial gains or losses.

FUNDED RATIO:

The ratio of the actuarial value of assets to the actuarial accrued liability. The funding ratio is a measure of the funded status of the plan.

FUTURE BENEFITS:

Benefits specified in the law which will become payable at some time in the future when the member satisfies the requirement to receive such benefits.

FUTURE CONTRIBUTIONS:

Contributions to be made by the member or the State in the future, as required by the law and approved by the State Highway Commission.

NORMAL COST:

The average annual actuarial cost of the benefits provided by the System for the current employees as defined by the Cost Method.

PRESENT VALUE:

The actuarially determined lump sum value as of the valuation date of a series of payments to be made in the future, where the lump sum value is equal to the sum of the discounted value of each future payment. The discounted value of each payment is the product of (a) the amount of the payment, (b) the probability that the payment will be made (based on the current actuarial assumptions as to the future experience), and (c) the time value of money (based on the current assumed interest rate).

UNFUNDED ACTUARIAL ACCRUED LIABILITY:

That portion of the actuarial accrued liability (including the present value of benefits presently being paid to retired members and the value of any miscellaneous liabilities) that exceeds the value of current actuarial value of assets.