ARIZONA ELECTED OFFICIALS' RETIREMENT PLAN

CONSOLIDATED REPORT

ACTUARIAL VALUATION
AS OF JUNE 30, 2020

CONTRIBUTIONS APPLICABLE TO THE
PLAN/FISCAL YEAR ENDING JUNE 30, 2022

FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

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VIA E-MAIL

December 7, 2020

Board of Trustees
Arizona Elected Officials' Retirement Plan
Phoenix, AZ

Re: Actuarial Valuation Report as of June 30, 2020 – Arizona Elected Officials' Retirement Plan

Dear Members of the Board:

We are pleased to present to the Board this report of the annual actuarial valuation of the Arizona Elected Officials' Retirement Plan (EORP). The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and to develop the appropriate funding requirements for the applicable plan year.

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

The valuation has been conducted in accordance with generally accepted actuarial principles and practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board, and reflects laws and regulations issued to date pursuant to the provisions of Title 38, Chapter 5, Article 3 of the Arizona Revised Statutes, as well as applicable federal laws and regulations. In our opinion, the assumptions used in this valuation, as adopted by the Board of Trustees, represent reasonable expectations of anticipated plan experience. Future actuarial measurements may differ significantly from the current measurements presented in this report for a variety of reasons including: changes in applicable laws, changes in plan provisions, changes in assumptions, or plan experience differing from expectations. Due to the limited scope of the valuation, we did not perform an analysis of the potential range of such future measurements.

The computed contribution rates shown in the "Contribution Results" section should be considered minimum contribution rates that comply with the Board's funding policy and Arizona Statutes. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the Plan in excess of those presented in this report be considered.

The funding percentages and unfunded accrued liability as measured based on the actuarial value of assets will differ from similar measures based on the market value of assets. These measures, as provided, are appropriate for determining the adequacy of future contributions, but may not be appropriate for the purpose of settling a portion or all of the Plan's liabilities.

In conducting the valuation, we have relied on personnel, plan design, and asset information supplied by EORP through June 30, 2020 and the actuarial assumptions and methods described in the Actuarial Assumptions section of this report. While we cannot verify the accuracy of all this information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy of the information and believe that it has produced appropriate results. This information, along with any adjustments or modifications, is summarized in various sections of this report.

This valuation assumes the continuing ability of the participating employers to make the contributions necessary to fund this plan. A determination regarding whether or not the participating employers are actually able to do so is outside our scope of expertise. Consequently, we did not perform such an analysis.

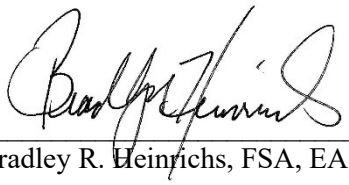
The undersigned are familiar with the immediate and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the actuarial opinion.

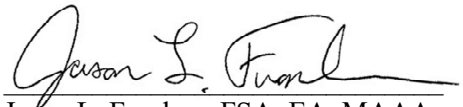
To our knowledge, no associate of Foster & Foster, Inc. working on valuations of the program has any direct financial interest or indirect material interest in the Arizona Elected Officials' Retirement Plan, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the Arizona Elected Officials' Retirement Plan. Thus, there is no relationship existing that might affect our capacity to prepare and certify this actuarial report.

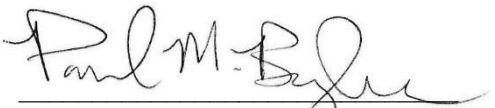
If there are any questions, concerns, or comments about any of the items contained in this report, please contact us at 239-433-5500.

Respectfully Submitted,

Foster & Foster, Inc.

By: 
Bradley R. Heinrichs, FSA, EA, MAAA

By: 
Jason L. Franken, FSA, EA, MAAA

By: 
Paul M. Baugher, FSA, EA, MAAA

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I. SUMMARY OF REPORT

The regular annual actuarial valuation of the Arizona Elected Officials' Retirement Plan, performed as of June 30, 2020, has been completed and the results are presented in this Report. The purpose of this valuation is to:

- Compute the liabilities associated with benefits likely to be paid on behalf of current retired and active members. This information is contained in the section entitled "Liability Support."
- Compare accumulated assets with the liabilities to assess the funded condition. This information is contained in the section entitled "Liability Support."
- Compute the employers' statutory contribution rates for the Fiscal Year beginning July 1, 2021. This information is contained in the section entitled "Contribution Results."

1. Key Valuation Results

The funded status as of June 30, 2020 and the statutory employer contribution amounts applicable to the plan/fiscal year ending June 30, 2022 are as follows:

	Pension	Health	Total
Employer Contribution Rate *	61.31%	0.00%	61.31%
Funded Status	32.1%	182.9%	34.3%

2. Comparison of Key Results to Prior Year

The chart below compares the results from this valuation with the results of the prior year's valuation (as of June 30, 2019):

Contribution Rate *

Valuation Date	Pension	Health	Total
June 30, 2019	55.21%	0.00%	55.21%
June 30, 2020	61.31%	0.00%	61.31%

Funded Status

Valuation Date	Pension	Health	Total
June 30, 2019	31.5%	176.4%	33.6%
June 30, 2020	32.1%	182.9%	34.3%

* *The rates shown are the calculated rates as of the valuation date.*

3. Reasons for Change

Changes in the results from the prior year's valuation are illustrated in the following tables along with high-level explanations below:

Contribution Rate

	Pension	Health
Contribution Rate Last Valuation	55.21%	0.00%
Asset Experience	0.60%	0.06%
Liability Experience	(0.72%)	(0.04%)
Payroll Base	0.92%	(0.01%)
Assumption/Method Change	5.81%	0.00%
Other	(0.51%)	(0.01%)
Contribution Rate This Valuation	61.31%	0.00%

Funded Status

	Pension	Health
Funded Status Last Valuation	31.5%	176.4%
Asset Experience	(0.6%)	(3.4%)
Liability Experience	0.2%	4.4%
Assumption/Method Change	0.0%	0.0%
Other	1.0%	5.5%
Funded Status This Valuation	32.1%	182.9%

Assets Experience – Asset gains and losses (relative to the assumed earnings rate) are smoothed over seven years. The return on the market value of assets for the year ending June 30, 2020 was 2.0%. On a smoothed, actuarial value of assets basis, however, the average return was 5.2%. This fell short of the 2019 assumed earnings rate of 7.3%.

Liability Experience – Experience overall was favorable, driven by lower salaries and more turnover than expected. Losses from lower than expected inactive mortality partially offset those gains.

Payroll Base – Under the current amortization policy, the contribution rate is developed based on a percentage of payroll. Payroll for this purpose includes members of this plan and defined contribution plans' members that would have been in this plan (EORP DC and ASRS DC). To the extent that overall payroll is lower/greater than last year's projected payroll, the contribution rate will increase / decrease as a result. The payroll increased more than expected, resulting in a decrease in the contribution rate.

Assumption / Method Change – The amortization method was updated to use a layered approach. New bases will be amortized on a Level Dollar basis while the 2019 base will continue to be amortized on a Level Percentage of Payroll basis. The payroll growth assumption was decreased from 3.50% to 2.50%.

Other – This is the combination of all other factors that could impact liabilities year-over-year, with the primary sources being changes resulting from an updated understanding of some data components provided by staff and changes in member data.

4. Looking Ahead

The continuing effect of prior asset losses was dampened by the asset smoothing reflected in the actuarial value of assets. There remain unrecognized investment losses that will, in the absence of other gains, put upward pressure on the contribution rate next year.

If the June 30, 2020 pension valuation results were based on the market value of assets instead of the actuarial value of assets, the pension funded percentage would be 29.8% (instead of 32.1%) and the statutory employer contribution requirement would be 63.92% of payroll (instead of 61.31%).

5. Conclusion

This plan is closed to new hires and relies on a statutory contribution that amortizes unfunded liabilities over a period that is much too long for the active membership. The contributions are based on the combined payroll of both current active members and defined contribution members that would have been part of this plan (EORP DC and ASRS DC). Two implications of this funding policy are that:

- Members who are not benefitting are helping to cover the cost of benefits (intergenerational equity).
- The assumption of continued payroll growth results in short-term growth in the unfunded liability and could significantly backload funding to the plan if the assumed growth (previously 3.50% annually) is not achieved.

The recent adoption of a layered amortization approach along with a plan to systematically lower the payroll growth assumption was an excellent step to addressing these issues and ensuring the Plan is on a viable path.

II. CONTRIBUTION RESULTS

Contribution Requirements

Development of Employer Contributions				
Valuation Date	June 30, 2020		June 30, 2019	
Applicable to Fiscal Year Ending	2022		2021	
	Rate	**Dollar**	**Rate**	**Dollar**
Pension				
Normal Cost				
Total Normal Cost	26.84%		27.40%	
Employee Cost	(7.00%)		(7.00%)	
Employer (Net) Normal Cost	19.84%		20.40%	
Amortization of Unfunded Liability	63.70%		57.44%	
Total Statutory Contribution Rate	83.54%	$ 54,854,303	77.84%	$ 50,396,359
Statutory Employer Contribution Rate	61.31%		55.21%	
Board Approved Employer Contribution Rate *	**61.43%**	**38,938,482**	**61.43%**	
Health				
Normal Cost	0.58%		0.63%	
Amortization of Unfunded Liability	(0.58%)		(0.63%)	
Total Employer Cost (Health)	0.00%	$ 0	0.00%	$ 0

As outlined in Section 38-810 of the Arizona Revised Statutes, the contribution rate, effective July 1, 2018, is determined actuarially as a combination of normal cost and an amortization of the plan's unfunded liability. This results in the "Total Statutory Contribution Rate" above. The statutes also outline that additional sources of funding will be provided through court fees (approximately $11 million in 2020) and appropriation ($5 million each year through fiscal 2043). The "Statutory Employer Contribution Rate" nets out this additional funding from the total rate to arrive at an employer rate to be paid by the combined payrolls for members that would have been in this plan had it not been closed (EORP defined benefit, EORP defined contribution, and ASRS defined contribution members).

* *The Board decided to keep the Employer contribution rate (as calculated with the June 30, 2018 valuation) for the fiscal years ending June 30, 2021 and June 30, 2022.*

Historical Summary of Employer Pension Rates

Valuation Date June 30	Fiscal Year Ending June 30	Normal Cost	Unfunded Amortization	Total *
2018	2020	21.71%	39.72%	61.43%
2019	2021	20.40%	41.03%	61.43%
2020	2022	19.84%	41.59%	61.43%

** Percent applied to combined DB/DC payroll and added to fees and $5 million appropriation.*

Historical Summary of Recommended Employer Health Rates

Valuation Date June 30	Fiscal Year Ending June 30	Normal Cost	Unfunded Amortization	Total
2018	2020	0.49%	(0.49%)	0.00%
2019	2021	0.63%	(0.63%)	0.00%
2020	2022	0.58%	(0.58%)	0.00%

III. LIABILITY SUPPORT

Liabilities and Funded Ratios by Benefit

	June 30, 2020	June 30, 2019
Pension		
Actuarial Present Value of Benefits		
Retirees and Beneficiaries	$ 725,180,184	$ 721,454,926
Vested Members	16,994,803	9,901,196
Active Members	289,488,463	297,295,886
Total Actuarial Present Value of Benefits	1,031,663,450	1,028,652,008
Actuarial Accrued Liability (AAL)		
All Inactive Members	742,174,987	731,356,122
Active Members	219,288,326	217,885,882
Total Actuarial Accrued Liability	961,463,313	949,242,004
Actuarial Value of Assets (AVA)	309,015,722	298,895,212
Unfunded Actuarial Accrued Liability	652,447,591	650,346,792
Funded Ratio (AVA / AAL)	32.1%	31.5%
Health		
Present Value of Benefits		
Retirees and Beneficiaries	$ 10,864,228	$ 11,253,880
Active Members	4,205,651	4,464,288
Total Present Value of Benefits	15,069,879	15,718,168
Actuarial Accrued Liability (AAL)		
Retirees and Beneficiaries	10,864,228	11,253,880
Active Members	2,800,918	2,795,336
Total Actuarial Accrued Liability	13,665,146	14,049,216
Actuarial Value of Assets (AVA)	24,988,727	24,785,950
Unfunded Actuarial Accrued Liability	(11,323,581)	(10,736,734)
Funded Ratio (AVA / AAL)	182.9%	176.4%

Derivation of Experience (Gain)/Loss

Actual experience will never exactly match assumed experience, except by coincidence. Ideally, gains and losses will cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience (gain) / loss is shown below, along with sources of the gains and losses.

		Pension	Health
(1)	Unfunded Actuarial Accrued Liability as of June 30, 2019	$ 650,346,792	$ (10,736,734)
(2)	Normal Cost Developed in Last Valuation	9,255,615	285,835
(3)	Actual Contributions	57,608,295	-
(4)	Expected Interest On (1), (2), and (3)	46,085,307	(762,916)
(5)	Expected Unfunded Actuarial Accrued Liability as of June 30, 2020 (1)+(2)-(3)+(4)	648,079,419	(11,213,815)
(6)	Changes to UAAL Due to Assumptions, Methods and Benefits	-	-
(7)	Change to UAAL Due to Actuarial (Gain)/Loss	4,368,172	(109,766)
(8)	Unfunded Actuarial Accrued Liability as of June 30, 2020	652,447,591	(11,323,581)

FY 2020 Gains and Losses by Source

	Pension		Health	
	(Gain) / Loss	% of Liabilities	(Gain) / Loss	% of Liabilities
Investment Return	6,218,248	0.6%	468,029	3.4%
Salary Increases	(7,432,627)	(0.8%)	-	0.0%
Retirement	(741,381)	(0.1%)	(238,374)	(1.7%)
Turnover	(7,807,629)	(0.8%)	79,590	0.6%
Disability	(118,855)	0.0%	(4,863)	0.0%
Death-In-Service	17,661	0.0%	(1,304)	0.0%
Retiree Mortality	4,348,193	0.5%	(108,836)	(0.8%)
Other *	9,884,562	1.1%	(304,008)	(2.3%)
Total	4,368,172	0.5%	(109,766)	(0.8%)

** The combination of all other factors that could impact liabilities year-over-year, with the primary sources being changes resulting from an updated understanding of some data components provided by staff and changes in member data.*

Amortization of Unfunded Liabilities

	Date Established	Outstanding Balance	Years Remaining	Amortization Rate
Pension	06/30/2019	663,795,419	24	64.09%
	06/30/2020	(3,372,308)	24	(0.39%)
	Total	660,423,111		63.70%
Health	06/30/2019	0	24	0.00%
	06/30/2020	(11,323,581)	24	(1.42%)
	Total	(11,323,581)		(1.42%)

IV. ASSET SUPPORT

Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2020

Market Value Basis

	Pension	Health
Additions		
Contributions		
Member Contributions	$ 4,526,318	$ -
Employer Contributions	41,597,623	-
Health Insurance Contributions	-	-
Other Contributions	16,010,672	-
Total Contributions	62,134,613	-
Investment Income		
Net Increase in Fair Value	2,242,799	184,335
Interest and Dividends	2,274,697	186,958
Other Income	3,576,053	293,916
Less Investment Expenses	(2,081,760)	(171,100)
Net Investment Income	6,011,789	494,109
Transfers In	182,940	-
Total Additions	68,329,342	494,109
Deductions		
Distributions to Members		
Benefit Payments	67,590,963	-
Health Insurance Subsidy	-	1,098,474
Refund of Contributions	14,185	-
Total Distributions	67,605,148	1,098,474
Administrative Expenses	287,489	23,629
Transfers Out	-	-
Other	-	-
Total Deductions	67,892,637	1,122,103
Net Increase / (Decrease)	436,705	(627,994)
Net Position Held in Trust		
Prior Valuation	286,064,803	23,843,634
End of the Year	286,501,508	23,215,640

Development of Pension Actuarial Value of Assets

A. Investment Income	
A1. Actual Investment Income	$5,724,300
A2. Expected Amount for Immediate Recognition	20,693,133
A3. Amount Subject to Amortization	(14,968,833)

	Year Ended June 30						
B. Amortization Schedule	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
2020 Experience (A3 / 7)	(2,138,405)	(2,138,405)	(2,138,405)	(2,138,405)	(2,138,405)	(2,138,405)	(2,138,403)
2019 Experience	(973,961)	(973,961)	(973,961)	(973,961)	(973,961)	(973,958)	
2018 Experience	(198,529)	(198,529)	(198,529)	(198,529)	(198,532)		
2017 Experience	1,448,275	1,448,275	1,448,275	1,448,276			
2016 Experience	(3,206,762)	(3,206,762)	(3,206,763)				
2015 Experience	(1,951,168)	(1,951,166)					
2014 Experience	1,735,522						
Total Amortization	(5,285,028)	(7,020,548)	(5,069,383)	(1,862,619)	(3,310,898)	(3,112,363)	(2,138,403)

C. Actuarial Value of Assets	
C1. Actuarial Value of Assets, 06/30/2019	298,895,212
C2. Noninvestment Net Cash Flow	(5,287,595)
C3. Preliminary Actuarial Value of Assets, 06/30/2020 (A2 + B + C1 + C2)	309,015,722
C4. Market Value of Assets, 06/30/2020	286,501,508
C5. Final Actuarial Value of Assets, 06/30/2020 (C3 Within 20% Corridor of C4)	309,015,722

D. Rates of Return	
D1. Market Value Rate of Return	2.0%
D2. Actuarial Value Rate of Return	5.2%

Development of Health Actuarial Value of Assets

A. Investment Income	
A1. Actual Investment Income	$ 470,480
A2. Expected Amount for Immediate Recognition	1,701,197
A3. Amount Subject to Amortization	(1,230,717)

	Year Ended June 30						
B. Amortization Schedule	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
2020 Experience (A3 / 7)	(175,817)	(175,817)	(175,817)	(175,817)	(175,817)	(175,817)	(175,815)
2019 Experience	(82,099)	(82,099)	(82,099)	(82,099)	(82,099)	(82,097)	
2018 Experience	(12,326)	(12,326)	(12,326)	(12,326)	(12,325)		
2017 Experience	118,122	118,122	118,122	118,119			
2016 Experience	(236,920)	(236,920)	(236,922)				
2015 Experience	(138,912)	(138,912)					
2014 Experience	128,006						
Total Amortization	(399,946)	(527,952)	(389,042)	(152,123)	(270,241)	(257,914)	(175,815)

C. Actuarial Value of Assets	
C1. Actuarial Value of Assets, 06/30/2019	24,785,950
C2. Noninvestment Net Cash Flow	(1,098,474)
C3. Preliminary Actuarial Value of Assets, 06/30/2020 (A2 + B + C1 + C2)	24,988,727
C4. Market Value of Assets, 06/30/2020	23,215,640
C5. Final Actuarial Value of Assets, 06/30/2020 (C3 Within 20% Corridor of C4)	24,988,727

D. Rates of Return	
D1. Market Value Rate of Return	2.0%
D2. Actuarial Value Rate of Return	5.4%

V. MEMBER STATISTICS

Valuation Data Summary

	June 30, 2020	June 30, 2019
Actives		
Number	457	485
Average Current Age	59.3	58.6
Average Age at Employment	46.3	46.5
Average Past Service	13.1	12.1
Average Annual Salary	$96,617	$98,941
Retirees		
Number	1,002	1,004
Average Current Age	72.9	72.5
Average Annual Benefit	$57,071	$55,908
Beneficiaries		
Number	236	220
Average Current Age	79.2	78.9
Average Annual Benefit	$41,923	$41,048
Disability Retirees		
Number	16	16
Average Current Age	71.5	70.6
Average Annual Benefit	$109,582	$107,433
Inactive / Vested		
Number	175	166
Average Current Age	56.3	56.2
Average Accumulated Contributions	$12,335	$13,532
Total Number	1,886	1,891

Active Counts and Pay Summary by Service

	Past Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total Count**	**Total Pay**	**Average Pay**
<30	0	0	0	0	0	0	0	0	$ -	$ -
30 - 34	0	2	0	0	0	0	0	2	106,160	53,080
35 - 39	0	4	1	0	0	0	0	5	263,599	52,720
40 - 44	0	11	5	0	0	0	0	16	852,465	53,279
45 - 49	0	26	11	8	0	0	0	45	4,446,575	98,813
50 - 54	3	29	20	8	1	0	0	61	6,247,830	102,423
55 - 59	4	31	37	25	9	1	0	107	12,555,841	117,344
60 - 64	4	37	28	31	8	1	1	110	11,798,890	107,263
65+	3	31	33	22	9	10	3	111	7,882,391	71,013
Total	14	171	135	94	27	12	4	457	$ 44,153,751	$ 96,617

VI. ACTUARIAL ASSUMPTIONS AND METHODS

Interest Rate	7.30% per year. This is the assumed earnings rate on System assets, compounded annually, net of investment and administrative expenses.
Salary Increases	3.75%. This is an annual increase for individual member's salary. This rate, which is based on a 2017 experience study using actual plan experience, consist of 3.5% for wage inflation and 0.25% for merit / seniority increases.
Inflation	2.50%.
Cost-of-Living Adjustment	1.75%.
Mortality Rates	These rates are used to project future decrements from the population due to death. ***Active Lives*** PubG-2010 Employee mortality, projected with future mortality improvements reflected generationally using 75% of scale MP-2019. ***Inactive Lives*** PubG-2010 Healthy Retiree mortality, projected with future mortality improvements reflected generationally using 75% of scale MP-2019. ***Beneficiaries*** PubG-2010 Survivor mortality, projected with future mortality improvements reflected generationally using 75% of scale MP-2019. ***Disabled Lives*** PubG-2010 Disabled mortality, projected with future mortality improvements reflected generationally using 75% of scale MP-2019. The mortality assumptions sufficiently accommodate anticipated future mortality improvements.
Retirement Rates	These rates are used to project future decrements from the active population due to retirement. The rates below are based on a 2017 experience study using actual plan experience.

Applicable to Tier 1 Members Reaching Age 62 Before Attaining 20 Years of Service

Age-related rates based on age at retirement: 15% per year from age 62 - 74 and 100% assumed at age 75.

Applicable to Tier 1 Members Reaching Age 62 After Attaining 20 Years of Service

Service-related rates based on service at retirement: 40% per year with 20 years of service, 30% per year with 21 years of service, 15% per year with 22-34 years of service, and 100% assumed with 35+ years of service.

Applicable to Tier 1 Members Eligible For Early Retirement

3.5% per year for each year of eligibility.

Applicable to Tier 2 Members

Age-related rates based on age at retirement.

Age	Rate
62	40%
63	30%
64	20%
65-66	15%
67-68	45%
69	15%
70+	100%

Termination Rates

These rates are used to project future decrements from the active population due to termination. Service-related rates based on service at termination: 5.50% per year for up to 10 years of service, 2.50% per year for 11-20 years of service, and 2.00% per year for 21+ years of service. These rates are based on a 2017 experience study using actual plan experience.

Disability Rates

These rates are used to project future decrements from the active population due to disability. Sample age-related rates based on age at disability are provided below. These rates are based on a 2017 experience study using actual plan experience.

Age	Rate
30	0.00%
35	0.00%
40	0.00%
45	0.00%
50	0.13%
55	0.17%

Marital Status	For active members, 80% of males and 70% of females are assumed to be married. Actual marital status is used, where applicable, for inactive members.
Spouse's Age	Males are assumed to be three years older than females.
Health Care Utilization	For active members, 70% of retirees are expected to utilize retiree health care. Actual utilization is used for inactive members.
Funding Method	Entry Age Normal Cost Method.
Actuarial Asset Method	Each year the assumed investment income is recognized in full while the difference between actual and assumed investment income are smoothed over a 7-year period subject to a 20% corridor around the market value. During periods when investment performance exceeds (falls short) of the assumed rate, the actuarial value of assets will tend to be less (greater) than the market value of assets.
Funding Policy Amortization Method	Any positive UAAL (assets less than liabilities) is amortized using a layered approach beginning with the June 30, 2020 valuation, with new amounts determined according to a Level Dollar method over a closed period of 15 years (phased into from current period of 24 years). Initial layer from June 30, 2019 valuation continues to be amortized according to a Level Percentage of Payroll method. Any negative UAAL (assets greater than liabilities) is amortized according to a Level Dollar method over an open period of 20 years.
Payroll Growth	2.50% per year. This is annual increase for total employer payroll.
Stabilization Reserve	Beginning with the June 30, 2007 valuation and with each subsequent valuation, if the actuarial value of assets exceeds the actuarial accrued liability, one half of this excess in each year is allocated to a Stabilization Reserve. This Reserve is excluded from the calculation of the employer contribution rates. The Reserve accumulates as long as the plan is overfunded. Once the plan becomes underfunded, the Stabilization Reserve will be used to dampen increases in the employer contribution rates.

Changes to Actuarial Assumptions and Methods Since the Prior Valuation

- The amortization method was changed to use a layered amortization approach.
- The payroll growth assumption was lowered from 3.50% to 2.50%.

VII. DISCUSSION OF RISK

ASOP No. 51, Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions, states that the actuary should identify risks that, in the actuary's professional judgment, may reasonably be anticipated to significantly affect the plan's future financial condition.

Throughout this report, actuarial results are determined under various assumption scenarios. These results are based on the premise that all future plan experience will align with the plan's actuarial assumptions; however, there is no guarantee that actual plan experience will align with the plan's assumptions. Whenever possible, the recommended assumptions in this report reflect conservatism to allow for some margin of unfavorable future plan experience. However, it is still possible that actual plan experience will differ from anticipated experience in an unfavorable manner that will negatively impact the plan's funded position.

Below are examples of ways in which plan experience can deviate from assumptions and the potential impact of that deviation. Typically, this results in an actuarial gain or loss representing the current-year financial impact on the plan's unfunded liability of the experience differing from assumptions; this gain or loss is amortized over a period of time determined by the plan's amortization method. When assumptions are selected that adequately reflect plan experience, gains and losses typically offset one another in the long term, resulting in a relatively low impact on the plan's contribution requirements associated with plan experience. When assumptions are too optimistic, losses can accumulate over time and the plan's amortization payment could potentially grow to an unmanageable level.

- Investment Return: When the rate of return on the Actuarial Value of Assets falls short of the assumption, this produces a loss representing assumed investment earnings that were not realized. Further, it is unlikely that the plan will experience a scenario that matches the assumed return in each year as capital markets can be volatile from year to year. Therefore, contribution amounts can vary in the future.
- Salary Increases: When a plan participant experiences a salary increase that was greater than assumed, this produces a loss representing the cost of an increase in anticipated plan benefits for the participant as compared to the previous year. The total gain or loss associated with salary increases for the plan is the sum of salary gains and losses for all active participants.
- Payroll Growth: The plan's payroll growth assumption, if one is used, causes a predictable annual increase in the plan's amortization payment in order to produce an amortization payment that remains constant as a percentage of payroll if all assumptions are realized. If payroll does not increase according to the plan's payroll growth assumption, the plan's amortization payment can increase significantly as a percentage of payroll even if all assumptions other than the payroll growth assumption are realized.
- Demographic Assumptions: Actuarial results take into account various potential events that could happen to a plan participant, such as retirement, termination, disability, and death. Each of these potential events is assigned a liability based on the likelihood of the event and the financial consequence of the event for the plan. Accordingly, actuarial liabilities reflect a blend of financial consequences associated with various possible outcomes (such as retirement at one of various possible ages). Once the outcome is known (e.g. the participant retires) the liability is adjusted to reflect the known outcome. This adjustment

produces a gain or loss depending on whether the outcome was more or less favorable than other outcomes that could have occurred.

- Contribution risk: This risk results from the potential that actual employer contributions may deviate from actuarially determined contributions, which are determined in accordance with the Board's funding policy. The funding policy is intended to result in contribution requirements that if paid when due, will result in a reasonable expectation that assets will accumulate to be sufficient to pay plan benefits when due. Contribution deficits, particularly large deficits and those that occur repeatedly, increase future contribution requirements and put the plan at risk for not being able to pay plan benefits when due.

IMPACT OF PLAN MATURITY ON RISK

For newer pension plans, most of the participants and associated liabilities are related to active members who have not yet reached retirement age. As pension plans continue in operation and active members reach retirement ages, liabilities begin to shift from being primarily related to active members to being shared amongst active and retired members. Plan maturity is a measure of the extent to which this shift has occurred. It is important to understand that plan maturity can have an impact on risk tolerance and the overall risk characteristics of the plan. For example, plans with a large amount of retired liability do not have as long of a time horizon to recover from losses (such as losses on investments due to lower than expected investment returns) as plans where the majority of the liability is attributable to active members. For this reason, less tolerance for investment risk may be warranted for highly mature plans with a substantial inactive liability. Similarly, mature plans paying substantial retirement benefits resulting in a small positive or net negative cash flow can be more sensitive to near term investment volatility, particularly if the size of the fund is shrinking, which can result in less assets being available for investment in the market.

To assist with determining the maturity of the plan, we have provided some relevant metrics in the table following titled "Plan Maturity Measures and Other Risk Metrics". Highlights of this information are discussed below:

- The Support Ratio, determined as the ratio of active to inactive members, has decreased from 42.8% on June 30, 2018 to 32.0% on June 30, 2020. This is expected since the plan is closed to new active members.
- The Accrued Liability Ratio, determined as the ratio of the Inactive Accrued Liability, which is the liability associated with members who are no longer employed but are due a benefit from the plan, to the Total Accrued Liability, is 77.2%. With a plan of this maturity, losses due to lower than expected investment returns or demographic factors will need to be made up for over a shorter time horizon than would be needed for a less mature plan.
- The Funded Ratio, determined as the ratio of the Actuarial Value of Assets to the Total Accrued Liability, has increased from 31.3% on June 30, 2018 to 32.1% on June 30, 2020, due mainly to plan experience including contributions. The contributions will need to continue at least at these statutory levels for the funded status to improve over time.
- The Net Cash Flow Ratio, determined as the ratio of the Net Cash Flow (contributions minus benefit payments) to the Market Value of Assets, decreased from (0.9%) on June 30, 2019 to (1.9%) on June 30, 2020, meaning that contributions are not currently covering the plan's benefit payments.

It is important to note that the actuary has identified the risks above as the most significant risks based on the characteristics of the plan and the nature of the project, however, it is not an exhaustive list of potential risks that could be considered. Additional advanced modeling, as well as the identification of additional risks, can be provided at the request of the reader.

Plan Maturity Measures and Other Risk Metrics

	06/30/2018	06/30/2019	06/30/2020
Support Ratio			
Total Actives	579	485	457
Total Inactives	1,353	1,406	1,429
Actives / Inactives	42.8%	34.5%	32.0%
Asset Volatility Ratio			
Market Value of Assets (MVA)		286,064,803	286,501,508
Total Annual Payroll		47,986,264	44,153,751
MVA / Total Annual Payroll		596.1%	648.9%
Accrued Liability (AL) Ratio			
Inactive Accrued Liability		731,356,122	742,174,987
Total Accrued Liability		949,242,004	961,463,313
Inactive AL / Total AL		77.0%	77.2%
Funded Ratio			
Actuarial Value of Assets (AVA)	283,453,428	298,895,212	309,015,722
Total Accrued Liability	904,884,325	949,242,004	961,463,313
AVA / Total Accrued Liability	31.3%	31.5%	32.1%
Net Cash Flow Ratio			
Net Cash Flow *		(2,692,470)	(5,470,535)
Market Value of Assets (MVA)		286,064,803	286,501,508
Net Cash Flow / MVA		(0.9%)	(1.9%)

** Determined as total contributions minus benefit payments. Administrative expenses are typically included but are considered part of the net interest rate assumption for this plan.*

VIII. SUMMARY OF CURRENT PLAN

The following is a summary of the benefit provisions provided in Title 38, Chapter 5, Article 3 of the Arizona Revised Statutes.

Membership

Eligible elected officials, justices, judges, and administrators who were members of the plan on December 31, 2013.

Benefit Tiers

Benefits differ for members based on their hire date:

Tier	Hire Date
1	Hired before January 1, 2012
2	Hired on or after January 1, 2012

Average Yearly Salary

Total salary paid during a considered period divided by the number of years (including fractional years) in which the salary was received.

Tier 1

Considered period is the three highest consecutive years within the last ten completed years of service.

Tier 2

Considered period is the five highest consecutive years within the last ten completed years of service.

Credited Service

Total periods of service, both from other State plans and those compensated periods of service for which the member made contributions to the Fund.

Normal Retirement Date

First of the month following attainment of 1) age 62 years with 10 years of Credited Service or 2) age 65 with 5 years of Credited Service. Members hired before January 1, 2012 are also eligible upon attainment of 20 years of Credited Service.

Benefit

Tier 1

4.00% times Average Yearly Salary times Credited Service (maximum 80% of Average Yearly Salary).

Tier 2

3.00% times Average Yearly Salary times Credited Service (maximum 75% of Average Yearly Salary).

Form of Benefit

For married retirees, an annuity payable for the life of the member with 75% continuing to the eligible spouse upon death (50% for members hired on/after January 1, 2012). For unmarried retirees, the normal form is a single life annuity.

Early Retirement Eligibility

Only Applicable to Tier 1 Members

5 years of Credited Service.

Benefit

Normal Retirement benefit reduced by 0.25% for each month Early Retirement precedes the member's Normal Retirement date. Maximum reduction is 30%.

Disability Benefit Eligibility

Permanent mental or physical incapacitation that would prevent the member from performing the duties of their office.

Benefit Amount

Percentage (below) times Average Yearly Salary.

Tier 1

Credited Service	Percentage
Less than 5 years	20%
5 years to less than 10	40%
10+ years	80%

Tier 2

Credited Service	Percentage
Less than 5 years	18.75%
5 years to less than 10	37.50%
10+ years	75.00%

Pre-Retirement Death Benefit

Payable to Eligible Survivor

75% (50% for members hired on/after January 1, 2012) of benefit calculated in same manner as disability benefit. Payable to eligible spouse for life; payable to eligible children until adopted, age 18, or age 23 if full-time student.

No Survivors

Accumulated contributions.

Vesting (Termination) Deferred Annuity

For those with 5 years of credited service, Normal Retirement Benefit is payable upon reaching age requirement if contributions are left in fund.

Return of Contributions

Tier 1

Lump sum payment of accumulated contributions, plus additional amount based on years of credited service.

Contributions left on deposit more than 30 days receive interest (as determined by the Board) from termination.

Service	Additional % of Contributions
Less than 5 years	0%
5 years	25%
6 years	40%
7 years	55%
8 years	70%
9 years	85%
10+ years	100%

Tier 2

Lump sum payment of accumulated contributions, with interest at rate determined by the Board.

Cost-of-Living Adjustment

Compound cost-of-living adjustment on base benefit, payable to retired member or survivor of retired member. First payment is made on July 1, 2019, with annual adjustments effective every July 1 thereafter.

Cost-of-living adjustment will be based on the average annual percentage change in the Metropolitan Phoenix-Mesa Consumer Price Index published by the United States Department of Labor, Bureau of Statistics. Maximum increase of 2%.

Post-Retirement Health Insurance Subsidy

Eligibility

Retired member or survivor who elect health coverage provided by the state or participating employer.

Maximum Subsidy Amounts (Monthly)

	Member Only	With Dependents
Medicare Eligible	$100	$170
One w/ Medicare	N/A	$215
Not Medicare Eligible	$150	$260

Retired members or survivors with at least five years of service, but less than 8 years of service receive a proportionate share of full subsidy.

Employee Contributions

Tier 1

7.00%

	Tier 2 13.00%. Amounts in excess of 7.00% are not used to reduce the employer contribution ("maintenance of effort").
Employer Contributions	Normal Cost plus amortization of unfunded actuarial accrued liability over a closed period not to exceed 30 years. Total employer and employee contributions cannot be less than the normal cost.

Changes to Benefit Provisions Since the Prior Valuation

None.

IX. ACTUARIAL FUNDING POLICY

The purpose of this Actuarial Funding Policy is to record the funding objectives and policy set by the Board for the Arizona Elected Officials' Retirement Plan. The Board establishes this Funding Policy to help ensure the systematic funding of future benefit payments for members of the Retirement System.

This funding policy was reviewed by the Board annually for several years following initial adoption until the 2017 experience study. Subsequently, it shall be reviewed every five years in conjunction with the experience study, although some adjustments may be warranted sooner to properly reflect changes to amortization methodology.

Funding Objectives

1. Maintain adequate assets so that current plan assets plus future contributions and investment earnings are sufficient to fund all benefits expected to be paid to members and their beneficiaries.

2. Maintain stability of employer contribution rates, consistent with other funding objectives.

3. Maintain public policy goals of accountability and transparency. Each policy element is clear in intent and effect, and each should allow an assessment of whether, how and when the funding requirements of the plan will be met.

4. Promote intergenerational equity. Each generation of members and employers should incur the cost of benefits for the employees who provides services to them, rather than deferring those costs to future members and employers.

5. Provide a reasonable margin for adverse experience to help offset risks.

6. Continue progress of systematic reduction of the Unfunded Actuarial Accrued Liability (UAAL).

Elements of Actuarial Funding Policy

1. Actuarial Cost Method

a. The Entry Age Normal level percent of pay actuarial cost method of valuation shall be used in determining the Actuarial Accrued Liability (AAL) and Normal Cost. Differences in the past between assumed experience and actual experience ("actuarial gains and losses") shall become part of the AAL. The Normal Cost shall be determined on an individual basis for each active member.

2. Asset Smoothing Method

a. The investment gains or losses of each valuation period, resulting from the difference between the actual investment return and assumed investment return, shall be recognized annually in level amounts over seven years in calculating the Actuarial Value of Assets.

b. The Actuarial Value of Assets so determined shall be subject to a 20% corridor relative to the Market Value of Assets.

3. Amortization Method

a. The Actuarial Value of Assets are subtracted from the computed AAL. Any unfunded amount is amortized as a level percent of payroll over a closed period. If the Actuarial Value of Assets exceeds the AAL, the excess is amortized over an open period of 20 years and applied as a credit to reduce the Normal Cost otherwise payable.

4. Funding Target

a. The targeted funded ratio shall be 100%.

b. The maximum amortization period shall be 30 years.

c. If the funding ratio is between 100% and 120%, a minimum contribution equal to the Normal Cost will be made.

5. Risk Management

a. Assumption Changes

i. The actuarial assumptions used shall be those last adopted by the PSPRS Board based on the most recent experience study and upon the advice and recommendation of the actuary. In accordance with best practices, the actuary shall conduct an experience study every five years. The results of the study shall be the basis for the actuarial assumption changes recommended to the PSPRS Board.

ii. The actuarial assumptions can be updated during the five-year period if significant plan design changes or other significant events occur, as advised by the actuary.

b. Amortization Method

i. The amortization method, Level Percent Closed, will ensure full payment of the UAAL over a finite, systematically decreasing period not to exceed 30 years. The amortization period will be reviewed once the period reaches 15 years.

c. Risk Measures

i. The following risk measures will be annually determined to provide quantifiable measurements of risk and their movement over time.

1. Classic measures currently determined

- Funded ratio (assets / liability)

2. UAAL / Total Payroll

- Measures the risk associated with contribution decreases relative impact on the ability to fund the UAAL. An increase in this measure indicates an increase in contribution risk.

3. Total Liability / Total Payroll

- Measures the risk associated with the ability to respond to liability experience through adjustments in contributions. An increase in this measure indicates an increase in experience risk.

X. GLOSSARY

Actuarial Accrued Liability – Computed differently under different funding methods, the actuarial accrued liability generally represents the portion of the actuarial present value of benefits attributable to service credit earned (or accrued) as of the valuation date.

Actuarial Present Value of Benefits – Amount which, together with future interest, is expected to be sufficient to pay all benefits to be paid in the future, regardless of when earned, as determined by the application of a particular set of actuarial assumptions; equivalent to the actuarial accrued liability plus the present value of future normal costs attributable to the members.

Actuarial Assumptions – Assumptions as to the occurrence of future events affecting pension costs. These assumptions include rates of investment earnings, changes in salary, rates of mortality, withdrawal, disablement, and retirement as well as statistics related to marriage and family composition.

Actuarial Cost Method – A method of determining the portion of the cost of a pension plan to be allocated to each year; sometimes referred to as the "actuarial funding method." Each cost method allocates a certain portion of the actuarial present value of benefits between the actuarial accrued liability and future normal costs.

Actuarial Equivalence – Series of payments with equal actuarial present values on a given date when valued using the same set of actuarial assumptions.

Actuarial Present Value - The amount of funds required as of a specified date to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest, and by probabilities of payments between the specified date and the expected date of payment.

Actuarial Value of Assets – The value of cash, investments, and other property belonging to the pension plan as used by the actuary for the purpose of the actuarial valuation. This may correspond to market value of assets, or some modification using an asset valuation method to reduce the volatility of asset values.

Asset Gain (Loss) – That portion of the actuarial gain attributable to investment performance above (below) the expected rate of return in the actuarial assumptions.

Amortization – Paying off an interest-discounted amount with periodic payments of interest and (generally) principal, as opposed to paying off with a lump sum payment.

Amortization Payment – That portion of the pension plan contribution designated to pay interest and reduce the outstanding principal balance of unfunded actuarial accrued liability. If the amortization payment is less than the accrued interest on the unfunded actuarial accrued liability the outstanding principal balance will increase.

Assumed Earnings Rate – The interest rate used in developing present values to reflect the time value of money.

Decrements – Events which result in the termination of membership in the system such as retirement, disability, withdrawal, or death.

Entry Age Normal (EAN) Funding Method – A standard actuarial funding method whereby each member's normal costs (service costs) are generally level as a percentage of pay from entry age until retirement. The annual cost of benefits is comprised of the normal cost plus an amortization payment to reduce the UAL.

Experience Gain (Loss) – The difference between actual unfunded actuarial accrued liabilities and anticipated unfunded actuarial accrued liabilities during the period between two valuation dates. It is a measurement of the difference between actual and expected experience, and may be related to investment earnings above (or below) those expected or changes in the liability due to fewer (or greater) than expected numbers of retirements, deaths, disabilities, or withdrawals, or variances in pay increases relative to assumed pay increases. The effect of such gains (or losses) is to decrease (or increase) future costs.

Funded Ratio – A measure of the ratio of the actuarial value of assets to liabilities of the system. Typically, the assets used in the measure are the actuarial value of assets as determined by the asset valuation method. The funded ratio depends not only on the financial strength of the plan but also on the asset valuation method used to determine the assets and on the funding method used to determine the liabilities.

Market Value of Assets (MVA) – The value of assets as they would trade on an open market.

Normal Cost – Computed differently under different funding methods, generally that portion of the actuarial present value of benefits allocated to the current plan year.

Unfunded Actuarial Accrued Liability (UAAL) – The excess of the actuarial accrued liability over the valuation assets; sometimes referred to as "unfunded past service liability". UAL increases each time an actuarial loss occurs and when new benefits are added without being fully funded initially and decreases when actuarial gains occur.