RESOLUTION NO. (R)22-20

A RESOLUTION OF THE MAYOR AND COUNCIL OF THE TOWN OF ORO VALLEY, ARIZONA, ADOPTING THE PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM (PSPRS) PENSION FUNDING POLICY AND ACCEPTING THE TOWN'S SHARE OF ASSETS AND LIABILITIES UNDER THE PSPRS ACTUARIAL VALUATION REPORT; AND DIRECTING THE TOWN MANAGER, TOWN CLERK, TOWN LEGAL SERVICES DIRECTOR, TOWN CHIEF FINANCIAL OFFICER, OR THEIR DULY AUTHORIZED OFFICERS AND AGENTS TO TAKE ALL STEPS NECESSARY TO CARRY OUT THE PURPOSES AND INTENT OF THIS RESOLUTION

WHEREAS, A.R.S. Title 38, Chapter 5, Article 4 and related statutes establish a Public Safety Personnel Retirement System; and

WHEREAS, on April 3, 2018, House Bill 2097 was passed into law, requiring the Town Council to adopt a pension funding policy for the Public Safety Personnel Retirement System (PSPRS) before July 1, 2019 and annually each year after; and

WHEREAS, pursuant to A.R.S. §38-863.01, the Town is required to adopt a pension funding policy to communicate how the Town will maintain the stability of the Town's required contributions, how and when the Town's funding requirements will be met, and defining the Town's funded ratio target under PSPRS and how it will be met ; and

WHEREAS, the Town's sworn police officers are members of the PSPRS plan, PSPRS also administers the Correction Officers Retirement Plan (CORP) and three (3) Town police dispatch personnel are currently active members of the CORP plan; and

WHEREAS, annually, PSPRS and CORP provide the Town with an actuarial report that includes the Town's assets, liabilities, unfunded actuarial liability, funding ratio, and the projected minimum contributions required for the upcoming fiscal year; and

WHEREAS, it is in the best interest of the Town to adopt the Public Safety Personnel Retirement System (PSPRS) Pension Funding Policy, attached hereto as Exhibit "A" and incorporated herein by reference, and accept the Town's share of assets and liabilities under the PSPRS actuarial valuation report.

NOW THEREFORE, BE IT RESOLVED by the Mayor and Council of the Town of Oro Valley, that:

SECTION 1. The Mayor and Council hereby adopt the Public Safety Personnel Retirement System Pension Funding Policy, attached hereto as

Exhibit "A" and accept the Town's share of assets and liabilities under the PSPRS actuarial valuation report.

SECTION 2. The Town Manager, Town Clerk, Town Legal Services Director, Town Chief Financial Officer, or their duly authorized officers and agents are hereby authorized and directed to take all steps necessary to carry out the purposes and intent of this resolution.

SECTION 3. If any section, subsection, sentence, clause, phrase, or portion of this resolution or any part of the PSPRS Pension Funding Policy, attached hereto as Exhibit "A", is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions thereof.

SECTION 4. All Oro Valley resolutions, or motions and parts of resolutions or motions of the Council in conflict with the provisions of this Resolution are hereby repealed.

PASSED, AND ADOPTED by the Mayor and Council of the Town of Oro Valley Arizona, this 18th day of May, 2022.

TOWN OF ORO VALLEY

E-SIGNED by Joseph C. Winfield
on 2022-05-19 17:10:20 GMT

Joseph C. Winfield, Mayor

ATTEST:

E-SIGNED by Michael Standish
on 2022-05-23 15:13:07 GMT

Michael Standish, Town Clerk

Date: ______________________

APPROVED AS TO FORM:

E-SIGNED by Tobin Sidles
on 2022-05-20 15:38:42 GMT

Tobin Sidles, Legal Services Director

Date: ______________________

ARIZONA CORRECTIONS OFFICER RETIREMENT PLAN

TOWN OF ORO VALLEY - DISPATCHERS (556)

ACTUARIAL VALUATION
AS OF JUNE 30, 2021

CONTRIBUTIONS APPLICABLE TO THE
PLAN/FISCAL YEAR ENDING JUNE 30, 2023

FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

VIA E-MAIL

December 2021

Board of Trustees
Arizona Corrections Officer Retirement Plan
Phoenix, AZ

Re: Actuarial Valuation Report as of June 30, 2021 for Town of Oro Valley - Dispatchers (556)

Dear Members of the Board:

We are pleased to present to the Board this report of the annual actuarial valuation of the Arizona Corrections Officer Retirement Plan (CORP). 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 CORP and those designated or approved by the Board. It documents the valuation of the consolidated plan and provides summary information for CORP participating employers. This report may be provided to parties other than CORP 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 6 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.

13420 Parker Commons Boulevard, Suite 104 Fort Myers, FL 33912 · (239) 433-5500 · Fax (239) 481-0634 · www.foster-foster.com

In conducting the valuation, we have relied on personnel, plan design, and asset information supplied by CORP through June 30, 2021 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.

In performing the analysis, we used third-party software to model (calculate) the underlying liabilities and costs. These results are reviewed in the aggregate and for individual sample lives. The output from the software is either used directly or input into internally developed models to generate the costs. All internally developed models are reviewed as part of the process. As a result of this review, we believe that the models have produced reasonable results. We do not believe there are any material inconsistencies among assumptions or unreasonable output produced due to the aggregation of assumptions.

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 sections of this report are considered an integral part of the actuarial opinions.

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 Corrections Officer Retirement Plan, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the Arizona Corrections Officer 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: ______________________
Paul M. Baugher, FSA, EA, MAAA

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I. Summary of Report

The regular annual actuarial valuation of the Arizona Corrections Officer Retirement Plan for the Town of Oro Valley - Dispatchers, performed as of June 30, 2021, 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' recommended contribution rates for the Fiscal Year beginning July 1, 2022. This information is contained in the section entitled "Contribution Results."

1. Key Valuation Results

The funded status as of June 30, 2021 and the employer contribution amounts applicable to the plan/fiscal year ending June 30, 2023 are as follows:

	Tier 1 & Tier 2 Members		
	Pension	**Health**	**Total**
Employer Contribution Rate	118.45%	0.00%	118.45%
Funded Status	46.5%	330.3%	48.3%

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, 2020):

Contribution Rate

	Tier 1 & Tier 2 Members		
Valuation Date	**Pension**	**Health**	**Total**
June 30, 2020	79.23%	0.00%	79.23%
June 30, 2021	118.45%	0.00%	118.45%

Funded Status

	Tier 1 & Tier 2 Members		
Valuation Date	**Pension**	**Health**	**Total**
June 30, 2020	44.6%	151.2%	46.1%
June 30, 2021	46.5%	330.3%	48.3%

3. Reasons for Change

Changes in the results from the prior year's valuation can be illustrated in the following tables along with high-level explanations for the entire Plan below:

Contribution Rate

	Tier 1 & Tier 2	
	Pension	**Health**
Contribution Rate Last Valuation	79.23%	0.00%
Asset Experience	(0.74%)	(0.03%)
Payroll Base	30.64%	(0.13%)
Liability Experience	24.11%	(0.74%)
Additional Contributions	0.00%	0.00%
Assumption/Method Change	3.21%	0.00%
Other	(18.00%)	0.90%
Contribution Rate This Valuation	118.45%	0.00%

Funded Status

	Tier 1 & Tier 2	
	Pension	**Health**
Funded Status Last Valuation	44.6%	151.2%
Asset Experience	0.3%	2.4%
Liability Experience	(5.1%)	173.2%
Additional Contributions	0.0%	0.0%
Assumption/Method Change	0.0%	0.0%
Other	6.7%	3.5%
Funded Status This Valuation	46.5%	330.3%

Assets Experience – Asset gains and losses (relative to the assumed earnings rate) are smoothed over seven years for Tiers 1 and 2. The return on the market value of assets for the year ending June 30, 2021 was 24.4%. On a smoothed, actuarial value of assets basis, however, the average return was 7.7%. This return exceeded the 2020 assumed earnings rate of 7.3%.

Payroll Base – Under the current amortization policy for Tiers 1 and 2, the contribution rate is developed as a level percentage of payroll. Payroll for this purpose includes members of this plan and defined contribution plan's members that would have been in this plan. To the extent that actual payroll is lower/greater than last year's projected payroll, the contribution rate will increase/decrease as a result. The payroll decreased compared to expected, resulting in an increase in the contribution rate.

Liability Experience – Experience overall was favorable, driven by lower than expected salary increases.

Additional Contribution – Monies contributed in excess of the required contribution rate in order to pay down the unfunded liability.

Assumption / Method Change – The payroll growth assumption was decreased 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 in member data.

4. Looking Ahead

The volatility in annual returns, which have produced both gains and losses in recent years, was dampened by the asset smoothing reflected in the actuarial value of assets. The significant gain realized this year will, in the absence of other losses, put downward pressure on the contribution rate next year.

If the June 30, 2021 pension valuation results were based on the market value of assets instead of the actuarial value of assets, the pension funded percentage for Tiers 1 and 2 would be 50.4% (instead of 46.5%) and the pension employer contribution requirement would be 109.02% of payroll (instead of 118.45%).

5. Conclusion

The funded status for Tiers 1 and 2 will continue to improve if assumptions are met and contributions at least equal to the rates determined for each employer are made to the fund. The recent adoption of a layered amortization approach along with a plan to systematically lower the payroll growth assumption was an excellent step to improve funding and ensure the Plan is on a viable path.

II. Contribution Results

Contribution Requirements

Development of Employer Contributions - Tiers 1 & 2 Members				
Valuation Date	June 30, 2021		June 30, 2020	
Applicable to Fiscal Year Ending	2023		2022	
	Rate	**Dollar**	**Rate**	**Dollar**
Pension				
Normal Cost				
Total Normal Cost	10.79%	$16,669	10.51%	$22,257
Employee Cost	(7.96%)	(12,303)	(7.96%)	(16,860)
Employer (Net) Normal Cost	2.83%	4,366	2.55%	5,397
Amortization of Unfunded Liability	115.62%	178,696	76.68%	162,414
Total Employer Cost (Pension)	118.45%	183,062	79.23%	167,811
Health				
Normal Cost	0.24%	$371	0.33%	$690
Amortization of Unfunded Liability	(0.24%)	(371)	(0.33%)	(690)
Total Employer Cost (Health)	0.00%	0	0.00%	0
Total Employer Cost (Pension + Health)	**118.45%**	**183,062**	**79.23%**	**167,811**
Total Minimum Contribution Requirement (if applicable)	0.00%		0.00%	
Alternate Contribution Rate (ACR) *	115.62%		76.68%	
Underlying Payroll (as of valuation date)		154,555		211,807

** The Alternate Contribution Rate is the sum of the positive amortization rates for Tiers 1 & 2 Pension and Health (subject to a 6% minimum) and is charged when retirees return to active status.*

The results above are shown both prior to and after the application of the statutory minimum contribution requirement of 6% of payroll.

Development of Employer Contributions – Tier 3 Members		
Valuation Date	June 30, 2021	June 30, 2020
Applicable to Fiscal Year Ending	2023	2022

Defined Contribution (DC) Retirement Plan

	Rate	**Dollar**	**Rate**	**Dollar**
Tier 3 DC Only				
Employee Cost	7.00%	$ 0	7.00%	$ 0
Employee Health Subsidy Program Cost	0.17%	0		
Employee Disability Program Cost	0.44%	0	0.49%	0
Total Employee Cost	**7.61%**	**0**	**7.49%**	**0**
Employer Cost	5.00%	0	5.00%	0
Employer Health Subsidy Program Cost	0.17%	0		
Employer Disability Program Cost	0.44%	0	0.49%	0
Total Employer Cost (before Legacy)	**5.61%**	**0**	**5.49%**	**0**
ER Legacy Cost of Tiers 1 & 2 Amort of Unfunded Liabilities *	115.62%	0	76.68%	0
Total Employer Cost	**121.23%**	**0**	**82.17%**	**0**
Underlying Payroll (as of valuation date)		0		0

** Pursuant to ARS § 38-891(A), the amortization of positive unfunded liabilities for Tiers 1 & 2 shall be applied to all Tier 3 payroll on a level percent basis. However, while it is statutorily required to present the rates in this manner, these are the minimums where alternate methods for paying down that unfunded liability is at the discretion of each employer. Further, to understand the effects of reform in relation to Tier 3, compare the total rate of Tier 3 before application of those legacy costs.*

Contribution Rate Summary

	Tier 1	Tier 2	Tier 3	
Membership Date On or After	7/1/1986	1/1/2012	7/1/2018	
Available Retirement Plan	DB Plan	DB Plan	DB Plan [1]	DC Plan
Employee Contribution Rate				
CORP DB Rate	7.96%	7.96%	0.00%	
CORP DC Rate [2]				7.00%
CODCRP Health Subsidy Program Rate				0.17%
CODCRP Disability Program Rate				0.44%
Total EE Contribution Rate	7.96%	7.96%	0.00%	7.61%
Employer Contribution Rate				
CORP DB Normal Cost	2.83%	2.83%	0.00%	
CORP DB Tier 1 & 2 Legacy Cost [3]	115.62%	115.62%	0.00%	115.62%
CORP DC Rate				5.00%
CODCRP Health Subsidy Program Rate				0.17%
CODCRP Disability Program Rate				0.44%
Total ER Contribution Rate	118.45%	118.45%	0.00%	121.23%

[1] *Applicable to AOC Probation and Surveillance only.*

[2] *Although the default contribution rate is 7%, Tier 3 members in the DC plan may choose an employee contribution rate anywhere between 5% and 40%.*

[3] *Per statute (ARS § 38-891(A), any positive unfunded liability for Tiers 1 and 2 is to be applied to all Tier 3 (DB and DC) payrolls.*

Exhibit summarizes employee and employer contributions based on Statute and the results of June 30, 2021 actuarial valuation. Pension and health components are combined, where applicable.

Impact of Additional Contributions

	Additional Contribution (000s)										
	$0	$10	$20	$30	$40	$50	$60	$70	$80	$90	$100
Impact On											
Funded Status June 30, 2021	46.5%	46.7%	47.0%	47.3%	47.6%	47.9%	48.1%	48.4%	48.7%	49.0%	49.3%
FYE 2023 Contribution Rate	118.45%	117.77%	117.10%	116.42%	115.75%	115.08%	114.40%	113.73%	113.05%	112.38%	111.70%

Table shows the hypothetical change in the funded status and contribution rate from the June 30, 2021 actuarial valuation results for Tiers 1 & 2 if an additional contribution of the amount shown had been made to the Fund on June 30, 2021. This illustration can help estimate the impact of contributing additional monies to the fund in the future.

Historical Summary of Employer Rates

			Pension			Health		
	Valuation Date June 30	Fiscal Year Ending June 30	Normal Cost	Unfunded Amortization	Total	Normal Cost	Unfunded Amortization	Total
TIERS 1 & 2	2018	2020	6.42%	53.52%	59.94%	0.11%	(0.11%)	0.00%
	2019	2021	3.03%	72.50%	75.53%	0.34%	(0.34%)	0.00%
	2020	2022	2.55%	76.68%	79.23%	0.33%	(0.33%)	0.00%
	2021	2023	2.83%	115.62%	118.45%	0.24%	(0.24%)	0.00%

III. Liability Support

Liabilities and Funded Ratios by Benefit - Tiers 1 & 2

	June 30, 2021	June 30, 2020
Pension		
Actuarial Present Value of Benefits		
Retirees and Beneficiaries	$ 2,505,267	$ 1,703,353
Vested Members	63,948	73,902
Active Members	1,088,314	1,723,515
Total Actuarial Present Value of Benefits	3,657,529	3,500,770
Actuarial Accrued Liability (AAL)		
All Inactive Members	2,569,215	1,777,255
Active Members	982,080	1,597,678
Total Actuarial Accrued Liability	3,551,295	3,374,933
Actuarial Value of Assets (AVA)	1,649,829	1,504,732
Unfunded Actuarial Accrued Liability		
Gross Unfunded Actuarial Accrued Liability	1,901,466	1,870,201
Stabilization Reserve	0	0
Net Unfunded Actuarial Accrued Liability	1,901,466	1,870,201
Funded Ratio (AVA / AAL)	46.5%	44.6%
Health		
Present Value of Benefits		
Retirees and Beneficiaries	$ 7,365	$ 22,311
Active Members	17,835	28,313
Total Present Value of Benefits	25,200	50,624
Actuarial Accrued Liability (AAL)		
All Inactive Members	7,365	22,311
Active Members	15,836	25,732
Total Actuarial Accrued Liability	23,201	48,043
Actuarial Value of Assets (AVA)	76,639	72,662
Unfunded Actuarial Accrued Liability	(53,438)	(24,619)
Funded Ratio (AVA / AAL)	330.3%	151.2%

Derivation of Experience (Gain)/Loss

		Tiers 1 & 2	
		Pension	**Health**
(1)	Unfunded Actuarial Accrued Liability as of June 30, 2020	1,870,201	(24,619)
(2)	Normal Cost Developed in Last Valuation	5,397	690
(3)	Actual Contributions	138,372	0
(4)	Expected Interest On (1), (2), and (3)	131,957	(1,747)
(5)	Expected Unfunded Actuarial Accrued Liability as of June 30, 2021 (1)+(2)-(3)+(4)	1,869,183	(25,676)
(6)	Changes to UAAL Due to Assumptions, Methods and Benefits	0	0
(7)	Change to UAAL Due to Actuarial (Gain)/Loss	32,283	(27,762)
(8)	Unfunded Actuarial Accrued Liability as of June 30, 2021	1,901,466	(53,438)

Amortization of Unfunded Liabilities - Tiers 1 & 2

	Date Established	Outstanding Balance	Years Remaining	Amortization Rate
Pension	06/30/2019	1,781,726	15	107.54%
	06/30/2021 [1]	119,740	15	8.08%
	Total	1,901,466		115.62%
Health	06/30/2019	0	15	0.00%
	06/30/2021 [1]	(53,438)	20	(3.11%)
	Total	(53,438)		(3.11%)

[1] *Since the "Years Remaining" for the 2020 and 2021 bases are the same, they have been combined into a single base.*

IV. Asset Support

Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2021

Market Value Basis

	Tiers 1 & 2	
	Pension	**Health**
Additions		
Contributions		
Member Contributions	$ 42,323,414	$ 0
Employer Contributions	730,498,415	0
Health Insurance Contributions	0	585,463
Total Contributions	772,821,829	585,463
Investment Income		
Net Increase in Fair Value	558,893,199	32,477,757
Interest and Dividends	18,245,145	1,060,241
Other Income	13,075,141	759,808
Less Investment Expenses	(12,776,627)	(742,460)
Net Investment Income	577,436,858	33,555,346
Transfers In	37,367	0
Total Additions	1,350,296,054	34,140,809
Deductions		
Distributions to Members		
Benefit Payments	183,202,439	0
Health Insurance Subsidy	0	4,401,179
Refund of Contributions	18,514,647	0
Total Distributions	201,717,086	4,401,179
Administrative Expenses	2,666,934	138,110
Transfers Out	538,460	0
Other	0	0
Total Deductions	204,922,480	4,539,289
Net Increase / (Decrease)	1,145,373,574	29,601,520
Net Position Held in Trust		
Prior Valuation	2,070,559,462	125,974,705
Beginning of the Year Adjustment	0	(1)
End of the Year	3,215,933,036	155,576,224

Development of Pension Actuarial Value of Assets - Tiers 1 & 2

A. Investment Income	
A1. Actual Investment Income	$ 574,769,924
A2. Expected Amount for Immediate Recognition	171,611,052
A3. Amount Subject to Amortization	403,158,872

	Year Ended June 30						
B. Amortization Schedule	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
2021 Experience (A3 / 7)	57,594,125	57,594,125	57,594,125	57,594,125	57,594,125	57,594,125	57,594,122
2020 Experience	(13,457,282)	(13,457,282)	(13,457,282)	(13,457,282)	(13,457,282)	(13,457,281)	
2019 Experience	(5,782,115)	(5,782,115)	(5,782,115)	(5,782,115)	(5,782,112)		
2018 Experience	(1,511,828)	(1,511,828)	(1,511,828)	(1,511,825)			
2017 Experience	8,429,734	8,429,734	8,429,733				
2016 Experience	(16,290,498)	(16,290,497)					
2015 Experience	(9,194,260)						
Total Amortization	19,787,876	28,982,137	45,272,633	36,842,903	38,354,731	44,136,844	57,594,122

C. Actuarial Value of Assets	Total	Employer
C1. Actuarial Value of Assets, 06/30/2020	2,202,747,086	
C2. Non-investment Net Cash Flow	570,603,650	
C3. Preliminary Actuarial Value of Assets, 06/30/2021 (A2 + B + C1 + C2)	2,964,749,664	
C4. Market Value of Assets, 06/30/2021	3,215,933,036	1,789,608
C5. Final Actuarial Value of Assets, 06/30/2021 (C3 Within 20% Corridor of C4)	2,964,749,664	1,649,829

D. Rates of Return	
D1. Market Value Rate of Return	24.4%
D2. Actuarial Value Rate of Return	7.7%

Development of Health Actuarial Value of Assets - Tiers 1 & 2

A. Investment Income	
A1. Actual Investment Income	$ 33,417,236
A2. Expected Amount for Immediate Recognition	9,059,333
A3. Amount Subject to Amortization	24,357,903

	Year Ended June 30						
B. Amortization Schedule	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
2021 Experience (A3 / 7)	3,479,700	3,479,700	3,479,700	3,479,700	3,479,700	3,479,700	3,479,703
2020 Experience	(806,920)	(806,920)	(806,920)	(806,920)	(806,920)	(806,919)	
2019 Experience	(382,214)	(382,214)	(382,214)	(382,214)	(382,213)		
2018 Experience	(81,544)	(81,544)	(81,544)	(81,541)			
2017 Experience	574,691	574,691	574,693				
2016 Experience	(1,140,445)	(1,140,442)					
2015 Experience	(623,078)						
Total Amortization	1,020,190	1,643,271	2,783,715	2,209,025	2,290,567	2,672,781	3,479,703

C. Actuarial Value of Assets	**Total**	**Employer**
C1. Actuarial Value of Assets, 06/30/2020	134,233,358	
C2. Non-investment Net Cash Flow	(3,815,716)	
C3. Preliminary Actuarial Value of Assets, 06/30/2021 (A2 + B + C1 + C2)	140,497,165	
C4. Market Value of Assets, 06/30/2021	155,576,224	84,865
C5. Final Actuarial Value of Assets, 06/30/2021 (C3 Within 20% Corridor of C4)	140,497,165	76,639

D. Rates of Return	
D1. Market Value Rate of Return	26.9%
D2. Actuarial Value Rate of Return	7.6%

FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

V. Member Statistics

Valuation Data Summary – Tiers 1 & 2

	June 30, 2021	June 30, 2020
Actives		
Number	2	3
Average Current Age	50.9	54.3
Average Age at Employment	32.3	31.9
Average Past Service	18.6	22.4
Average Annual Salary	$66,016	$68,025
Actives (transferred)		
Number	0	0
Average Current Age	N/A	N/A
Average Age at Employment	N/A	N/A
Average Past Service	N/A	N/A
Average Annual Salary	N/A	N/A
Retirees		
Number	4	3
Average Current Age	65.4	64.9
Average Annual Benefit	$38,703	$34,012
Beneficiaries		
Number	1	1
Average Current Age	67.0	66.0
Average Annual Benefit	$36,318	$35,606
Disability Retirees		
Number	1	1
Average Current Age	50.0	49.0
Average Annual Benefit	$4,697	$4,605
Inactive / Vested		
Number	4	4
Average Current Age	46.1	45.1
Average Accumulated Contributions	$16,262	$16,262
Total Number	12	12
Former Members (transferred)	0	0

Counts and Pay Summary by Service - Tiers 1 & 2

	Past Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total Count**	**Total Pay**	**Average Pay**
< 25	0	0	0	0	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0	0	0	0	0
30 - 34	0	0	0	0	0	0	0	0	0	0
35 - 39	0	0	0	0	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0	0	0	0	0
45 - 49	0	0	1	0	0	0	0	1	62,031	62,031
50 - 54	0	0	0	0	1	0	0	1	70,000	70,000
55 - 59	0	0	0	0	0	0	0	0	0	0
60 - 64	0	0	0	0	0	0	0	0	0	0
65+	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	0	0	2	132,031	66,016

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	See table below. This is annual increase for individual member's salary. These rates, which are based on a 2017 experience study using actual plan experience, consist of 3.5% for wage inflation with the remaining portion for merit / seniority increases.

Age	Rate
20	6.5%
25	6.1%
30	5.4%
35	4.7%
40	4.2%
45	4.0%
50	3.9%
55	3.7%
60+	3.5%

Inflation	2.50%.
Tier 3 Compensation Limit	$70,000 for calendar 2020. Assumed increases of 2.00% per year thereafter.
Cost-of-Living Adjustment	1.75%.
Reverse DROP Interest	2.00%.
Mortality Rates	These rates are used to project future decrements from the population due to death.

Active Lives:
PubS-2010 Employee mortality, loaded 125% for males and 115% for females, projected with future mortality improvements reflected generationally using 75% of scale MP-2020. 100% of active deaths are assumed to be in the line of duty.

Inactive Lives
PubS-2010 Healthy Retiree mortality, loaded 125% for males and 115% for females, projected with future mortality improvements reflected generationally using 75% of scale MP-2020.

Beneficiaries:
PubS-2010 Survivor mortality, projected with future mortality improvements reflected generationally using 75% of scale MP-2020.

Disabled Lives:
PubS-2010 Disabled mortality, projected with future mortality improvements reflected generationally using 75% of scale MP-2020.

The mortality assumptions sufficiently accommodate anticipated future mortality improvements.

Retirement

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.

Tier 1 – reaching age 62 before attaining 20 (25 for dispatchers) years of service:
Age-related rates based on age at retirement: 45% per year from age 60 - 74 and 100% assumed at age 75.

Tier 1 – reaching age 62 after attaining 20 (25 for dispatchers) years of service:
Service-related rates based on service at retirement:

Service	Rate
20	30%
21	28%
22	19%
23	17%
24	13%
25-26	26%
27-29	19%
30-31	27%
32-33	40%
34-35	50%
36	60%
37+	100%

Tiers 2 & 3:
Age-related rates based on age at retirement:

Age	Rate
53-54	40%
55	30%
56-57	15%
58-59	30%
60-61	65%
62+	100%

Termination Rate

These rates are used to project future decrements from the active population due to termination. Service-related rates based on service at termination are shown below. The rates below apply to members prior to retirement eligibility and are based on a 2017 experience study using actual plan experience.

Service	Rate
0	23.00%
1	20.00%
2	16.50%
3	14.50%
4	13.00%
5	10.50%
6	9.50%
7	9.00%
8-10	8.50%
11	6.00%
12	5.00%
13	4.50%
14-16	3.00%
17+	2.00%

Disability Rate

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. 100% of disablements are assumed to be duty-related.

Age	Rate
20	0.03%
25	0.03%
30	0.03%
35	0.04%
40	0.05%
45	0.06%
50	0.08%
55	0.08%

Marital Status	For active members, 75% of males and 50% 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, 60% 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	Method described below. Note that 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. ***Tiers 1 & 2:*** 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. ***Tier 3:*** Each year the assumed investment income is recognized in full while the difference between actual and assumed investment income are smoothed over a 5-year period subject to a 20% corridor around the market value.
Funding Policy Amortization Method	***Tiers 1 & 2:*** 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 at most 30 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. ***Tier 3:*** Any positive UAAL (assets less than liabilities) is amortized according to a Level Dollar method over a closed period of 10 years. No amortization is made of any negative UAAL (assets greater than liabilities).
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 payroll growth assumption was lowered from 3.00% 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.

- <u>Investment Return</u>: 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.
- <u>Salary Increases</u>: 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.
- <u>Payroll Growth</u>: 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.
- <u>Demographic Assumptions:</u> 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." For a better understanding of the overall Plan and the impact of these risks, please refer to the consolidated CORP valuation report.

Plan Maturity Measures and Other Risk Metrics – Tiers 1 & 2

	06/30/2018	06/30/2019	06/30/2020	06/30/2021
Support Ratio				
Total Actives	4	3	3	2
Total Inactives	8	9	9	10
Actives / Inactives	50.0%	33.3%	33.3%	20.0%
Asset Volatility Ratio				
Market Value of Assets (MVA)		1,378,623	1,414,433	1,789,608
Total Annual Payroll		202,246	204,074	132,031
MVA / Total Annual Payroll		681.7%	693.1%	1,355.4%
Accrued Liability (AL) Ratio				
Inactive Accrued Liability	1,756,856	1,792,133	1,777,255	2,569,215
Total Accrued Liability	2,945,307	3,240,399	3,374,933	3,551,295
Inactive AL / Total AL	59.6%	55.3%	52.7%	72.3%
Funded Ratio				
Actuarial Value of Assets (AVA)	1,337,558	1,424,947	1,504,732	1,649,829
Total Accrued Liability	2,945,307	3,240,399	3,374,933	3,551,295
AVA / Total Accrued Liability	45.4%	44.0%	44.6%	46.5%
Net Cash Flow Ratio				
Net Cash Flow *		(288)	(892)	(10,257)
Market Value of Assets (MVA)		1,378,623	1,414,433	1,789,608
Net Cash Flow / MVA		(0.0%)	(0.1%)	(0.6%)

* *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 6 of the Arizona Revised Statutes.

Membership	Full-time employees of a participating employer in a designated position, whose customary employment is at least 40 hours each week. Includes employees hired after July 1, 2018 only if they are a judiciary probation or surveillance officer who makes the irrevocable election to participate in the plan.
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 but before July 1, 2018 3 — Hired on or after July 1, 2018
Salary	Salary is the amount including base salary, shift and military differential pay, and holiday pay, paid to an employee on a regular payroll basis. For Tier 3 members, salary is limited by statutory cap ($70,000 with adjustments by the Board).
Average Monthly Benefit Salary	***Tier 1:*** One-thirty-sixth of the highest total salary during a period of thirty-six consecutive months of service within the last one hundred twenty months of service. ***Tier 2 & 3:*** One-sixtieth of the highest total salary during a period of sixty consecutive months of service within the last one hundred twenty months of service.
Credited Service	Total periods of service, both from service other State plans and those compensated periods of service for which the member made contributions to the fund.
Normal Retirement Date	***Tier 1:*** First day of the month following attainment of 1) age 62 with 10 years of Credited Service, 2) 20 (25, if dispatcher) years of Credited Service, or 3) age and Credited Service points equal to 80.

Tier 2:
First day of month following the attainment of 1) age 52.5 with 25 years of Credited Service, or 2) age 62 with 10 years of Credited Service.

Tier 3:
First day of month following the attainment of age 55 with 10 years of Credited Service.

Benefit

Tier 1:
2.50% times Credited Service (up to 20 years) times Average Monthly Salary. If Credited Service exceeds 20 years, an additional 2.00% accrual is provided for up to five years. If Credited Service exceeds 25 years, the additional accrual for service in excess of 20 years is increased to 2.50%. Maximum benefit equals 80% of Average Monthly Salary.

Tier 2:
2.50% times Credited Service times Average Monthly Salary (maximum benefit equals 80% of Average Monthly Salary).

Tier 3:
Benefit multiplier (below) times Average Monthly Benefit Salary times Credited Service (maximum benefit of 80% of Average Monthly Benefit Salary):

Credited Service	Benefit Multiplier
10 years, but less than 15	1.25%
15 years, but less than 20	1.50%
20 years, but less than 22	1.75%
22 years, but less than 25	2.00%
25+ years	2.25%

Form of Benefit

For married retirees, an annuity payable for the life of the member with 80% continuing to the eligible spouse upon death. For unmarried retirees, the normal form is a single life annuity.

Early Retirement

Only applicable to Tier 3 members:

Date

Attainment of age 52.5 and 10 years of Credited Service.

Benefit

Actuarial equivalent of Normal Retirement benefit.

Disability Benefit – Duty-Related

Eligibility

Total and permanent disability incurred in performance of duty.

Benefit Amount	The greater of 1) 50% of Average Monthly Salary, and 2) the Normal Retirement pension that the member is entitled to receive.

<u>Disability Benefit – Ordinary</u>

Eligibility	Total and permanent disability not incurred in performance of duty.
Benefit Amount	
Dispatchers	Normal Retirement pension that the member is entitled to receive prorated on Credited Service (maximum 25 years) over 25.
All Others	Normal Retirement pension that the member is entitled to receive prorated on Credited Service (maximum 20 years) over 20.

<u>Pre-Retirement Death Benefit</u>

Payable to Eligible Survivor	Payable to eligible spouse for life; payable to eligible children until adopted, age 18, or age 23 if full-time student.
Service Incurred	100% of Average Monthly Salary
Non-Service Incurred	40% of Average Monthly Salary.
No survivors	Two times member's accumulated contributions.

<u>Vesting (Termination)</u>

Deferred Annuity

***Tier 1*:**
For those with 10 or more years of Credited Service, an annuity based on two times member's accumulated contributions, deferred to age 62. Member is not entitled to survivor benefits, benefit increases, or group health insurance subsidy.

Return of Contributions

***Tier 1*:**
Lump sum payment of accumulated contributions, plus additional amount based on years of credited service.

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%

Tiers 2 & 3:
Lump sum payment of accumulated contributions, with interest at rate determined by the Board.

Cost-of-Living Adjustment

Payable to retired member or survivor of retired member

Tiers 1 & 2
Compound cost-of-living adjustment on base benefit. First payment is made on July 1, 2018, 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%.

Tier 3
Compound cost-of-living adjustment on base benefit beginning earlier of fist calendar year after the 7th anniversary of retirement or when the retired member reaches 60 years of age.
A cost-of-living adjustment shall be paid on July 1 each year that the funded ratio for members hired on or after July 1, 2018 is 70% or more.

The 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. The cost-of-living adjustment will not exceed:

- 2%, if funded ratio for members who are hired on or after July 1, 2018 is 90% or more;
- 1.5%, if funded ratio for members who are hired on or after July 1, 2018 is 80-90%;
- 1%, if funded ratio for members who are hired on or after July 1, 2018 is 70-80%.

Reverse Deferred Retirement Option Plan (Reverse DROP):

Eligibility

Tier 1 and eligible for normal pension with at least 24 years of Credited Service (25 years for dispatchers). Must not have been awarded disability pension.

Reverse DROP Date

First day of month immediately following completion of required Credited Service or date not more than 60 consecutive months before the date the member elects to participate in the Reverse DROP, whichever is later.

Benefit Amount	Calculated based on Credited Service and Average Monthly Salary as of the Reverse DROP Date.
Reverse DROP Lump Sum	Accumulated benefit amounts (with interest) from Reverse DROP date to the date the member elected to participate in Reverse DROP. Interest is equal to the yield on five-year Treasury note as of the first day of the month, as published by the Federal Reserve Board.

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

Employee Contributions

Tiers 1 and 2:
Non-dispatchers: 8.41% of salary, or 50/50 split of total employer and employee costs, whichever is lower, until the plan is 100% funded. Minimum contribution of 7.65% of salary.

Dispatchers: 0.45% less than non-dispatcher rate until plan is 100% funded; equal thereafter.

Tier 3:
66.7% of the Normal Cost plus 50% of a level-dollar amortization of unfunded actuarial accrued liability over a closed period not to exceed 10 years.

Employer Contributions

Tiers 1 & 2:
Normal Cost, plus amortization of unfunded actuarial accrued liability over a closed period not to exceed 20 years. Contribution will never be less than 6% of payroll.

Tier 3:
33.3% of the Normal Cost plus 50% of a level-dollar amortization of unfunded actuarial accrued liability over a closed period not to exceed 10 years.

Changes to Benefit Provisions Since the Prior Valuation

None.

IX. Actuarial Funding Policy

A pension plan funding policy describes how pension funding will improve for underfunded plans or maintain funded benefits for funded plans over time for those benefits defined in ARS. Those benefits defined in ARS are to be equitably managed and administered by PSPRS.

This Actuarial Funding Policy identifies the funding objectives and elements of the actuarial funding policy set by the Board for the Arizona Public Safety Personnel Retirement System (PSPRS). The Board adopted this Funding Policy to help ensure the systematic funding of future benefit payments for members of the Retirement System as established by the legislature.

To achieve the systematic funding of future benefits, metrics are identified to measure the progress, or the lack of progress, over time to identify trends. These trends inform the continuation of the current policies or identify areas of needed research for consideration.

This funding policy is reviewed annually and adopted by the Board in accordance with ARS 38-863.02. This policy was reviewed and adopted by the Board in October 2021.

PSPRS Statement of Purpose

The Purpose of the Public Safety Personnel Retirement System is to provide uniform, consistent, and equitable statewide retirement programs for those who have been entrusted to our care.

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.
    a. Corollary 1a: Current and future contributions should be calculated based upon assumptions that reflect the Board's best estimate of future experience and methods that appropriately allocate costs to address generational equity.
    b. Corollary 1b: While the shorter-term objective is to fully fund the actuarial liability (AAL) that estimates benefits earned as of the valuation date, contributions should target the long-term present value of benefits (PVB) to fund all benefits and help offset risks.

2. Maintain public policy goals of accountability and transparency through stakeholder communication and education. Each policy element is clear in intent and effect, and each should be considered in a balanced approach to determine how and when the funding requirements of the plan will be met.
    a. Corollary 2a: Board shall provide stakeholders with separate reports and tools to help explain current results as well as to help model future funding requirements.

3. Promote intergenerational equity. Defined benefit pensions are designed with a long-term perspective and designed to minimize contribution volatility that cannot avoid some level of generational cost shift. However, the goal is that each generation of members and employers (taxpayers) should, to the extent possible, incur the cost of benefits for the employees who provide services to them, rather than shifting those costs to other generations of members and employers (taxpayers).

a. Corollary 3a: A systematic reduction of the Unfunded Actuarial Accrued Liability (UAAL) over a reasonable time period is paramount to achieving this objective.

Consideration can be given to reduce volatility, to the extent possible, of employer and employee contribution rates as long as the integrity of the objectives listed above is not compromised.

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 (Tiers 1 and 2) or five years (Tier 3) in calculating the Actuarial Value of Assets.
   b. The Actuarial Value of Assets so determine shall be subject to a 20% corridor relative to the Market Value of Assets.

3. Amortization Method (Unfunded Amounts)
   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.
   b. The unfunded liabilities, for EORP and Tiers 1 & 2 for both PSPRS and CORP, determined in the June 30, 2019 actuarial valuation will become the initial layer for each employer beginning with the June 30, 2020 actuarial valuation and amortized using the current closed year period for that employer and continue to decrease each year.
      i. The payroll growth rate assumption used to amortize the Public Safety Plan (PSPRS) June 30, 2019 Unfunded Liability will be decreased by 0.5% beginning with the 6/30/2021 actuarial valuation and again each year with the intention of ultimately achieving 0.0%. Once the payroll growth assumption reaches 2.0%, however, the Board will reevaluate the payroll growth assumption and decide whether to continue to let it track down to 0.0%.
      ii. The payroll growth rate used to amortize the Correction Officers Retirement Plan (CORP) June 30, 2019 Unfunded Liability will be 3.0% beginning with the 6/30/2020 actuarial valuation, and future years will be reduced by 0.5% until 0.0% is reached.
      iii. The payroll growth rate used to amortize the Elected Officials Retirement Plan (EORP) June 30, 2019 Unfunded Liability will be 2.5% beginning with the 6/30/2020 actuarial valuation, and future years will be reduced by 0.5% until 0.0% is reached.
   c. Gains and losses, for EORP and Tiers 1 & 2 for both PSPRS and CORP, for each employer beginning with the June 30, 2020 actuarial valuation will be amortized as a new layer over the same amortization period as the regular unfunded liability to a minimum of 15 years. Once the amortization period for each employer decreases to 15 years, each subsequent year's gains and losses will be amortized as a new 15-year closed layer.
      i. The payroll growth rate used to amortize unfunded liability for all Plans under this paragraph will be 0.0% (i.e. level-dollar amortization).

   d. Tier 3 amortization methods are established in ARS 38-843.G and ARS 38-891.K.

4. Amortization Method (Overfunded Amounts)
   a. If the Actuarial Value of Assets exceeds the AAL for EORP and Tiers 1 & 2 for both PSPRS and CORP, the excess is amortized over an open period of 20 years and applied as a credit to reduce the Normal Cost otherwise payable.
   b. Tier 3 amortization methods are established in ARS 38-843.G and ARS 38-891.K.

Metrics to Monitor Funding Objectives

1. Appropriateness of Assumptions – Gain/Loss Experience (Corollary 1a)
   a. Metric: Do the cumulative gain/loss layers over the prior five years exceed 8% of plan assets?
   b. Measurement: History of annual gain/loss (split by asset and liability experience) and five-year cumulative results will be tracked.
   c. Action Plan: This metric assumes that a full experience study is performed at least every five years so objective of measurement is to monitor interim experience. If the metric answer is yes, a review of the sources or causes of gains and losses should be analyzed and presented to the Advisory Committee to provide a recommendation to the Board of Trustees. The analysis and presentation are intended to provide a basis for consideration if assumption changes are warranted between full experience studies.

2. Funding Targets (Corollary 1b)
   a. Metric: Has the funded status, on both an AAL and PVB basis when compared to the market value of assets, increased over a five-year period?
   b. Measurement: History of funded status measures will be tracked.
   c. Action Plan: If the answer is no and not readily explainable (e.g., significant assumption change), a review of the reason(s) for the decrease should be researched and presented to the Advisory Committee to provide a recommendation to the Board of Trustees. The analysis and presentation are intended to provide a basis for consideration if changes to assumptions and/or methods are warranted between full experience studies.

3. Communication with Stakeholders (Corollary 2a)
   a. Metric: Have reports and budgeting tools been provided to stakeholders in a timely fashion?
   b. Measurement: Yes/No answer based on input from PSPRS administrator. (An annual standard survey of stakeholders – 3 to 5 questions.)
   c. Action Plan: If the answer is no, and periodically regardless (e.g., every three years), PSPRS staff will revisit this metric to report to the Advisory Committee to provide a recommendation to the Board of Trustees if current reports / tools are sufficient and if the delivery timing is appropriate.

4. Timely Recognition of Costs (Corollary 3a)
   a. Metric: Has the percentage of unfunded liability subject to negative amortization decreased over a five-year lookback period?
   b. Measurement: History of unfunded liability subject to negative amortization as a percentage of total unfunded liability will be tracked.
      - Action Plan: If the answer is no, and not readily explainable (e.g., adopted assumption changes being phased in are anticipated to address negative amortization), a review of the

reason(s) for negative amortization should be researched and presented to the Advisory Committee to provide a recommendation to the Board of Trustees. The analysis and presentation are intended to provide a basis for consideration if changes to assumptions and/or methods are warranted between full experience studies.

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.

ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

ORO VALLEY POLICE DEPT. (122)

ACTUARIAL VALUATION
AS OF JUNE 30, 2021

CONTRIBUTIONS APPLICABLE TO THE
PLAN/FISCAL YEAR ENDING JUNE 30, 2023

FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

VIA E-MAIL

December 2021

Board of Trustees
Arizona Public Safety Personnel Retirement System
Phoenix, AZ

Re: Actuarial Valuation Report as of June 30, 2021 for Oro Valley Police Dept. (122)

Dear Members of the Board:

We are pleased to present to the Board this report of the annual actuarial valuation of the Arizona Public Safety Personnel Retirement System (PSPRS). 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 PSPRS and those designated or approved by the Board. It documents the valuation of the consolidated plan and provides summary information for PSPRS participating employers. This report may be provided to parties other than PSPRS 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 4 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 System 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.

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In conducting the valuation, we have relied on personnel, plan design, and asset information supplied by PSPRS through June 30, 2021 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.

In performing the analysis, we used third-party software to model (calculate) the underlying liabilities and costs. These results are reviewed in the aggregate and for individual sample lives. The output from the software is either used directly or input into internally developed models to generate the costs. All internally developed models are reviewed as part of the process. As a result of this review, we believe that the models have produced reasonable results. We do not believe there are any material inconsistencies among assumptions or unreasonable output produced due to the aggregation of assumptions.

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 sections of this report are considered an integral part of the actuarial opinions.

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 Public Safety Personnel Retirement System, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the Arizona Public Safety Personnel Retirement System. 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: ______________________
Paul M. Baugher, FSA, EA, MAAA

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I. Summary of Report

The regular annual actuarial valuation of the Arizona Public Safety Personnel Retirement System for the Oro Valley Police Dept., performed as of June 30, 2021, 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' recommended contribution rates for the Fiscal Year beginning July 1, 2022. This information is contained in the section entitled "Contribution Results."

1. Key Valuation Results

The funded status as of June 30, 2021 and the employer contribution amounts applicable to the plan/fiscal year ending June 30, 2023 are as follows:

	Tier 1 & Tier 2 Members			Tier 3 Members *		
	Pension	**Health**	**Total**	**Pension**	**Health**	**Total**
Employer Contribution Rate	43.47%	0.00%	43.47%	9.00%	0.12%	9.12%
Funded Status	66.1%	148.5%	67.3%	107.3%	210.0%	108.9%

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, 2020):

Contribution Rate

	Tier 1 & Tier 2 Members			Tier 3 Members *		
Valuation Date	**Pension**	**Health**	**Total**	**Pension**	**Health**	**Total**
June 30, 2020	43.57%	0.00%	43.57%	9.05%	0.13%	9.18%
June 30, 2021	43.47%	0.00%	43.47%	9.00%	0.12%	9.12%

Funded Status

	Tier 1 & Tier 2 Members			Tier 3 Members		
Valuation Date	**Pension**	**Health**	**Total**	**Pension**	**Health**	**Total**
June 30, 2020	61.7%	132.7%	62.9%	101.4%	203.9%	103.0%
June 30, 2021	66.1%	148.5%	67.3%	107.3%	210.0%	108.9%

** The Tier 3 rates shown are the calculated rates as of the valuation date and do not reflect any Legacy costs that the employer must also contribute.*

3. Reasons for Change

Changes in the results from the prior year's valuation can be illustrated in the following tables along with high-level explanations for the entire System below:

Contribution Rate

	Tier 1 & Tier 2		Tier 3 Members	
	Pension	**Health**	**Pension**	**Health**
Contribution Rate Last Valuation	43.57%	0.00%	9.05%	0.13%
Asset Experience	(0.17%)	0.00%	(0.17%)	(0.01%)
Payroll Base	0.36%	(0.01%)	0.01%	(0.01%)
Liability Experience	(0.97%)	(0.15%)	(0.24%)	0.00%
Additional Contribution	(0.61%)	0.00%	0.00%	0.00%
Assumption/Method Change	0.86%	0.00%	0.00%	0.00%
Other	0.43%	0.16%	0.35%	0.01%
Contribution Rate This Valuation	43.47%	0.00%	9.00%	0.12%

Funded Status

	Tier 1 & Tier 2		Tier 3 Members	
	Pension	**Health**	**Pension**	**Health**
Funded Status Last Valuation	61.7%	132.7%	101.4%	203.9%
Asset Experience	0.2%	(0.2%)	3.4%	7.8%
Liability Experience	0.6%	16.1%	4.8%	0.0%
Additional Contribution	0.7%	0.0%	0.0%	0.0%
Assumption/Method Change	0.0%	0.0%	0.0%	0.0%
Other	2.9%	(0.1%)	(2.3%)	(1.7%)
Funded Status This Valuation	66.1%	148.5%	107.3%	210.0%

Assets Experience – Asset gains and losses (relative to the assumed earnings rate) are smoothed over seven years for Tiers 1 and 2 and over five years for Tier 3. The return on the market value of assets for the year ending June 30, 2021 was 26.7% for Tiers 1 and 2 and 32.7% for Tier 3. On a smoothed, actuarial value of assets basis, however, the average return was 7.6% for Tiers 1 and 2 and 11.5% for Tier 3. These returns exceeded the 2020 assumed earnings rate for Tiers 1 and 2 of 7.3% and for Tier 3 of 7.0%.

Payroll Base – Under the current amortization policy for Tiers 1 and 2, the contribution rate is developed as a level percentage of payroll. Payroll for this purpose includes members of this plan and defined contribution plan's members that would have been in this plan. To the extent that actual payroll is lower/greater than last year's projected payroll, the contribution rate will increase/decrease as a result. The payroll decreased compared to expected, resulting in an increase in the contribution rate.

Liability Experience – Experience overall was unfavorable, driven by salary increases that were higher than expected.

Additional Contribution – Monies contributed in excess of the required contribution rate in order to pay down the unfunded liability.

Assumption / Method Change – The payroll growth assumption was decreased from 3.50% to 3.00%.

Other – This is the combination of all other factors that could impact liabilities year-over-year, with the primary sources being changes in benefits for continuing inactives. Note that Tier 3 experience will stabilize as the group matures.

4. Looking Ahead

The volatility in annual returns, which have produced both gains and losses in recent years, was dampened by the asset smoothing reflected in the actuarial value of assets. The significant gain realized this year will, in the absence of other losses, put downward pressure on the contribution rate next year.

If the June 30, 2021 pension valuation results were based on the market value of assets instead of the actuarial value of assets, the pension funded percentage for Tiers 1 and 2 would be 72.3% (instead of 66.1%) and the pension employer contribution requirement would be 37.16% of payroll (instead of 43.47%).

5. Conclusion

The funded status for Tiers 1 and 2 will continue to improve if assumptions are met and contributions at least equal to the rates determined for each employer are made to the fund. The recent adoption of a layered amortization approach along with a plan to systematically lower the payroll growth assumption was an excellent step to improve funding and ensure the Plan is on a viable path.

The funded status for Tier 3 will stabilize as the population continues to grow, as contributions appear sufficient to keep the liabilities fully funded.

II. CONTRIBUTION RESULTS

Contribution Requirements

Development of Employer Contributions - Tiers 1 & 2 Members				
Valuation Date	June 30, 2021		June 30, 2020	
Applicable to Fiscal Year Ending	2023		2022	
	Rate	**Dollar**	**Rate**	**Dollar**
Pension				
Normal Cost				
Total Normal Cost	20.74%	$ 1,373,511	20.84%	$ 1,407,038
Employee Cost	(7.65%)	(506,623)	(7.65%)	(516,499)
Employer (Net) Normal Cost	13.09%	866,888	13.19%	890,539
Amortization of Unfunded Liability	30.38%	2,011,922	30.38%	2,051,143
Total Employer Cost (Pension)	43.47%	2,878,810	43.57%	2,941,682
Health				
Normal Cost	0.45%	29,801	0.45%	30,382
Amortization of Unfunded Liability	(0.45%)	(29,801)	(0.45%)	(30,382)
Total Employer Cost (Health)	0.00%	0	0.00%	0
Total Employer Cost (Pension + Health)	**43.47%**	**2,878,810**	**43.57%**	**2,941,682**
Total Minimum Contribution Requirement (if applicable)	0.00%		0.00%	
Alternate Contribution Rate (ACR) *	30.38%		30.38%	
Underlying Payroll (as of valuation date)		6,429,633		6,523,308

** The Alternate Contribution Rate is the sum of the positive amortization rates for Tiers 1 & 2 Pension and Health (subject to an 8% minimum) and is charged when retirees return to active status.*

The results above are shown both prior to and after the application of the statutory minimum contribution requirement of 8% of payroll (5% of payroll if the actual employer contribution is less than 5% for the 2006/2007 Fiscal Year) and are based on the current amortization schedule approved by the Board of Trustees for your individual plan (see "Actuarial Assumptions and Methods").

Development of Employer Contributions – Tier 3 Members		
Valuation Date	June 30, 2021	June 30, 2020
Applicable to Fiscal Year Ending	2023	2022

Defined Benefit (DB) Retirement Plan

	Rate	**Dollar**	**Rate**	**Dollar**
Pension				
Total Normal Cost	17.99%	$ 141,199	18.10%	$ 95,943
Amortization of Unfunded Liability	0.00%	0	0.00%	0
Total Pension Cost	17.99%	141,199	18.10%	95,943
Employee (EE) Pension Cost	9.00%	70,600	9.05%	47,972
Employer (ER) Pension Cost	9.00%	70,600	9.05%	47,972
Health				
Total Normal Cost	0.24%	1,884	0.25%	1,325
Amortization of Unfunded Liability	0.00%	0	0.00%	0
Total Health Cost	0.24%	1,884	0.25%	1,325
Employee (EE) Health Cost	0.12%	942	0.13%	663
Employer (ER) Health Cost	0.12%	942	0.13%	663
Total				
Total Calculated Tier 3 Required EE/ER Individual Cost	9.12%	71,542	9.18%	48,635
Board Approved Tier 3 Required EE/ER Individual Cost [1]	9.94%	78,017	9.94%	52,689
ER Legacy Cost of Tiers 1 & 2 Amort of Unfunded Liabilities [2]	30.38%	238,445	30.38%	161,036
Total Calculated Tier 3 Required ER Defined Benefit Cost	39.50%	309,987	39.56%	209,671
Total Board Approved Tier 3 Required ER Defined Benefit Cost	**40.32%**	**316,462**	**40.32%**	**213,725**
Underlying Payroll (as of valuation date)		762,016		512,148

[1] The Board decided to keep Tier 3 rates level (as calculated with the June 30, 2019 valuation) for the fiscal year ending June 30, 2023.

[2] Pursuant to ARS § 38-843(B), the amortization of positive unfunded liabilities for Tiers 1 & 2 shall be applied to all Tier 3 payroll on a level percent basis. However, while it is statutorily required to present the rates in this manner, these are the minimums where alternate methods for paying down that unfunded liability is at the discretion of each employer. Further, to understand the effects of reform in relation to Tier 3, compare the total rate of Tier 3 before application of those legacy costs.

Development of Employer Contributions – Tier 3 Members

Valuation Date	June 30, 2021	June 30, 2020
Applicable to Fiscal Year Ending	2023	2022

Defined Contribution (DC) Retirement Plan

	Rate	Dollar	Rate	Dollar
Tier 2 & 3 DB / Non-Social Security				
Employee Cost	3.00%		3.00%	
Employer Cost [1]	3.00%		3.00%	
Tier 3 DC Only				
Employee Cost	9.00%	$ 5,468	9.00%	$ 4,710
Employee Health Subsidy Program Cost	0.19%	115		
Employee Disability Program Cost	1.66%	1,009	0.88%	461
Total Employee Cost	**10.85%**	**6,592**	**9.88%**	**5,171**
Employer Cost	9.00%	5,468	9.00%	4,710
Employer Health Subsidy Program Cost	0.19%	115		
Employer Disability Program Cost	1.66%	1,009	0.88%	461
Total Employer Cost (before Legacy)	**10.85%**	**6,592**	**9.88%**	**5,171**
ER Legacy Cost of Tiers 1 & 2 Amort of Unfunded Liabilities [2]	30.38%	18,458	30.38%	15,899
Total Employer Cost	**41.23%**	**25,050**	**40.26%**	**21,070**
Underlying Payroll (as of valuation date)		58,986		50,563

[1] *Employer rate is 4% for Tier 2 members for a period of time depending on the individual's membership date.*

[2] *Pursuant to ARS § 38-843(B), the amortization of positive unfunded liabilities for Tiers 1 & 2 shall be applied to all Tier 3 payroll on a level percent basis. However, while it is statutorily required to present the rates in this manner, these are the minimums where alternate methods for paying down that unfunded liability is at the discretion of each employer. Further, to understand the effects of reform in relation to Tier 3, compare the total rate of Tier 3 before application of those legacy costs.*

Contribution Rate Summary

	Tier 1		Tier 2			Tier 3	
Membership Date On or After	7/1/1968	7/20/2011	1/1/2012			7/1/2017	
Participates in Social Security	N/A	N/A	Yes	No	Yes	No	N/A
Available Retirement Plan [1]	DB Only	DB Only	DB Only	Hybrid	DB Only	Hybrid	DC Only
Employee Contribution Rate							
PSPRS DB Rate	7.65%	11.65%	11.65%	11.65%	9.94%	9.94%	
PSPRS DC Rate				3.00%		3.00%	9.00%
Employer Health Subsidy Program Cost							0.19%
PSPDCRP Disability Program Rate							1.66%
Total EE Contribution Rate	7.65%	11.65%	11.65%	14.65%	9.94%	12.94%	10.85%
Employer Contribution Rate							
PSPRS DB Normal Cost	13.54%	13.54%	13.54%	13.54%	9.94%	9.94%	
PSPRS DB Tier 1 & 2 Legacy Cost [2]	29.93%	29.93%	29.93%	29.93%	30.38%	30.38%	30.38%
PSPRS DC Rate [3]				4.00%		3.00%	9.00%
Employer Health Subsidy Program Cost							0.19%
PSPDCRP Disability Program Rate							1.66%
Total ER Contribution Rate	43.47%	43.47%	43.47%	47.47%	40.32%	43.32%	41.23%

[1] *Employers that pay into Social Security on behalf of their members do not participate in the Hybrid Plan.*

[2] *Per statute (ARS § 38-843(B)), any positive unfunded liability for Tiers 1 and 2 is to be applied to all Tier 3 (DB and DC) payrolls.*

[3] *The 4.00% employer match for Tier 2 Hybrid members is for a short period of time depending on the membership date of the employee at which point the rate will change to 3.00% (ARS § 38-868(C)).*

Exhibit summarizes employee and employer contributions based on Statute and the results of June 30, 2021 actuarial valuation. Pension and health components are combined, where applicable.

Impact of Additional Contributions

	Additional Contribution (000s)										
	$0	**$1,000**	**$2,000**	**$3,000**	**$4,000**	**$5,000**	**$6,000**	**$7,000**	**$8,000**	**$9,000**	**$10,000**
Impact On											
Funded Status 06/30/2021	66.1%	67.5%	68.9%	70.3%	71.7%	73.1%	74.5%	76.0%	77.4%	78.8%	80.2%
FYE 2023 Contribution Rate	43.47%	42.07%	40.68%	39.28%	37.89%	36.49%	35.09%	33.70%	32.30%	30.90%	29.51%

Table shows the hypothetical change in the funded status and contribution rate from the June 30, 2021 actuarial valuation results for Tiers 1 & 2 if an additional contribution of the amount shown had been made to the Fund on June 30, 2021. This illustration can help estimate the impact of contributing additional monies to the fund in the future.

Historical Summary of Employer Rates

			Pension			Health		
	Valuation Date June 30	**Fiscal Year Ending June 30**	**Normal Cost**	**Unfunded Amortization**	**Total**	**Normal Cost**	**Unfunded Amortization**	**Total**
TIERS 1 & 2	2018	2020	14.15%	24.11%	38.26%	0.33%	0.00%	0.33%
	2019	2021	13.95%	27.67%	41.62%	0.49%	(0.46%)	0.03%
	2020	2022	13.19%	30.38%	43.57%	0.45%	(0.45%)	0.00%
	2021	2023	13.09%	30.38%	43.47%	0.45%	(0.45%)	0.00%
TIER 3 [1]	2018	2020	9.68%	0.00%	9.68%	0.26%	0.00%	0.26%
	2019	2021	9.68%	0.00%	9.68%	0.26%	0.00%	0.26%
	2020	2022	9.68%	0.00%	9.68%	0.26%	0.00%	0.26%
	2021 [2]	2023	9.00%	0.00%	9.00%	0.12%	0.00%	0.12%
	2021	2023	9.68%	0.00%	9.68%	0.26%	0.00%	0.26%

[1] *Rates shown are Board approved EE/ER rates, unless otherwise noted. Does not reflect Legacy costs that the employer must also contribute.*

[2] *Rates shown are calculated EE/ER rates*

III. Liability Support

Liabilities and Funded Ratios by Benefit - Tiers 1 & 2

	June 30, 2021	June 30, 2020
Pension		
Actuarial Present Value of Benefits		
Retirees and Beneficiaries	$ 29,485,097	$ 27,357,215
DROP Members	11,116,699	10,147,515
Vested Members	694,040	483,193
Active Members	39,960,572	40,105,448
Total Actuarial Present Value of Benefits	81,256,408	78,093,371
Actuarial Accrued Liability (AAL)		
All Inactive Members	41,295,836	37,987,923
Active Members	29,496,718	29,252,603
Total Actuarial Accrued Liability	70,792,554	67,240,526
Actuarial Value of Assets (AVA)	46,773,089	41,498,361
Unfunded Actuarial Accrued Liability		
Gross Unfunded Actuarial Accrued Liability	24,019,465	25,742,165
Stabilization Reserve	0	0
Net Unfunded Actuarial Accrued Liability	24,019,465	25,742,165
Funded Ratio (AVA / AAL)	66.1%	61.7%
Health		
Present Value of Benefits		
Retirees and Beneficiaries	$ 301,694	$ 366,193
DROP Members	151,013	144,755
Active Members	786,860	800,984
Total Present Value of Benefits	1,239,567	1,311,932
Actuarial Accrued Liability (AAL)		
All Inactive Members	452,707	510,948
Active Members	581,099	586,446
Total Actuarial Accrued Liability	1,033,806	1,097,394
Actuarial Value of Assets (AVA)	1,534,689	1,456,224
Unfunded Actuarial Accrued Liability	(500,883)	(358,830)
Funded Ratio (AVA / AAL)	148.5%	132.7%

Liabilities and Funded Ratios by Benefit - Tier 3

	June 30, 2021	June 30, 2020
Pension		
Actuarial Present Value of Benefits		
Retirees and Beneficiaries	$ 440,356	$ 429,363
Vested Members	1,850,254	743,741
Active Members	288,612,448	203,486,437
Total Actuarial Present Value of Benefits	290,903,058	204,659,541
Actuarial Accrued Liability (AAL)		
All Inactive Members	2,290,610	1,173,104
Active Members	40,442,927	22,066,495
Total Actuarial Accrued Liability	42,733,537	23,239,599
Actuarial Value of Assets (AVA)	45,863,401	23,570,444
Unfunded Actuarial Accrued Liability	(3,129,864)	(330,845)
Funded Ratio (AVA / AAL)	107.3%	101.4%
Health		
Present Value of Benefits		
Retirees and Beneficiaries	0	0
Active Members	3,998,992	2,785,857
Total Present Value of Benefits	3,998,992	2,785,857
Actuarial Accrued Liability (AAL)		
All Inactive Members	0	0
Active Members	680,877	353,563
Total Actuarial Accrued Liability	680,877	353,563
Actuarial Value of Assets (AVA)	1,429,806	721,079
Unfunded Actuarial Accrued Liability	(748,929)	(367,516)
Funded Ratio (AVA / AAL)	210.0%	203.9%

The liabilities shown on this page are the liabilities for all Tier 3 members grouped together in the Risk Sharing group. These liabilities are NOT the liabilities solely for Oro Valley Police Dept. Tier 3 members.

Derivation of Experience (Gain)/Loss

		Tiers 1 & 2		Tier 3	
		Pension	**Health**	**Pension**	**Health**
(1)	Unfunded Actuarial Accrued Liability as of June 30, 2020	25,742,165	(358,830)	(330,845)	(367,516)
(2)	Normal Cost Developed in Last Valuation	890,539	30,382	7,910,126	113,626
(3)	Actual Contributions	3,343,850	1,917	9,445,404	586,975
(4)	Expected Interest On (1), (2), and (3)	1,824,287	(24,045)	214,602	(39,581)
(5)	Expected Unfunded Actuarial Accrued Liability as of June 30, 2021 (1)+(2)-(3)+(4)	25,113,141	(354,410)	(1,651,521)	(880,446)
(6)	Changes to UAAL Due to Assumptions, Methods and Benefits	0	0	0	0
(7)	Change to UAAL Due to Actuarial (Gain)/Loss	(1,093,676)	(146,473)	(1,478,343)	131,517
(8)	Unfunded Actuarial Accrued Liability as of June 30, 2021	24,019,465	(500,883)	(3,129,864)	(748,929)

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Amortization of Unfunded Liabilities - Tiers 1 & 2

	Date Established	Outstanding Balance [1]	Years Remaining	Amortization Rate
Pension	06/30/2019	23,815,666	15	28.86%
	06/30/2021 [2]	1,059,335	15	1.52%
	Total	24,875,001		30.38%
Health	06/30/2019	0	15	0.00%
	06/30/2021 [2]	(500,883)	20	(0.62%)
	Total	(500,883)		(0.62%)

Amortization of Unfunded Liabilities - Tier 3

	Date Established	Outstanding Balance	Years Remaining	Amortization Rate [3]
Pension	06/30/2018	150,675	7	0.02%
	06/30/2019	(1,301,325)	8	(0.18%)
	06/30/2020	855,335	9	0.11%
	06/30/2021	(2,834,549)	10	(0.35%)
	Total	(3,129,864)		0.00%
Health	06/30/2018	(3,195)	7	0.00%
	06/30/2019	(118,978)	8	(0.02%)
	06/30/2020	(217,212)	9	(0.03%)
	06/30/2021	(409,544)	10	(0.05%)
	Total	(748,929)		0.00%

[1] *By Statute, any unfunded liability is adjusted by remove any "maintenance of effort" balance included in the assets.*

[2] *Since the "Years Remaining" for the 2020 and 2021 bases are the same, they have been combined into a single base.*

[3] *By Statute, negative amortization rates are not subtracted in Tier 3 rate calculations.*

IV. Asset Support

Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2021

Market Value Basis

	Tiers 1 & 2		Tier 3	
	Pension	**Health**	**Pension**	**Health**
Additions				
Contributions				
Member Contributions	$ 125,332,035	$ 0	$ 21,045,607	$ 0
Employer Contributions	1,907,760,231	0	21,046,874	0
Health Insurance Contributions	0	4,005,856	0	1,358,038
Total Contributions	2,033,092,266	4,005,856	42,092,481	1,358,038
Investment Income				
Net Increase in Fair Value	2,205,440,985	84,098,414	21,638,252	757,438
Interest and Dividends	71,848,357	2,739,739	704,927	24,676
Other Income	83,636,944	3,601,503	820,588	32,436
Less Investment Expenses	(50,004,841)	(1,785,590)	(490,613)	(16,082)
Net Investment Income	2,310,921,445	88,654,066	22,673,154	798,468
Transfers In	145,214	0	55,573	0
Total Additions	4,344,158,925	92,659,922	64,821,208	2,156,506
Deductions				
Distributions to Members				
Benefit Payments	933,886,583	0	57,370	0
Health Insurance Subsidy	0	16,906,670	0	0
Refund of Contributions	12,184,527	0	576,884	0
Total Distributions	946,071,110	16,906,670	634,254	0
Administrative Expenses	10,897,164	364,534	106,925	3,283
Transfers Out	276,873	0	0	0
Other	0	0	0	0
Total Deductions	957,245,147	17,271,204	741,179	3,283
Net Increase / (Decrease)	3,386,913,778	75,388,718	64,080,029	2,153,223
Net Position Held in Trust				
Prior Valuation	8,057,538,776	328,079,035	48,259,114	1,480,635
Beginning of the Year Adjustment	0	0	0	0
End of the Year	11,444,452,554	403,467,753	112,339,143	3,633,858

Development of Pension Actuarial Value of Assets - Tiers 1 & 2

A. Investment Income	
A1. Actual Investment Income	$ 2,300,024,281
A2. Expected Amount for Immediate Recognition	627,173,072
A3. Amount Subject to Amortization	1,672,851,209

	Year Ended June 30						
B. Amortization Schedule	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
2021 Experience (A3 / 7)	238,978,744	238,978,744	238,978,744	238,978,744	238,978,744	238,978,744	238,978,745
2020 Experience	(68,882,158)	(68,882,158)	(68,882,158)	(68,882,158)	(68,882,158)	(68,882,160)	
2019 Experience	(22,859,275)	(22,859,275)	(22,859,275)	(22,859,275)	(22,859,275)		
2018 Experience	(6,266,349)	(6,266,349)	(6,266,349)	(6,266,351)			
2017 Experience	33,380,149	33,380,149	33,380,148				
2016 Experience	(64,250,729)	(64,250,726)					
2015 Experience	(36,894,251)						
Total Amortization	73,206,131	110,100,385	174,351,110	140,970,960	147,237,311	170,096,584	238,978,745

C. Actuarial Value of Assets	Total	Employer
C1. Actuarial Value of Assets, 06/30/2020	8,675,448,922	
C2. Non-investment Net Cash Flow	1,086,889,497	
C3. Preliminary Actuarial Value of Assets, 06/30/2021 (A2 + B + C1 + C2)	10,462,717,622	
C4. Market Value of Assets, 06/30/2021	11,444,452,554	51,161,889
C5. Final Actuarial Value of Assets, 06/30/2021 (C3 Within 20% Corridor of C4)	10,462,717,622	46,773,089

D. Rates of Return	
D1. Market Value Rate of Return	26.7%
D2. Actuarial Value Rate of Return	7.6%

Development of Health Actuarial Value of Assets - Tiers 1 & 2

A. Investment Income	
A1. Actual Investment Income	$ 88,289,532
A2. Expected Amount for Immediate Recognition	23,487,183
A3. Amount Subject to Amortization	64,802,349

	Year Ended June 30						
B. Amortization Schedule	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
2021 Experience (A3 / 7)	9,257,478	9,257,478	9,257,478	9,257,478	9,257,478	9,257,478	9,257,481
2020 Experience	(2,898,713)	(2,898,713)	(2,898,713)	(2,898,713)	(2,898,713)	(2,898,716)	
2019 Experience	(1,075,569)	(1,075,569)	(1,075,569)	(1,075,569)	(1,075,572)		
2018 Experience	(304,653)	(304,653)	(304,653)	(304,656)			
2017 Experience	1,532,136	1,532,136	1,532,136				
2016 Experience	(3,221,043)	(3,221,044)					
2015 Experience	(1,796,586)						
Total Amortization	1,493,050	3,289,635	6,510,679	4,978,540	5,283,193	6,358,762	9,257,481

C. Actuarial Value of Assets	Total	Employer
C1. Actuarial Value of Assets, 06/30/2020	355,709,881	
C2. Non-investment Net Cash Flow	(12,900,814)	
C3. Preliminary Actuarial Value of Assets, 06/30/2021 (A2 + B + C1 + C2)	367,789,300	
C4. Market Value of Assets, 06/30/2021	403,467,753	1,683,566
C5. Final Actuarial Value of Assets, 06/30/2021 (C3 Within 20% Corridor of C4)	367,789,300	1,534,689

D. Rates of Return	
D1. Market Value Rate of Return	27.5%
D2. Actuarial Value Rate of Return	7.2%

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Development of Pension Actuarial Value of Assets - Tiers 3

A. Investment Income	
A1. Actual Investment Income	$ 22,566,229
A2. Expected Amount for Immediate Recognition	4,806,547
A3. Amount Subject to Amortization	17,759,682

	Year Ended June 30				
B. Amortization Schedule	**2021**	**2022**	**2023**	**2024**	**2025**
2021 Experience (A3 / 5)	3,551,936	3,551,936	3,551,936	3,551,936	3,551,938
2020 Experience	(351,296)	(351,296)	(351,296)	(351,294)	
2019 Experience	44,435	44,435	44,437		
2018 Experience	(370)	(371)			
2017 Experience	0				
Total Amortization	3,244,705	3,244,704	3,245,077	3,200,642	3,551,938

C. Actuarial Value of Assets	**Total**	**Employer**
C1. Actuarial Value of Assets, 06/30/2020	49,531,567	
C2. Non-investment Net Cash Flow	41,513,800	
C3. Preliminary Actuarial Value of Assets, 06/30/2021 (A2 + B + C1 + C2)	99,096,619	
C4. Market Value of Assets, 06/30/2021	112,339,143	51,992,240
C5. Final Actuarial Value of Assets, 06/30/2021 (C3 Within 20% Corridor of C4)	99,096,619	45,863,401

D. Rates of Return	
D1. Market Value Rate of Return	32.7%
D2. Actuarial Value Rate of Return	11.5%

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Development of Health Actuarial Value of Assets - Tiers 3

A. Investment Income	
A1. Actual Investment Income	$ 795,185
A2. Expected Amount for Immediate Recognition	150,372
A3. Amount Subject to Amortization	644,813

	Year Ended June 30				
B. Amortization Schedule	**2021**	**2022**	**2023**	**2024**	**2025**
2021 Experience (A3 / 5)	128,963	128,963	128,963	128,963	128,961
2020 Experience	(10,555)	(10,555)	(10,555)	(10,557)	
2019 Experience	1,507	1,507	1,508		
2018 Experience	0	(2)			
2017 Experience	0				
Total Amortization	119,915	119,913	119,916	118,406	128,961

C. Actuarial Value of Assets	**Total**	**Employer**
C1. Actuarial Value of Assets, 06/30/2020	1,518,500	
C2. Non-investment Net Cash Flow	1,358,038	
C3. Preliminary Actuarial Value of Assets, 06/30/2021 (A2 + B + C1 + C2)	3,146,825	
C4. Market Value of Assets, 06/30/2021	3,633,858	1,651,097
C5. Final Actuarial Value of Assets, 06/30/2021 (C3 Within 20% Corridor of C4)	3,146,825	1,429,806

D. Rates of Return	
D1. Market Value Rate of Return	36.8%
D2. Actuarial Value Rate of Return	12.3%

V. Member Statistics

Valuation Data Summary

	June 30, 2021		June 30, 2020	
	Tiers 1 & 2	**Tier 3**	**Tiers 1 & 2**	**Tier 3**
Actives				
Number	68	12	73	9
Average Current Age	41.3	28.0	40.9	26.7
Average Age at Employment	26.5	26.4	26.7	25.8
Average Past Service	14.8	1.6	14.2	0.9
Average Annual Salary	$84,526	$55,480	$81,619	$53,586
Actives (transferred)				
Number	7	1	5	0
Average Current Age	33.8	27.1	32.7	N/A
Average Age at Employment	24.4	24.2	23.5	N/A
Average Past Service	9.3	2.9	9.2	N/A
Average Annual Salary	$61,007	$53,901	$60,837	N/A
Retirees				
Number	28	0	25	0
Average Current Age	58.8	N/A	58.7	N/A
Average Annual Benefit	$50,805	N/A	$50,349	N/A
Drop Retirees				
Number	9	N/A	9	N/A
Average Current Age	55.5	N/A	53.8	N/A
Average Annual Benefit	$70,927	N/A	$67,887	N/A
Beneficiaries				
Number	7	0	6	0
Average Current Age	67.5	N/A	69.2	N/A
Average Annual Benefit	$34,082	N/A	$34,740	N/A
Disability Retirees				
Number	11	0	12	0
Average Current Age	54.4	N/A	53.0	N/A
Average Annual Benefit	$39,355	N/A	$38,020	N/A
Inactive / Vested				
Number	9	1	9	1
Average Current Age	46.1	22.2	43.0	25.5
Average Accumulated Contributions	$38,421	$2,196	$30,066	$9,493
Total Number	139	14	139	10
Former Members (transferred)	3	0	2	0

Counts and Pay Summary by Service - Tiers 1 & 2

	Past Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30+	Total Count	Total Pay	Average Pay
<20	0	0	0	0	0	0	0	0	0	0
20 - 24	0	0	0	0	0	0	0	0	0	0
25 - 29	2	4	0	0	0	0	0	6	405,883	67,647
30 - 34	0	12	4	0	0	0	0	16	1,232,630	77,039
35 - 39	0	4	5	4	0	0	0	13	995,881	76,606
40 - 44	0	3	1	15	2	0	0	21	1,708,285	81,347
45 - 49	0	0	1	2	4	1	0	8	770,872	96,359
50 - 54	0	0	1	4	1	2	0	8	810,023	101,253
55 - 59	0	0	1	1	0	0	1	3	251,227	83,742
60 - 64	0	0	0	0	0	0	0	0	0	0
65+	0	0	0	0	0	0	0	0	0	0
Total	2	23	13	26	7	3	1	75	6,174,801	82,331

Counts and Pay Summary by Service - Tier 3

	Past Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30+	Total Count	Total Pay	Average Pay
15 - 19	0	0	0	0	0	0	0	0	0	0
20 - 24	3	0	0	0	0	0	0	3	165,957	55,319
25 - 29	7	0	0	0	0	0	0	7	386,058	55,151
30 - 34	3	0	0	0	0	0	0	3	167,646	55,882
35 - 39	0	0	0	0	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0	0	0	0	0
45 - 49	0	0	0	0	0	0	0	0	0	0
50 - 54	0	0	0	0	0	0	0	0	0	0
55 - 59	0	0	0	0	0	0	0	0	0	0
60 - 64	0	0	0	0	0	0	0	0	0	0
65+	0	0	0	0	0	0	0	0	0	0
Total	13	0	0	0	0	0	0	13	719,661	55,359

VI. Actuarial Assumptions and Methods

Interest Rate

This is the assumed earnings rate on System assets, compounded annually, net of investment and administrative expenses.

Tiers 1 & 2:
7.30% per year.

Tier 3:
7.00% per year.

Salary Increases

See table below. This is an annual increase for individual member's salary. These rates, which are based on a 2017 experience study using actual plan experience, consist of 3.5% for wage inflation with the remaining portion for merit / seniority increases.

Age	Maricopa County Police	Pima County Police	Other Police	Maricopa County Fire	Pima County Fire	Other Fire
20	7.50%	7.50%	7.50%	7.50%	7.50%	7.20%
25	7.14%	6.24%	6.60%	7.35%	6.36%	6.60%
30	6.00%	5.16%	5.25%	6.74%	5.48%	5.60%
35	4.77%	4.55%	4.15%	5.56%	4.83%	4.96%
40	3.90%	3.89%	3.60%	4.46%	4.03%	4.44%
45	3.54%	3.56%	3.50%	3.74%	3.60%	3.78%
50+	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%

Inflation

2.50%.

Tier 3 Compensation Limit

$115,868 for calendar 2021. Assumed increases of 2.00% per year thereafter.

Cost-of-Living Adjustment

1.75%.

Mortality Rates

These rates are used to project future decrements from the population due to death.

Active Lives:
PubS-2010 Employee mortality, loaded 110% for males and females, projected with future mortality improvements reflected generationally using 75% of scale MP-2020. 100% of active deaths are assumed to be in the line of duty.

Inactive Lives
PubS-2010 Healthy Retiree mortality, loaded 110% for males and females, projected with future mortality improvements reflected

generationally using 75% of scale MP-2020.

Beneficiaries:
PubS-2010 Survivor mortality, projected with future mortality improvements reflected generationally using 75% of scale MP-2020.

Disabled Lives:
PubS-2010 Disabled mortality, projected with future mortality improvements reflected generationally using 75% of scale MP-2020.

The mortality assumptions sufficiently accommodate anticipated future mortality improvements.

Retirement / DROP 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.

Tier 1 – reaching age 62 before attaining 20 years of service:
Age-related rates based on age at retirement: 60% assumed at age 62, 50% assumed at ages 63 – 69, and 100% assumed at age 70. Rates are the same for all employers.

Tier 1 – reaching age 62 after attaining 20 years of service:
Service-related rates based on service at retirement:

Service	Maricopa County Police	Pima County Police	Other Police	Maricopa County Fire	Pima County Fire	Other Fire
20	27%	24%	35%	14%	18%	23%
21	18%	19%	30%	14%	18%	18%
22	14%	14%	23%	7%	11%	11%
23	10%	10%	10%	7%	7%	8%
24	8%	7%	10%	7%	7%	5%
25	38%	32%	36%	22%	22%	30%
26	36%	32%	30%	26%	26%	30%
27	29%	22%	30%	19%	19%	30%
28	29%	22%	30%	32%	25%	25%
29	29%	22%	30%	30%	25%	16%
30	34%	35%	30%	30%	30%	32%
31	34%	35%	30%	30%	30%	35%
32	65%	65%	70%	55%	55%	60%
33	65%	65%	70%	55%	55%	60%
34+	100%	100%	100%	100%	100%	100%

60% are assumed to enter the DROP program while the remaining 40% are assumed to retire and commence benefits immediately. DROP periods are assumed to be 4 years in length.

Tiers 2 & 3:
Age-related rates based on age at retirement:

Age	Maricopa County Police	Pima County Police	Other Police	Maricopa County Fire	Pima County Fire	Other Fire
53	38%	32%	36%	22%	22%	30%
54	36%	32%	30%	26%	26%	30%
55	29%	22%	30%	19%	19%	30%
56	29%	22%	30%	32%	25%	25%
57	29%	22%	30%	30%	25%	16%
58	34%	35%	30%	30%	30%	32%
59	34%	35%	30%	30%	30%	35%
60-63	65%	65%	70%	55%	55%	60%
64+	100%	100%	100%	100%	100%	100%

Termination Rate

These rates are used to project future decrements from the active population due to termination. Service-related rates based on service at termination are shown below. The rates below apply to members prior to retirement eligibility and are based on a 2017 experience study using actual plan experience.

Service	Maricopa County Police	Pima County Police	Other Police	Maricopa County Fire	Pima County Fire	Other Fire
1	14.00%	16.00%	16.00%	7.00%	10.00%	9.50%
2	8.50%	9.00%	12.50%	4.50%	5.00%	9.00%
3	6.50%	7.50%	11.50%	3.70%	5.00%	7.50%
4	4.50%	6.00%	9.00%	3.00%	4.00%	7.50%
5	3.60%	6.00%	8.00%	2.50%	4.00%	6.50%
6	3.30%	4.50%	8.00%	1.70%	3.50%	4.50%
7	3.30%	4.50%	7.00%	1.70%	3.00%	4.00%
8	3.30%	3.20%	7.00%	1.70%	2.40%	3.50%
9	2.70%	3.20%	6.50%	1.70%	2.40%	3.50%
10	2.70%	3.20%	6.00%	1.50%	2.40%	3.00%
11	2.70%	3.20%	5.00%	1.10%	2.40%	2.70%
12	1.80%	1.40%	4.00%	0.70%	1.00%	2.00%
13	1.30%	1.40%	3.50%	0.70%	1.00%	2.00%
14	1.30%	1.40%	3.00%	0.70%	1.00%	1.70%
15	1.30%	1.00%	3.00%	0.60%	1.00%	1.20%
16	0.70%	1.00%	2.00%	0.50%	1.00%	1.20%
17	0.70%	1.00%	1.75%	0.50%	0.50%	1.20%
18	0.70%	1.00%	1.75%	0.40%	0.50%	1.20%
19	0.50%	1.00%	1.75%	0.40%	0.50%	1.20%
20+	0.50%	1.00%	1.75%	0.40%	0.50%	0.50%

Disability Rate

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. 100% of disablements are assumed to be duty-related.

Age	Maricopa County Police	Pima County Police	Other Police	Maricopa County Fire	Pima County Fire	Other Fire
20	0.08%	0.08%	0.10%	0.03%	0.03%	0.03%
25	0.08%	0.08%	0.10%	0.03%	0.03%	0.03%
30	0.17%	0.16%	0.20%	0.04%	0.03%	0.03%
35	0.22%	0.21%	0.26%	0.09%	0.07%	0.08%
40	0.36%	0.35%	0.44%	0.17%	0.16%	0.17%
45	0.51%	0.49%	0.62%	0.17%	0.43%	0.48%
50	0.78%	0.75%	0.95%	0.43%	0.59%	0.65%
55	1.02%	0.98%	1.23%	1.00%	1.01%	1.13%

Marital Status

For active members, 85% of males and 60% 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

Method described below. Note that 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.

Tiers 1 & 2:
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.

Tier 3:
Each year the assumed investment income is recognized in full while the difference between actual and assumed investment income are smoothed over a 5-year period subject to a 20% corridor around the market value.

Funding Policy Amortization Method	***Tiers 1 & 2:*** 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 at most 30 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. ***Tier 3:*** Any positive UAAL (assets less than liabilities) is amortized according to a Level Dollar method over a closed period of 10 years. No amortization is made of any negative UAAL (assets greater than liabilities).
Payroll Growth	3.00% 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 payroll growth assumption was lowered from 3.50% to 3.00%.

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." For a better understanding of the overall Plan and the impact of these risks, please refer to the consolidated PSPRS valuation report.

Plan Maturity Measures and Other Risk Metrics - Tiers 1 & 2

	06/30/2018	06/30/2019	06/30/2020	06/30/2021
Support Ratio				
Total Actives	90	84	78	75
Total Inactives	52	56	61	64
Actives / Inactives	173.1%	150.0%	127.9%	117.2%
Asset Volatility Ratio				
Market Value of Assets (MVA)		36,587,342	38,542,634	51,161,889
Total Annual Payroll		6,569,363	6,262,347	6,174,801
MVA / Total Annual Payroll		556.9%	615.5%	828.6%
Accrued Liability (AL) Ratio				
Inactive Accrued Liability	28,120,209	34,483,737	37,987,923	41,295,836
Total Accrued Liability	57,022,056	62,278,853	67,240,526	70,792,554
Inactive AL / Total AL	49.3%	55.4%	56.5%	58.3%
Funded Ratio				
Actuarial Value of Assets (AVA)	34,172,618	37,842,906	41,498,361	46,773,089
Total Accrued Liability	57,022,056	62,278,853	67,240,526	70,792,554
AVA / Total Accrued Liability	59.9%	60.8%	61.7%	66.1%
Net Cash Flow Ratio				
Net Cash Flow [1]		1,315,467	1,532,336	1,738,938
Market Value of Assets (MVA)		36,587,342	38,542,634	51,161,889
Net Cash Flow / MVA		3.6%	4.0%	3.4%

[1] 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.

Plan Maturity Measures and Other Risk Metrics - Tier 3 [1]

	06/30/2018	06/30/2019	06/30/2020	06/30/2021
Support Ratio				
Total Actives	419	944	1,408	2,560
Total Inactives	23	57	130	307
Actives / Inactives	1,821.7%	1,656.1%	1,083.1%	833.9%
Asset Volatility Ratio				
Market Value of Assets (MVA)		9,392,896	22,964,925	51,992,240
Total Annual Payroll		50,420,565	84,448,996	115,883,115
MVA / Total Annual Payroll		18.6%	27.2%	44.9%
Accrued Liability (AL) Ratio				
Inactive Accrued Liability		203,244	1,173,104	2,290,610
Total Accrued Liability		7,956,725	23,239,599	42,733,537
Inactive AL / Total AL		2.6%	5.0%	5.4%
Funded Ratio				
Actuarial Value of Assets (AVA)	1,635,349	9,305,220	23,570,444	45,863,401
Total Accrued Liability	1,831,715	7,956,725	23,239,599	42,733,537
AVA / Total Accrued Liability	89.3%	116.9%	101.4%	107.3%
Net Cash Flow Ratio				
Net Cash Flow [2]		7,281,178	13,192,598	18,607,209
Market Value of Assets (MVA)		9,392,896	22,964,925	51,992,240
Net Cash Flow / MVA		77.5%	57.4%	35.8%

[1] *Tier 3 results are shown for the Risk Sharing group, where applicable.*
[2] *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 4 of the Arizona Revised Statutes.

Membership	Full-time employees of an eligible group, prior to attaining age 65, who are engaged to work for more than six months in a calendar year.
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 but before July 1, 2017 3 — Hired on or after July 1, 2017
Compensation	Compensation is the amount including base salary, overtime pay, shift and military differential pay, compensatory time used in lieu of overtime pay, and holiday pay, paid to an employee on a regular payroll basis and longevity pay paid at least every six months for which contributions are made to the System. For Tier 3 members, compensation is limited by statutory cap ($110,000 with adjustments by the Board).
Average Monthly Benefit Compensation	***Tier 1:*** The highest compensation paid to member during three consecutive years out of the last 20 years of Credited Service, divided by months. ***Tier 2:*** The highest compensation paid to member during five consecutive years out of the last 20 years of Credited Service, divided by months. ***Tier 3:*** The highest compensation paid to member during five consecutive years out of the last 15 years of Credited Service, divided by months.
Credited Service	Total periods of service, both before and after the member's date of participation, for which the member made contributions to the fund.
Normal Retirement Date	***Tier 1:*** First day of month following attainment of 1) 20 years of service or 2) 62nd birthday and completion of 15 years of service.

Tier 2:
First day of month following the attainment of age 52.5 and completion of 15 years of service.

Tier 3:
First day of month following the attainment of age 55 and completion of 15 years of service.

Benefit

Tier 1:
50% of Average Monthly Benefit Compensation, adjusted based on Credited Service as follows (maximum benefit of 80% of Average Monthly Benefit Compensation):

Credited Service	Benefit Adjustment
15 years, but less than 20	Reduced 4% per year less than 20
20 years, but less than 25	Plus 2% per year between 20 and 25
25+ years	Plus 2.5% per year above 20

Tier 2:
Benefit multiplier (below) times Average Monthly Benefit Compensation times Credited Service (maximum benefit of 80% of Average Monthly Benefit Compensation):

Credited Service	Benefit Multiplier
15 years, but less than 17	1.50%
17 years, but less than 19	1.75%
19 years, but less than 22	2.00%
22 years, but less than 25	2.25%
25+ years	2.50%

Tier 3:
Benefit multiplier (below) times Average Monthly Benefit Compensation times Credited Service (maximum benefit of 80% of Average Monthly Benefit Compensation):

Credited Service	Benefit Multiplier
15 years, but less than 17	1.50%
17 years, but less than 19	1.75%
19 years, but less than 22	2.00%
22 years, but less than 25	2.25%
25+ years	2.50%

Form of Benefit

For married retirees, an annuity payable for the life of the member with 80% continuing to the eligible spouse upon death. For unmarried retirees, the normal form is a single life annuity.

Early Retirement	***Only applicable to Tier 3 members:***
Date	Attainment of age 52.5 and 15 years of Credited Service.
Benefit	Actuarial equivalent of Normal Retirement benefit.
Disability Benefit – Accidental (duty-related)	
Eligibility	Total and permanent disability incurred in performance of duty.
Benefit Amount	A maximum of: a.) 50% of Average Monthly Benefit Compensation, and; b.) The monthly Normal Retirement pension that the member is entitled to receive if he or she retired immediately.
Disability Benefit – Ordinary (not duty-related)	
Eligibility	Total and permanent disability not incurred in performance of duty.
Benefit Amount	Normal Retirement pension that the member is entitled to receive, prorated based on Credited Service earned over the required Credited Service for Normal Retirement (maximum ratio of 1).
Disability Benefit – Other	
Temporary	Benefit equals 1/12 of 50% of compensation during year preceding date of disability. Payments terminate after 12 months.
Catastrophic	Benefit equals 90% of Average Monthly Benefit Compensation. After 60 months member receives greater of 62.5% Average Monthly Benefit Compensation and accrued normal pension.
Pre-Retirement Death Benefit	
Service Incurred	100% of Average Monthly Benefit Compensation, reduced by child's pension.
Non-Service Incurred	80% of benefit based on calculation for accidental disability retirement.
Child's Pension	10% of pension for each child (maximum 20% paid) based on calculation for accidental disability retirement. Payable to dependent child under age 18 (23, if full-time student).
Guardian's Pension	Same as spouse's pension. Payable (along with child's pension) when no spouse is being paid and there is at least one child under 18 (23, if full-time student).
Vesting (Termination)	
Vesting Service Requirement	***Tier 1*:** 10 years of Credited Service.

Tiers 2 & 3:
15 years of Credited Service.

Non-Vested Benefit

Tier 1:
Lump sum payment of accumulated contributions, plus additional amount based on years of Credited Service.

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%

Tiers 2 & 3:
Lump sum payment of accumulated contributions, with interest at rate determined by the Board.

Vested Benefit

Tier 1:
Deferred retirement annuity based on two times member's accumulated contributions, deferred to age 62. Member is not entitled to survivor benefits, benefit increases, or group health insurance subsidy.

Tiers 2 & 3:
Calculated same as normal retirement pension. Payable if contributions left in fund until reach age requirement. Member is entitled to survivor benefits, benefit increases, and group health insurance subsidy.

Cost-of-Living Adjustment

Payable to retired member or survivor of retired member

Tiers 1 & 2:
Compound cost-of-living adjustment on base benefit. First payment is made on July 1, 2018, 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%.

Tier 3:
Compound cost-of-living adjustment on base benefit beginning earlier of first calendar year after the 7th anniversary of retirement or when the retired member reaches 60 years of age.

A cost-of-living adjustment shall be paid on July 1 each year that the funded ratio for members hired on or after July 1, 2017 is 70% or more.

The 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. The cost-of-living adjustment will not exceed:

- 2%, if funded ratio for members who are hired on or after July 1, 2017 is 90% or more;
- 1.5%, if funded ratio for members who are hired on or after July 1, 2017 is 80-90%;
- 1%, if funded ratio for members who are hired on or after July 1, 2017 is 70-80%.

Deferred Retirement Option Plan (DROP):

Eligibility: Tier 1 and 20 years of Credited Service.

DROP Period: Maximum 60 months.

Member Contributions: Cease upon DROP entry.

Benefit Amount: Calculated based on Credited Service and average monthly compensation as of the beginning of the DROP period, credited to DROP participation account for DROP period.

Interest on DROP Participation Account:

Beginning Year	Interest Rate
July 1, 2016	7.40%
July 1, 2017	7.40%
July 1, 2018	7.30%
July 1, 2019	7.30%
July 1, 2020	7.30%

Payment of DROP Participation Account: Payable as lump sum distribution to Public Safety Personnel Defined Contribution Retirement Plan at end of DROP period or at termination.

Payment Monthly Benefit: System commences payment of benefit amount at the earlier of 1) the end of the DROP period and 2) at termination.

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

Employee Contributions

Members hired before July 20, 2011:
7.65%

Members hired on/after July 20, 2011, but before July 1, 2017:
11.65%. Amounts in excess of 7.65% are not used to reduce the employer contribution ("maintenance of effort").

Tier 3:
50% of total contribution, which is Normal Cost plus a level-dollar amortization of unfunded actuarial accrued liability over a closed period not to exceed 10 years.

Employer Contributions

Tiers 1 & 2:
Normal Cost plus amortization of unfunded actuarial accrued liability over a closed period not to exceed 20 years (subject to one-time election to extend to closed period not to exceed 30 years). Contribution will never be less than 8% of payroll.

Tier 3:
50% of total contribution, which is Normal Cost plus a level-dollar amortization of unfunded actuarial accrued liability over a closed period not to exceed 10 years.

Changes to Benefit Provisions Since the Prior Valuation

The proration period for the Ordinary Disability Benefit was revised to reflect the different required Credited Service periods for different benefit tiers.

IX. ACTUARIAL FUNDING POLICY

A pension plan funding policy describes how pension funding will improve for underfunded plans or maintain funded benefits for funded plans over time for those benefits defined in ARS. Those benefits defined in ARS are to be equitably managed and administered by PSPRS.

This Actuarial Funding Policy identifies the funding objectives and elements of the actuarial funding policy set by the Board for the Arizona Public Safety Personnel Retirement System (PSPRS). The Board adopted this Funding Policy to help ensure the systematic funding of future benefit payments for members of the Retirement System as established by the legislature.

To achieve the systematic funding of future benefits, metrics are identified to measure the progress, or the lack of progress, over time to identify trends. These trends inform the continuation of the current policies or identify areas of needed research for consideration.

This funding policy is reviewed annually and adopted by the Board in accordance with ARS 38-863.02. This policy was reviewed and adopted by the Board in October 2021.

PSPRS Statement of Purpose

The Purpose of the Public Safety Personnel Retirement System is to provide uniform, consistent, and equitable statewide retirement programs for those who have been entrusted to our care.

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.
    a. Corollary 1a: Current and future contributions should be calculated based upon assumptions that reflect the Board's best estimate of future experience and methods that appropriately allocate costs to address generational equity.
    b. Corollary 1b: While the shorter-term objective is to fully fund the actuarial liability (AAL) that estimates benefits earned as of the valuation date, contributions should target the long-term present value of benefits (PVB) to fund all benefits and help offset risks.

2. Maintain public policy goals of accountability and transparency through stakeholder communication and education. Each policy element is clear in intent and effect, and each should be considered in a balanced approach to determine how and when the funding requirements of the plan will be met.
    a. Corollary 2a: Board shall provide stakeholders with separate reports and tools to help explain current results as well as to help model future funding requirements.

3. Promote intergenerational equity. Defined benefit pensions are designed with a long-term perspective and designed to minimize contribution volatility that cannot avoid some level of generational cost shift. However, the goal is that each generation of members and employers (taxpayers) should, to the extent possible, incur the cost of benefits for the employees who provide services to them, rather than shifting those costs to other generations of members and employers (taxpayers).

a. Corollary 3a: A systematic reduction of the Unfunded Actuarial Accrued Liability (UAAL) over a reasonable time period is paramount to achieving this objective.

Consideration can be given to reduce volatility, to the extent possible, of employer and employee contribution rates as long as the integrity of the objectives listed above is not compromised.

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 (Tiers 1 and 2) or five years (Tier 3) in calculating the Actuarial Value of Assets.
   b. The Actuarial Value of Assets so determine shall be subject to a 20% corridor relative to the Market Value of Assets.

3. Amortization Method (Unfunded Amounts)
   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.
   b. The unfunded liabilities, for EORP and Tiers 1 & 2 for both PSPRS and CORP, determined in the June 30, 2019 actuarial valuation will become the initial layer for each employer beginning with the June 30, 2020 actuarial valuation and amortized using the current closed year period for that employer and continue to decrease each year.
      i. The payroll growth rate assumption used to amortize the Public Safety Plan (PSPRS) June 30, 2019 Unfunded Liability will be decreased by 0.5% beginning with the 6/30/2021 actuarial valuation and again each year with the intention of ultimately achieving 0.0%. Once the payroll growth assumption reaches 2.0%, however, the Board will reevaluate the payroll growth assumption and decide whether to continue to let it track down to 0.0%.
      ii. The payroll growth rate used to amortize the Correction Officers Retirement Plan (CORP) June 30, 2019 Unfunded Liability will be 3.0% beginning with the 6/30/2020 actuarial valuation, and future years will be reduced by 0.5% until 0.0% is reached.
      iii. The payroll growth rate used to amortize the Elected Officials Retirement Plan (EORP) June 30, 2019 Unfunded Liability will be 2.5% beginning with the 6/30/2020 actuarial valuation, and future years will be reduced by 0.5% until 0.0% is reached.
   c. Gains and losses, for EORP and Tiers 1 & 2 for both PSPRS and CORP, for each employer beginning with the June 30, 2020 actuarial valuation will be amortized as a new layer over the same amortization period as the regular unfunded liability to a minimum of 15 years. Once the amortization period for each employer decreases to 15 years, each subsequent year's gains and losses will be amortized as a new 15-year closed layer.
      i. The payroll growth rate used to amortize unfunded liability for all Plans under this paragraph will be 0.0% (i.e. level-dollar amortization).

d. Tier 3 amortization methods are established in ARS 38-843.G and ARS 38-891.K.

4. Amortization Method (Overfunded Amounts)
   a. If the Actuarial Value of Assets exceeds the AAL for EORP and Tiers 1 & 2 for both PSPRS and CORP, the excess is amortized over an open period of 20 years and applied as a credit to reduce the Normal Cost otherwise payable.
   b. Tier 3 amortization methods are established in ARS 38-843.G and ARS 38-891.K.

Metrics to Monitor Funding Objectives

1. Appropriateness of Assumptions – Gain/Loss Experience (Corollary 1a)
   a. Metric: Do the cumulative gain/loss layers over the prior five years exceed 8% of plan assets?
   b. Measurement: History of annual gain/loss (split by asset and liability experience) and five-year cumulative results will be tracked.
   c. Action Plan: This metric assumes that a full experience study is performed at least every five years so objective of measurement is to monitor interim experience. If the metric answer is yes, a review of the sources or causes of gains and losses should be analyzed and presented to the Advisory Committee to provide a recommendation to the Board of Trustees. The analysis and presentation are intended to provide a basis for consideration if assumption changes are warranted between full experience studies.

2. Funding Targets (Corollary 1b)
   a. Metric: Has the funded status, on both an AAL and PVB basis when compared to the market value of assets, increased over a five-year period?
   b. Measurement: History of funded status measures will be tracked.
   c. Action Plan: If the answer is no and not readily explainable (e.g., significant assumption change), a review of the reason(s) for the decrease should be researched and presented to the Advisory Committee to provide a recommendation to the Board of Trustees. The analysis and presentation are intended to provide a basis for consideration if changes to assumptions and/or methods are warranted between full experience studies.

3. Communication with Stakeholders (Corollary 2a)
   a. Metric: Have reports and budgeting tools been provided to stakeholders in a timely fashion?
   b. Measurement: Yes/No answer based on input from PSPRS administrator. (An annual standard survey of stakeholders – 3 to 5 questions.)
   c. Action Plan: If the answer is no, and periodically regardless (e.g., every three years), PSPRS staff will revisit this metric to report to the Advisory Committee to provide a recommendation to the Board of Trustees if current reports / tools are sufficient and if the delivery timing is appropriate.

4. Timely Recognition of Costs (Corollary 3a)
   a. Metric: Has the percentage of unfunded liability subject to negative amortization decreased over a five-year lookback period?
   b. Measurement: History of unfunded liability subject to negative amortization as a percentage of total unfunded liability will be tracked.
   c. Action Plan: If the answer is no, and not readily explainable (e.g., adopted assumption changes being phased in are anticipated to address negative amortization), a review of the reason(s) for negative amortization should be researched and presented to the Advisory Committee to provide a

recommendation to the Board of Trustees. The analysis and presentation are intended to provide a basis for consideration if changes to assumptions and/or methods are warranted between full experience studies.

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.

Town of Oro Valley
Public Safety Personnel Retirement System (PSPRS & CORP)
Pension Funding Policy – FY22/23

The intent of this policy is to clearly communicate the Town Council's pension funding objectives, its commitment to employees and the sound financial management of the Town of Oro Valley, and maintain compliance with statutory requirements of A.R.S. 38-863.01. The Council shall annually assess the status of the Town's PSPRS trust fund and take formal action to update this policy in concert with the final annual budget approval. This policy shall also apply to the Town's participation in the Correction Officer Retirement Plan (CORP).

Several terms are used throughout this policy and are defined as follows:

> **Unfunded Actuarial Accrued Liability (UAAL)** – Is the difference between trust assets and the estimated future cost of pensions earned by employees. This UAAL results from actual results (interest earnings, member mortality, disability rates, etc.) being different from the assumptions used in previous actuarial valuations.
>
> **Annual Required Contribution (ARC)** – Is the annual amount required to pay into the pension funds, as determined through annual actuarial valuations. It is comprised of two primary components: normal pension cost – which is the estimated cost of pension benefits earned by employees in the current year; and, amortization of UAAL – which is the cost needed to cover the unfunded portion of pensions earned by employees in previous years. The UAAL is collected over a period of time referred to as the amortization period. The ARC is a percentage of the current payroll.
>
> **Funded Ratio** – Is a ratio of fund assets to actuarial accrued liability. The higher the ratio, the better funded the pension is, with 100% being fully funded based on current actuarial valuations.
>
> **Intergenerational equity –** Is a concept used to describe the policy expectation that no generation is burdened by substantially more or less pension costs than past or future generations.

The Town's sworn police employees who are regularly assigned hazardous duty participate in the Public Safety Personnel Retirement System (PSPRS). Selected individuals who serve as dispatchers in the Oro Valley Police Department participate in the CORP plan, which is also administered by the Public Safety Personnel Retirement System.

Public Safety Personnel Retirement System (PSPRS)

PSPRS is administered as an agent multiple-employer pension plan. An agent multiple-employer plan has two main functions: 1) to comingle assets of all plans under its administration, thus achieving economy of scale for more cost efficient investments, and invest those assets for the benefit of all members under its administration and 2) serve as the statewide uniform administrator for the distribution of benefits.

Under an agent multiple-employer plan, each agency participating in the plan has an individual trust fund reflecting that agencies' assets and liabilities. Under this plan all contributions are deposited to and distributions are made from that fund's assets, each fund has its own funded ratio and contribution rate, and each fund has a unique annual actuarial valuation. The Town of Oro Valley has one trust fund for police employees. The Town also contributes to the Correction Officer Retirement Plan (CORP), administered by the Public Safety Personnel Retirement System, on behalf of selected individuals who serve as dispatchers in the Oro Valley Police Department. CORP maintains one trust fund for dispatchers.

Oro Valley Town Council formally accepts the assets, liabilities, and current funding ratio of the Town's PSPRS and CORP trust funds from the June 30, 2021 actuarial valuations specified below.

Trust Fund	**Assets**	**Accrued Liability**	**Unfunded Actuarial Accrued Liability**	**Funded Ratio**
Oro Valley Police (PSPRS)	$46,773,089	$70,792,554	$24,019,465	66.1%
Oro Valley Dispatchers (CORP)	$ 1,649,829	$ 3,551,295	$ 1,901,466	46.5%

Note: The Town of Oro Valley funded the PSPRS Pension Plan with $27.6M in July 2021, after the June 30, 2021 actuarial report was prepared. At this time, it is expected the plan is 100% funded.

PSPRS and CORP Funding Goal

Pensions that are less than fully funded place the cost of service provided in earlier periods (amortization of UAAL) on current taxpayers. Fully funded pension plans are the best way to achieve taxpayer and member intergenerational equity.

The Council's PSPRS and CORP funding ratio goal is 100% (fully funded) through June 30, 2036 and beyond. Council establishes this goal for the following reasons:

- The PSPRS and CORP trust funds represent only the Town of Oro Valley's liability
- The fluctuating cost of an UAAL causes strain on the Town's budget, affecting the Town's ability to provide services
- A fully funded pension is the best way to achieve taxpayer and member intergenerational equity

Council has determined that in order to achieve the 100% funding ratio goal, the following actions will be taken:

- Maintain ARC payment from operating revenues – Council is committed to maintaining the full ARC payment (normal cost and UAAL amortization) from operating funds. The estimated combined ARC for FY21/22 is estimated at $2.9 million for PSPRS and at $183,000 for CORP and shall be paid from operating funds.

- At such time the ARC is projected to be reduced, the Town should endeavor to continue paying the ARC at the higher rate (currently 43.47% for Police), to maintain the funding ratio goal of 100%. This is due to historically poor investment performance in the Plan and should assist in mitigating that risk should it continue.
- Retain 20-year amortization of unfunded liability
- Review Local board practices annually
- Periodically engage consultants to review actual results and recommend possible adjustments or corrections as necessary

Payments to PSPRS will be as follows:

- In FY22, the Town will make approximately $2.9M in payments based upon a 43.57% contribution rate.
- In FY23, the Town will make approximately $2.9M in payments based upon a 43.47% contribution rate.
- In FY24 and subsequent years, the Town will continue maintaining a 100% funding ratio. If the funding ratio grows to over 110%, the Town Manager through the budget process, may recommend applying funding to other Town priorities. If the funding ratio falls below 100%, future additional payments will be made to restore the funding ratio back to 100%.

It is hereby the Town Council's intent to achieve its goal of 100% funding by June 30, 2036, in accordance with the amortization timeline set forth by the PSPRS and CORP June 30, 2021 Actuarial Valuation

The attached appendix shows the historical performance of the unfunded actuarial accrued liability.

Appendix A

Year	Trust Fund	Assets	Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio
2014	Oro Valley Police	23,567,852	36,122,643	(12,554,791)	65%
2014	Oro Valley Dispatchers	1,216,956	2,269,744	(1,052,788)	54%
2015	Oro Valley Police	26,200,389	40,452,911	(14,252,522)	65%
2015	Oro Valley Dispatchers	1,205,067	2,362,604	(1,157,537)	51%
2016	Oro Valley Police	29,296,195	48,414,270	(19,118,075)	61%
2016	Oro Valley Dispatchers	1,163,258	2,524,360	(1,361,102)	46%
2017	Oro Valley Police	31,882,797	53,037,566	(21,154,769)	60%
2017	Oro Valley Dispatchers	1,260,798	3,077,649	(1,816,851)	41%
2018	Oro Valley Police	34,172,618	57,022,056	(22,849,438)	60%
2018	Oro Valley Dispatchers	1,337,558	2,945,307	(1,607,749)	45%
2019	Oro Valley Police	37,842,906	62,278,853	(24,435,947)	61%
2019	Oro Valley Dispatchers	1,424,947	3,240,399	(1,815,452)	44%
2020	Oro Valley Police	41,498,361	67,240,526	(25,742,165)	62%
2020	Oro Valley Dispatchers	1,504,732	3,374,933	(1,870,201)	45%
2021	Oro Valley Police	46,773,089	70,792,554	(24,019,465)	66%
2021	Oro Valley Dispatchers	1,649,829	3,551,295	(1,901,466)	46%

Source: Town Comprehensive Annual Financial Report for June 30, 2021 – Note 15.