
**TUCSON AIRPORT AUTHORITY | Public Safety Personnel Retirement Board (PSPRS)
Local Board Meeting
Tuesday, June 7, 2022 | 8:00 a.m. | Virtual Meeting**

Pursuant to A.R.S. § 38-431.02, notice is hereby given to the members of the Tucson Airport Authority (TAA) **Public Safety Personnel Retirement System Local Board** and to the public that the Board will hold a hold a meeting open to the public on **Tuesday, June 7, 2022, beginning at 8:00 a.m.** Board members may attend either virtually or telephonically for the purpose of conducting regular business.

The Board may vote to go into executive session pursuant to A.R.S. § 38-431.03 for the purpose of discussion or for legal advice with the Board attorney, or for confidential medical review, regarding any item on this agenda. If authorized by a majority vote of the Board members, the executive session will be held immediately after the vote and will not be open to the public. An executive session, if approved, is authorized under A.R.S. § 38-431.03(A)(3).

Members of the public may observe the public portions of the meeting. Click on the hyperlink below to be taken to the Microsoft Teams registration form. Upon registering, you will receive an email confirmation containing the hyperlink, telephone number, and access code to join the meeting virtually or telephonically.

MICROSOFT TEAMS REGISTRATION FORM

The agenda for the meeting is as follows:

1. CALL TO ORDER | ROLL CALL

APPOINTED MEMBERS:

- Jim Ronstadt, Chair
- Taunya Villicaña
- John Ivanoff

ELECTED MEMBERS:

- Firefighter Scott Lackey
- Officer Raymon Smith

2. APPROVAL OF MINUTES

Approve the minutes of the PSPRS Local Board meeting held on March 1, 2022.

3. PRESENTATION | DISCUSSION

- a. TAA PSPRS FUNDING POLICY FOR FY2022:** The Board will receive a report on the FY2022 PSPRS Funding Policy approved by the TAA Board of Directors.
- b. JEFFREY STREBING DISABILITY APPLICATION:** The PSPRS Local Board will receive an update on the status of the disability application filed by Jeffrey Strebing.

4. ACTION ITEMS

- a. **ACTUARIAL REPORTS:** The PSPRS Local Board will consider and approve the valuation reports for fiscal year ending June 30, 2021, for both Police and Fire Departments at TAA.
- b. **PSPRS MEMBERSHIP AND PRE-EXISTING CONDITION DETERMINATIONS:** The PSPRS Local Board will discuss, consider, and may take appropriate action regarding the membership and pre-existing condition determination for new hires.
 - i. Daniel Daw, Firefighter, DOH, 4/4/2022, Tier 3 date 7/3/2022
 - ii. Alexander Rios, Police Officer, DOH, 5/2/2022, Tier 3 date 7/30/2022

5. NEXT MEETING

Tuesday, September 6, 2022 | 8:00 a.m. | Virtual meeting via Microsoft Teams

6. ADJOURN

Contact:

Byron M. Jones, CMC, Acting PSPRS Local Board Secretary

Direct: (520) 573-4822

Email: bjones@flytucson.com

**TUCSON AIRPORT AUTHORITY | Public Safety Personnel Retirement System (PSPRS)
Local Board Meeting
March 1, 2022 | 8:00 a.m. | Remote Participation Only**

THIS BOARD MEETING WAS HELD WITH REMOTE PARTICIPATION ONLY, WITH BOARD MEMBERS ATTENDING VIA MICROSOFT TEAMS OR TELEPHONICALLY. MEMBERS OF THE PUBLIC WHO REGISTERED FOR THE EVENT RECEIVED A NOTIFICATION CONTAINING THE INFORMATION TO VIEW THE MEETING VIA MICROSOFT TEAMS OR LISTEN TO THE MEETING TELEPHONICALLY.

1. CALL TO ORDER | ROLL CALL

Chair Ronstadt called the meeting to order at 8:00 a.m.

Members Present: Chair Jim Ronstadt, Appointed Board Member Taunya Villicaña, Appointed Board Member John Ivanoff, Elected Board Member Scott Lackey (Fire), and Elected Board Member Raymon Smith (Police)

Members Absent: None

Staff Present:

Local Board Attorney Representative(s):

- Pamela Treadwell-Rubin, Esq.,
Goering, Roberts, Rubin, Brogna, Enos & Treadwell-Rubin, P.C.
- Andrew Apodaca, Esq.,
Goering, Roberts, Rubin, Brogna, Enos & Treadwell-Rubin, P.C.

Tucson Airport Authority (TAA) Representative(s):

- Legal Representative: Deputy General Counsel Kim Ryan
- HR Representative: Director of People Operations Andy Votava
- Acting Local Board Secretary: TAA Clerk Byron Jones
- IT Support: IT Support Technician Randy Janek

2. CONSENT AGENDA

a. **APPROVAL OF MINUTES:** Approve the minutes of the Tucson Airport Authority Public Safety Personnel Retirement System Local Board Meeting held on December 20, 2021.

b. **ACTING LOCAL BOARD SECRETARY:** Authorize Byron Jones, TAA Clerk, to serve as Acting Local Board Secretary during Ms. Agar's absence.

MOTION BY Board Member Villicaña, SECONDED BY Board Member Ivanoff, to APPROVE the consent agenda. The motion carried by the following vote:

Ayes 4 Chair Ronstadt, Board Member Villicaña, Board Member Ivanoff, and Board Member Lackey

Nays 0

3. ACTION ITEMS

a. REPORT OF ELECTION RESULTS:

Acting Local Board Secretary Byron Jones reported that an election was held from February 23 through 25, 2022, to select a certified plan member to fill the unexpired term of Captain Chuck Glover, ending on June 30, 2025. Seventeen votes were cast. Officer Raymon Smith received a plurality of the votes and was declared ELECTED.

Mr. Jones administered the Oath of Office to Officer Smith.

Local Board Attorney Pamela Treadwell-Rubin advised the Board that she and Mr. Apodaca had legal advice and confidential medical review to provide.

MOTION BY Board Member Villicaña, SECONDED BY Board Member Ivanoff, to CONVENE into executive session to discuss items 3. b. through 3. c. vi. The motion carried by the following vote:

Ayes 4 Chair Ronstadt, Board Member Villicaña, Board Member Ivanoff, and Board Member Lackey

Nays 0

The open meeting recessed, and the Local Board went into executive session at 8:05 a.m.

The executive session adjourned at 8:56 a.m.

The open meeting resumed at 9:02 a.m. Mr. Votava returned to the meeting room.

b. DISCUSSION, CONSIDERATION AND APPROPRIATE ACTION REGARDING THE DISABILITY APPLICATION FILED BY THE FOLLOWING MEMBER(S):

i. Jeffrey Strebing

MOTION BY Board Member Ivanoff, SECONDED BY Board Member Villicaña, to ACCEPT the Accidental Disability application of Jeffrey Strebing, filed on or about January 24, 2022, for further investigation and action. The motion carried by the following vote:

Ayes 5 Chair Ronstadt, Board Member Villicaña, Board Member Ivanoff, Board Member Lackey, and Board Member Smith

Nays 0

MOTION BY Board Member Ivanoff, SECONDED BY Board Member Lackey, to TABLE the Application for an Accidental Disability for Jeffrey Strebing, for further investigation, including to obtain additional details of the claim, and/or medical, industrial, and/or employment records. The motion carried by the following vote:

Ayes 5 Chair Ronstadt, Board Member Villicaña, Board Member Ivanoff, Board Member Lackey, and Board Member Smith

Nays 0

c. DISCUSSION, CONSIDERATION, AND APPROPRIATE ACTION FOR PSPRS MEMBERSHIP AND PREEXISTING CONDITION DETERMINATIONS FOR NEW HIRES:

- i. Calvin Hernandez, Police Officer, DOH 2/14/2022, Tier 3 date 5/15/2022
- ii. Hunter Mortiz, Police Officer, DOH 2/28/2022, Tier 3 date 5/30/2022
- iii. Kenneth Carfagno, Police Officer, DOH 2/28/2022, Tier 3 date 5/30/2022
- iv. Mark Velasquez, Firefighter, DOH 3/7/2022, Tier 3 date 6/5/2022
- v. Jack Burr, Firefighter, DOH 3/7/2022, Tier 3 date 6/5/2022
- vi. Chris Parvi, Firefighter, DOH 3/7/2022, Tier 3 date 6/5/2022

Board Member Smith recused himself from any review of medical records, discussion and voting on the Calvin Hernandez matter, as he is currently a Field Training Officer (FTO) assigned to that officer's supervision.

MOTION BY Board Member Ivanoff, SECONDED BY Board Member Lackey, to FIND that the new hires meet all applicable PSPRS membership definitions, including the definition of Member, A.R.S. § 38-842 (31), and all its related definitions, and regular assignment to hazardous duty, pursuant to A.R.S. § 38-842 (42), effective on the dates of their hire, with Tier 3 dates as listed in the agenda. The motion carried by the following vote:

Ayes 4 Chair Ronstadt, Board Member Villicaña, Board Member Ivanoff, and Board Member Lackey

Nays 0

Recusals 1 Board Member Smith

MOTION BY Board Member Villicaña, SECONDED BY Board Member Ivanoff, to TABLE the pre-existing condition determination as to all new hires, until appropriate medical documentation can be obtained in compliance with A.R.S. § 38-859 (A)(1), (B), and to APPROVE the use of the Pre-existing Condition Report form. The motion carried by the following vote:

Ayes 4 Chair Ronstadt, Board Member Villicaña, Board Member Ivanoff, and Board Member Lackey

Nays 0

Recusals 1 Board Member Smith

d. PSPRS MODEL RULES UPDATE:

Ms. Treadwell-Rubin reported that recent changes to the PSPRS Model Rules suggest a possible limitation on how much of the pre-existing condition reports the local boards are entitled to see. The attorneys are drafting a self-contained report requesting information that can still be obtained within the protocols of the current physical exam. As there is currently no comparable medical report form for firefighters to the one used by the Arizona Peace Officer Standards and Training Board, the attorneys are recommending that the firefighters use the Pre-existing Condition Report form. Copies of the form should be distributed to the physicians performing the pre-hire physicals. Depending on the clarify and completeness of the forms being returned, the attorneys may consider conducting educational outreach to the physicians.

4. NEXT MEETING

Tuesday, June 7, 2022 | 8:00 a.m. | Remote participation via Microsoft Teams

5. ADJOURN

MOTION BY Board Member Villicaña, SECONDED BY Board Member Lackey, to ADJOURN the meeting. The motion carried by the following vote:

Ayes 5 Chair Ronstadt, Board Member Villicaña, Board Member Ivanoff, Board Member Lackey, and Board Member Smith

Nays 0

There being no further business to discuss, Chair Ronstadt adjourned the meeting at 9:11 a.m.

APPROVED BY:

Prepared by:

Jim Ronstadt, Chair

Byron M. Jones, CMC, Acting Local Board Secretary

Date: _____

Date: _____

DRAFT

**Public Safety Personnel Retirement
System Pension Funding Policy FY2022**

Policy No.	2022-03
Date	04/06/2022
Authorized By	D. Bewley
Supersedes Policy No.	N/A

This policy is a statement of the objectives of the Tucson Airport Authority (TAA) regarding the funding of the public safety pension in which it participates for public safety employees participating in the Public Safety Personnel Retirement System (PSPRS) hired before July 1, 2017. It represents a commitment to our participating PSPRS employees and was specifically prepared to assure TAA’s compliance with A.R.S § 38-863.01.

TAA PSPRS Plan Description

Employees of the TAA who are employed in either police or firefighting capacities and meet the minimum work qualifications participate in PSPRS. The PSPRS administers an agent multiple-employer defined benefit pension plan. The PSPRS acts as a common investment and administrative agent which issues, on an annual basis, financial reports detailing pension plan assets, liabilities, pertinent funding information and actuarial assumptions. Under this structure, PSPRS comingles investment resources of all participating agencies and serves as the statewide uniform distributor of benefits. However, each participating agency is treated as an individual trust fund, with separately identifiable assets and liabilities. There are two separate participating agencies within TAA: Tucson Airport Authority Police Department (TAAPD), and Tucson Airport Authority Fire Department (TAAFD).

Stability and Frequency of Contributions

Upon completion of the bi-weekly payroll process, TAA shall remit to the PSPRS all required pension contributions for participating employees as defined by the PSPRS. In general, the required contributions are derived by applying the required percentage contribution rate (published by PSPRS annually) to each employee’s pensionable wages (as defined by PSPRS).

The PSPRS contribution rate is comprised of two primary components:

- 1) Normal pension cost – estimated cost of pension benefits earned by participating employees in the current plan year
- 2) Amortization of any unfunded actuarial accrued liabilities (UAAL) – difference between trust assets and the estimated future costs of pensions earned by employees

GASB 68 statements published by PSPRS for the plan year ended June 30, 2021 for TAAPD and TAAFD reflected the following:

	TAAFD	TAAPD	Total
Total Pension Liability	\$19,884,116	\$22,684,942	\$42,569,058
Plan Fiduciary Net Position	20,205,933	23,820,740	44,026,673
Net Pension Liability (Asset)	\$ (321,817)	\$ (1,135,798)	\$(1,457,615)
Funded Ratio*	101.62%	105.01%	103.42%

*Plan fiduciary net position as a percent of total pension liability

Because TAA has a funded ratio of greater than 100% for the plan year ended June 30, 2021, there is no UAAL which limits the rate to the amount required to service the normal pension cost.

Acceptance of Pension Assets and Liabilities

TAA accepts the reported share of pension assets and liabilities for both TAAPD and TAAFD as presented in the GASB 68 statements provided by PSPRS.

Funded Ratio Target

In April of 2021, the TAA voluntarily contributed amounts to PSPRS estimated to equal the UAALs for both TAAPD and TAAFD to fully-fund each plan’s pension liability. The GASB 68 reports for the plan year ended June 30, 2021 confirm that the strategy was effective and the discretionary contribution was sufficient to achieve that goal.

TAA will continue to remit the required pension contributions on a bi-weekly basis as defined by PSPRS. Should the returns on PSPRS investments fall below the amounts used in the actuarial assumptions, TAA may again reflect a UAAL for one or both of its PSPRS pension plans. In this case, TAA will remit the required percentage of pensionable wages as defined by PSPRS, which will include both the normal contribution and an amount amortizing the UAAL, with the goal of maintaining a 100% funded ratio.

Authorized by:

Danette Bewley

Danette Bewley
 President/CEO

4/20/22

Date

**ARIZONA PUBLIC SAFETY PERSONNEL
RETIREMENT SYSTEM**

TUCSON AIRPORT AUTHORITY POLICE DEPT. (125)

ACTUARIAL VALUATION
AS OF JUNE 30, 2021

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



FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

December 2021

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

Re: Actuarial Valuation Report as of June 30, 2021 for Tucson Airport Authority Police Dept. (125)

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.

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.

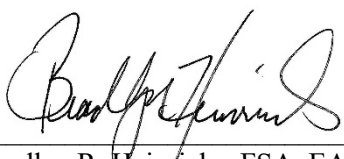
The undersigned are familiar with the immediate and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All sections of this report are considered an integral part of the actuarial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

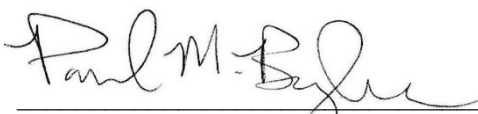
By: 
Paul M. Baugher, FSA, EA, MAAA

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I. SUMMARY OF REPORT

The regular annual actuarial valuation of the Arizona Public Safety Personnel Retirement System for the Tucson Airport Authority 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	24.17%	0.00%	24.17%	9.00%	0.12%	9.12%
Funded Status	96.0%	147.7%	96.5%	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

Valuation Date	Tier 1 & Tier 2 Members			Tier 3 Members *		
	Pension	Health	Total	Pension	Health	Total
June 30, 2020	97.53%	0.02%	97.55%	9.05%	0.13%	9.18%
June 30, 2021	24.17%	0.00%	24.17%	9.00%	0.12%	9.12%

Funded Status

Valuation Date	Tier 1 & Tier 2 Members			Tier 3 Members		
	Pension	Health	Total	Pension	Health	Total
June 30, 2020	26.1%	127.8%	27.2%	101.4%	203.9%	103.0%
June 30, 2021	96.0%	147.7%	96.5%	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	97.53%	0.02%	9.05%	0.13%
Asset Experience	(0.36%)	0.00%	(0.17%)	(0.01%)
Payroll Base	7.82%	(0.04%)	0.01%	(0.01%)
Liability Experience	(0.70%)	(0.12%)	(0.24%)	0.00%
Additional Contribution	(83.45%)	0.00%	0.00%	0.00%
Assumption/Method Change	0.00%	0.00%	0.00%	0.00%
Other	<u>3.33%</u>	<u>0.14%</u>	<u>0.35%</u>	<u>0.01%</u>
Contribution Rate This Valuation	24.17%	0.00%	9.00%	0.12%

	Funded Status			
	Tier 1 & Tier 2		Tier 3 Members	
	Pension	Health	Pension	Health
Funded Status Last Valuation	26.1%	127.8%	101.4%	203.9%
Asset Experience	0.3%	(0.2%)	3.4%	7.8%
Liability Experience	0.5%	13.5%	4.8%	0.0%
Additional Contribution	66.5%	0.0%	0.0%	0.0%
Assumption/Method Change	0.0%	0.0%	0.0%	0.0%
Other	<u>2.6%</u>	<u>6.6%</u>	<u>(2.3%)</u>	<u>(1.7%)</u>
Funded Status This Valuation	96.0%	147.7%	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 inactive. 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 105.0% (instead of 96.0%) and the pension employer contribution requirement would be 14.48% of payroll (instead of 24.17%).

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	24.68%	\$ 403,847	23.55%	\$ 375,378
Employee Cost	<u>(7.65%)</u>	<u>(125,179)</u>	<u>(7.65%)</u>	<u>(121,938)</u>
Employer (Net) Normal Cost	17.03%	278,668	15.90%	253,440
Amortization of Unfunded Liability	<u>7.14%</u>	<u>116,834</u>	<u>81.63%</u>	<u>1,301,152</u>
Total Employer Cost (Pension)	24.17%	395,502	97.53%	1,554,592
Health				
Normal Cost	0.43%	7,036	0.39%	6,216
Amortization of Unfunded Liability	<u>(0.43%)</u>	<u>(7,036)</u>	<u>(0.37%)</u>	<u>(5,898)</u>
Total Employer Cost (Health)	0.00%	0	0.02%	318
Total Employer Cost (Pension + Health)	24.17%	395,502	97.55%	1,554,910
Total Minimum Contribution Requirement (if applicable)	0.00%		0.00%	
Alternate Contribution Rate (ACR) *	8.00%		81.63%	
Underlying Payroll (as of valuation date)		1,588,673		1,540,061

* 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%	\$ 0	18.10%	\$ 25,649
Amortization of Unfunded Liability	<u>0.00%</u>	<u>0</u>	<u>0.00%</u>	<u>0</u>
Total Pension Cost	17.99%	0	18.10%	25,649
Employee (EE) Pension Cost	9.00%	0	9.05%	12,825
Employer (ER) Pension Cost	9.00%	0	9.05%	12,825
Health				
Total Normal Cost	0.24%	0	0.25%	354
Amortization of Unfunded Liability	<u>0.00%</u>	<u>0</u>	<u>0.00%</u>	<u>0</u>
Total Health Cost	0.24%	0	0.25%	354
Employee (EE) Health Cost	0.12%	0	0.13%	177
Employer (ER) Health Cost	0.12%	0	0.13%	177
Total				
Total Calculated Tier 3 Required EE/ER Individual Cost	9.12%	0	9.18%	13,002
Board Approved Tier 3 Required EE/ER Individual Cost ¹	9.94%	0	9.94%	14,086
ER Legacy Cost of Tiers 1 & 2 Amort of Unfunded Liabilities ²	7.14%	0	81.63%	115,675
Total Calculated Tier 3 Required ER Defined Benefit Cost	16.26%	0	90.81%	128,677
Total Board Approved Tier 3 Required ER Defined Benefit Cost	17.08%	0	91.57%	129,760
Underlying Payroll (as of valuation date)		0		136,914

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%	\$ 0	9.00%	\$ 0
Employee Health Subsidy Program Cost	0.19%	0		
Employee Disability Program Cost	<u>1.66%</u>	<u>0</u>	<u>0.88%</u>	<u>0</u>
Total Employee Cost	10.85%	0	9.88%	0
Employer Cost	9.00%	0	9.00%	0
Employer Health Subsidy Program Cost	0.19%	0		
Employer Disability Program Cost	<u>1.66%</u>	<u>0</u>	<u>0.88%</u>	<u>0</u>
Total Employer Cost (before Legacy)	10.85%	0	9.88%	0
ER Legacy Cost of Tiers 1 & 2 Amort of Unfunded Liabilities ²	7.14%	0	81.63%	0
Total Employer Cost	17.99%	0	91.51%	0
Underlying Payroll (as of valuation date)		0		0

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	17.46%	17.46%	17.46%	17.46%	9.94%	9.94%	
PSPRS DB Tier 1 & 2 Legacy Cost ²	6.71%	6.71%	6.71%	6.71%	7.14%	7.14%	7.14%
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	24.17%	24.17%	24.17%	28.17%	17.08%	20.08%	17.99%

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	\$100	\$200	\$300	\$400	\$500	\$600	\$700	\$800	\$900	\$1,000
Impact On											
Funded Status 06/30/2021	96.0%	96.4%	96.9%	97.3%	97.8%	98.2%	98.6%	99.1%	99.5%	100.0%	100.4%
FYE 2023 Contribution Rate	24.17%	23.53%	22.90%	22.26%	21.62%	20.98%	20.35%	19.71%	19.07%	18.43%	17.80%

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

	Valuation Date June 30	Fiscal Year Ending June 30	Normal Cost	Pension			Health		
				Unfunded Amortization	Total	Normal Cost	Unfunded Amortization	Total	
TIERS 1 & 2	2018	2020	13.55%	79.19%	92.74%	0.35%	0.12%	0.47%	
	2019	2021	12.59%	82.49%	95.08%	0.45%	(0.23%)	0.22%	
	2020	2022	15.90%	81.63%	97.53%	0.39%	(0.37%)	0.02%	
	2021	2023	17.03%	7.14%	24.17%	0.43%	(0.43%)	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	\$ 16,993,071	\$ 16,483,670
DROP Members	937,477	877,388
Vested Members	223,188	209,251
Active Members	<u>7,523,685</u>	<u>7,434,642</u>
Total Actuarial Present Value of Benefits	25,677,421	25,004,951
Actuarial Accrued Liability (AAL)		
All Inactive Members	18,153,736	17,570,309
Active Members	<u>4,531,206</u>	<u>4,738,772</u>
Total Actuarial Accrued Liability	22,684,942	22,309,081
Actuarial Value of Assets (AVA)	21,777,335	5,815,369
Unfunded Actuarial Accrued Liability		
Gross Unfunded Actuarial Accrued Liability	907,607	16,493,712
Stabilization Reserve	<u>0</u>	<u>0</u>
Net Unfunded Actuarial Accrued Liability	907,607	16,493,712
Funded Ratio (AVA / AAL)	96.0%	26.1%
Health		
Present Value of Benefits		
Retirees and Beneficiaries	\$ 123,406	\$ 151,472
DROP Members	14,986	14,060
Active Members	<u>139,802</u>	<u>130,970</u>
Total Present Value of Benefits	278,194	296,502
Actuarial Accrued Liability (AAL)		
All Inactive Members	138,392	165,532
Active Members	<u>84,222</u>	<u>84,201</u>
Total Actuarial Accrued Liability	222,614	249,733
Actuarial Value of Assets (AVA)	328,859	319,229
Unfunded Actuarial Accrued Liability	(106,245)	(69,496)
Funded Ratio (AVA / AAL)	147.7%	127.8%

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	<u>288,612,448</u>	<u>203,486,437</u>
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	<u>40,442,927</u>	<u>22,066,495</u>
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	<u>3,998,992</u>	<u>2,785,857</u>
Total Present Value of Benefits	3,998,992	2,785,857
Actuarial Accrued Liability (AAL)		
All Inactive Members	0	0
Active Members	<u>680,877</u>	<u>353,563</u>
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 Tucson Airport Authority 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	16,493,712	(69,496)	(330,845)	(367,516)
(2) Normal Cost Developed in Last Valuation	253,440	6,216	7,910,126	113,626
(3) Actual Contributions	16,841,672	3,496	9,445,404	586,975
(4) Expected Interest On (1), (2), and (3)	618,648	(4,745)	214,602	(39,581)
(5) Expected Unfunded Actuarial Accrued Liability as of June 30, 2021 (1)+(2)-(3)+(4)	524,128	(71,521)	(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	<u>383,479</u>	<u>(34,724)</u>	<u>(1,478,343)</u>	<u>131,517</u>
(8) Unfunded Actuarial Accrued Liability as of June 30, 2021	907,607	(106,245)	(3,129,864)	(748,929)

Amortization of Unfunded Liabilities - Tiers 1 & 2

	Date Established	Outstanding Balance ¹	Years Remaining	Amortization Rate
Pension	06/30/2019	0	15	0.00%
	06/30/2021 ²	<u>1,087,709</u>	15	<u>7.14%</u>
	Total	1,087,709		7.14%
Health	06/30/2019	0	15	0.00%
	06/30/2021 ²	<u>(106,245)</u>	20	<u>(0.60%)</u>
	Total	(106,245)		(0.60%)

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	<u>(2,834,549)</u>	10	<u>(0.35%)</u>
	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	<u>(409,544)</u>	10	<u>(0.05%)</u>
	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	<u>0</u>	<u>4,005,856</u>	<u>0</u>	<u>1,358,038</u>
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	<u>(50,004,841)</u>	<u>(1,785,590)</u>	<u>(490,613)</u>	<u>(16,082)</u>
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	<u>12,184,527</u>	<u>0</u>	<u>576,884</u>	<u>0</u>
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

B. Amortization Schedule	Year Ended June 30						
	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	23,820,740
C5. Final Actuarial Value of Assets, 06/30/2021 (C3 Within 20% Corridor of C4)	10,462,717,622	21,777,335

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

B. Amortization Schedule	Year Ended June 30						
	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	360,761
C5. Final Actuarial Value of Assets, 06/30/2021 (C3 Within 20% Corridor of C4)	367,789,300	328,859

D. Rates of Return

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

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

B. Amortization Schedule	Year Ended June 30				
	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%

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

B. Amortization Schedule	Year Ended June 30				
	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	11	0	12	0
Average Current Age	46.9	N/A	46.9	N/A
Average Age at Employment	33.3	N/A	33.8	N/A
Average Past Service	13.6	N/A	13.1	N/A
Average Annual Salary	\$95,289	N/A	\$98,231	N/A
Actives (transferred)				
Number	7	0	4	2
Average Current Age	38.9	N/A	39.7	36.7
Average Age at Employment	27.4	N/A	28.1	35.6
Average Past Service	11.6	N/A	11.6	1.1
Average Annual Salary	\$68,534	N/A	\$75,772	\$65,194
Retirees				
Number	15	0	15	0
Average Current Age	64.3	N/A	65.3	N/A
Average Annual Benefit	\$51,188	N/A	\$51,081	N/A
Drop Retirees				
Number	1	N/A	1	N/A
Average Current Age	57.7	N/A	56.7	N/A
Average Annual Benefit	\$56,511	N/A	\$56,511	N/A
Beneficiaries				
Number	4	0	4	0
Average Current Age	68.7	N/A	56.8	N/A
Average Annual Benefit	\$49,939	N/A	\$38,127	N/A
Disability Retirees				
Number	8	0	8	0
Average Current Age	57.9	N/A	56.9	N/A
Average Annual Benefit	\$42,917	N/A	\$42,075	N/A
Inactive / Vested				
Number	3	1	3	1
Average Current Age	44.6	27.9	43.6	26.9
Average Accumulated Contributions	\$2,176	\$567	\$2,176	\$567
Total Number	49	1	47	3
Former Members (transferred)	3	2	3	0

Counts and Pay Summary by Service - Tiers 1 & 2

Age	Past Service							Total Count	Total Pay	Average Pay
	0-4	5-9	10-14	15-19	20-24	25-29	30+			
<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	0	1	0	0	0	0	0	1	67,571	67,571
30 - 34	1	1	1	0	0	0	0	3	184,571	61,524
35 - 39	0	2	0	1	0	0	0	3	286,298	95,433
40 - 44	0	1	2	0	0	0	0	3	279,292	93,097
45 - 49	0	0	1	2	0	0	0	3	260,803	86,934
50 - 54	0	0	1	1	0	0	0	2	202,853	101,427
55 - 59	0	0	0	1	1	0	0	2	140,195	70,098
60 - 64	0	0	0	1	0	0	0	1	106,330	106,330
65+	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	1	5	5	6	1	0	0	18	1,527,913	84,884

Counts and Pay Summary by Service - Tier 3

Age	Past Service							Total Count	Total Pay	Average Pay
	0-4	5-9	10-14	15-19	20-24	25-29	30+			
15 - 19	0	0	0	0	0	0	0	0	0	0
20 - 24	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	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+	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	0	0	0	0	0	0	0	0	0

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.

	Maricopa	Pima		Maricopa	Pima	
	County	County	Other	County	County	Other
Age	Police	Police	Police	Fire	Fire	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:

	Maricopa County	Pima County	Other	Maricopa County	Pima County	Other
<u>Service</u>	<u>Police</u>	<u>Police</u>	<u>Police</u>	<u>Fire</u>	<u>Fire</u>	<u>Fire</u>
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:

<u>Age</u>	Maricopa	Pima	Other	Maricopa	Pima	Other
	County	County		County	County	
	<u>Police</u>	<u>Police</u>	<u>Police</u>	<u>Fire</u>	<u>Fire</u>	<u>Fire</u>
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.

<u>Service</u>	Maricopa	Pima	Other	Maricopa	Pima	Other
	County	County		County	County	
	<u>Police</u>	<u>Police</u>	<u>Police</u>	<u>Fire</u>	<u>Fire</u>	<u>Fire</u>
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.

<u>Age</u>	<u>Maricopa</u>	<u>Pima</u>	<u>Other</u>	<u>Maricopa</u>	<u>Pima</u>	<u>Other</u>
	<u>County</u>	<u>County</u>		<u>County</u>	<u>County</u>	
	<u>Police</u>	<u>Police</u>	<u>Police</u>	<u>Fire</u>	<u>Fire</u>	<u>Fire</u>
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	18	17	16	18
Total Inactives	28	28	31	31
Actives / Inactives	64.3%	60.7%	51.6%	58.1%
Asset Volatility Ratio				
Market Value of Assets (MVA)		5,609,193	5,401,168	23,820,740
Total Annual Payroll		1,351,250	1,481,859	1,527,913
MVA / Total Annual Payroll		415.1%	364.5%	1,559.0%
Accrued Liability (AL) Ratio				
Inactive Accrued Liability	15,093,298	16,782,721	17,570,309	18,153,736
Total Accrued Liability	19,420,581	21,170,391	22,309,081	22,684,942
Inactive AL / Total AL	77.7%	79.3%	78.8%	80.0%
Funded Ratio				
Actuarial Value of Assets (AVA)	4,955,672	5,801,683	5,815,369	21,777,335
Total Accrued Liability	19,420,581	21,170,391	22,309,081	22,684,942
AVA / Total Accrued Liability	25.5%	27.4%	26.1%	96.0%
Net Cash Flow Ratio				
Net Cash Flow ¹		462,630	(273,570)	15,830,277
Market Value of Assets (MVA)		5,609,193	5,401,168	23,820,740
Net Cash Flow / MVA		8.2%	(5.1%)	66.5%

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:

<u>Tier</u>	<u>Hire Date</u>
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.

Benefit

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.

Tier 1:

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

<u>Credited Service</u>	<u>Benefit Adjustment</u>
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):

<u>Credited Service</u>	<u>Benefit Multiplier</u>
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):

<u>Credited Service</u>	<u>Benefit Multiplier</u>
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

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.

<u>Service</u>	<u>Additional % of Contributions</u>
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	<u>Beginning Year</u>	<u>Interest Rate</u>
	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)	<u>Member Only</u>		<u>With Dependents</u>
	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.

**ARIZONA PUBLIC SAFETY PERSONNEL
RETIREMENT SYSTEM**

TUCSON AIRPORT AUTHORITY FIRE DEPT. (124)

ACTUARIAL VALUATION
AS OF JUNE 30, 2021

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



FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

December 2021

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

Re: Actuarial Valuation Report as of June 30, 2021 for Tucson Airport Authority Fire Dept. (124)

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.

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.

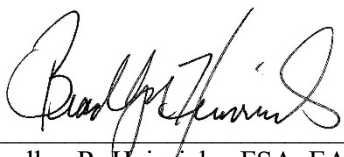
The undersigned are familiar with the immediate and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All sections of this report are considered an integral part of the actuarial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

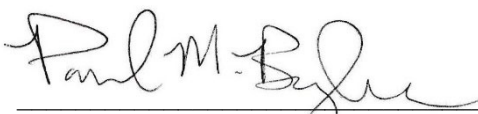
By: 
Paul M. Baugher, FSA, EA, MAAA

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I. SUMMARY OF REPORT

The regular annual actuarial valuation of the Arizona Public Safety Personnel Retirement System for the Tucson Airport Authority Fire 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	26.25%	0.02%	26.27%	9.00%	0.12%	9.12%
Funded Status	92.9%	119.7%	93.3%	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

Valuation Date	Tier 1 & Tier 2 Members			Tier 3 Members *		
	Pension	Health	Total	Pension	Health	Total
June 30, 2020	101.46%	0.00%	101.46%	9.05%	0.13%	9.18%
June 30, 2021	26.25%	0.02%	26.27%	9.00%	0.12%	9.12%

Funded Status

Valuation Date	Tier 1 & Tier 2 Members			Tier 3 Members		
	Pension	Health	Total	Pension	Health	Total
June 30, 2020	31.5%	131.5%	32.9%	101.4%	203.9%	103.0%
June 30, 2021	92.9%	119.7%	93.3%	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	101.46%	0.00%	9.05%	0.13%
Asset Experience	(0.39%)	0.00%	(0.17%)	(0.01%)
Payroll Base	2.80%	(0.01%)	0.01%	(0.01%)
Liability Experience	0.75%	(0.01%)	(0.24%)	0.00%
Additional Contribution	(85.71%)	0.00%	0.00%	0.00%
Assumption/Method Change	0.08%	0.00%	0.00%	0.00%
Other	<u>7.26%</u>	<u>0.04%</u>	<u>0.35%</u>	<u>0.01%</u>
Contribution Rate This Valuation	26.25%	0.02%	9.00%	0.12%

	Funded Status			
	Tier 1 & Tier 2		Tier 3 Members	
	Pension	Health	Pension	Health
Funded Status Last Valuation	31.5%	131.5%	101.4%	203.9%
Asset Experience	0.2%	(0.2%)	3.4%	7.8%
Liability Experience	(0.4%)	0.6%	4.8%	0.0%
Additional Contribution	60.9%	0.0%	0.0%	0.0%
Assumption/Method Change	0.0%	0.0%	0.0%	0.0%
Other	<u>0.7%</u>	<u>(12.2%)</u>	<u>(2.3%)</u>	<u>(1.7%)</u>
Funded Status This Valuation	92.9%	119.7%	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 inactive. 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 101.6% (instead of 92.9%) and the pension employer contribution requirement would be 13.55% of payroll (instead of 26.25%).

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	21.75%	\$ 246,257	22.25%	\$ 269,260
Employee Cost	<u>(7.65%)</u>	<u>(86,615)</u>	<u>(7.65%)</u>	<u>(92,577)</u>
Employer (Net) Normal Cost	14.10%	159,642	14.60%	176,683
Amortization of Unfunded Liability	<u>12.15%</u>	<u>137,564</u>	<u>86.86%</u>	<u>1,051,142</u>
Total Employer Cost (Pension)	26.25%	297,206	101.46%	1,227,825
Health				
Normal Cost	0.45%	5,095	0.44%	5,325
Amortization of Unfunded Liability	<u>(0.43%)</u>	<u>(4,869)</u>	<u>(0.44%)</u>	<u>(5,325)</u>
Total Employer Cost (Health)	0.02%	226	0.00%	0
Total Employer Cost (Pension + Health)	26.27%	297,432	101.46%	1,227,825
Total Minimum Contribution Requirement (if applicable)	0.00%		0.00%	
Alternate Contribution Rate (ACR) *	12.15%		86.86%	
Underlying Payroll (as of valuation date)		1,099,239		1,169,233

* 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%	\$ 26,368	18.10%	\$ 12,685
Amortization of Unfunded Liability	<u>0.00%</u>	<u>0</u>	<u>0.00%</u>	<u>0</u>
Total Pension Cost	17.99%	26,368	18.10%	12,685
Employee (EE) Pension Cost	9.00%	13,184	9.05%	6,343
Employer (ER) Pension Cost	9.00%	13,184	9.05%	6,343
Health				
Total Normal Cost	0.24%	352	0.25%	175
Amortization of Unfunded Liability	<u>0.00%</u>	<u>0</u>	<u>0.00%</u>	<u>0</u>
Total Health Cost	0.24%	352	0.25%	175
Employee (EE) Health Cost	0.12%	176	0.13%	88
Employer (ER) Health Cost	0.12%	176	0.13%	88
Total				
Total Calculated Tier 3 Required EE/ER Individual Cost	9.12%	13,360	9.18%	6,431
Board Approved Tier 3 Required EE/ER Individual Cost ¹	9.94%	14,569	9.94%	6,966
ER Legacy Cost of Tiers 1 & 2 Amort of Unfunded Liabilities ²	12.15%	17,808	86.86%	60,876
Total Calculated Tier 3 Required ER Defined Benefit Cost	21.27%	31,168	96.04%	67,307
Total Board Approved Tier 3 Required ER Defined Benefit Cost	22.09%	32,377	96.80%	67,842
Underlying Payroll (as of valuation date)		142,301		67,715

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%	\$ 0	9.00%	\$ 0
Employee Health Subsidy Program Cost	0.19%	0		
Employee Disability Program Cost	<u>1.66%</u>	<u>0</u>	<u>0.88%</u>	<u>0</u>
Total Employee Cost	10.85%	0	9.88%	0
Employer Cost	9.00%	0	9.00%	0
Employer Health Subsidy Program Cost	0.19%	0		
Employer Disability Program Cost	<u>1.66%</u>	<u>0</u>	<u>0.88%</u>	<u>0</u>
Total Employer Cost (before Legacy)	10.85%	0	9.88%	0
ER Legacy Cost of Tiers 1 & 2 Amort of Unfunded Liabilities ²	12.15%	0	86.86%	0
Total Employer Cost	23.00%	0	96.74%	0
Underlying Payroll (as of valuation date)		0		0

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		
	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	14.55%	14.55%	14.55%	14.55%	9.94%	9.94%	
PSPRS DB Tier 1 & 2 Legacy Cost ²	11.72%	11.72%	11.72%	11.72%	12.15%	12.15%	12.15%
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	26.27%	26.27%	26.27%	30.27%	22.09%	25.09%	23.00%

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	\$100	\$200	\$300	\$400	\$500	\$600	\$700	\$800	\$900	\$1,000
Impact On											
Funded Status 06/30/2021	92.9%	93.4%	93.9%	94.4%	94.9%	95.4%	95.9%	96.4%	96.9%	97.4%	97.9%
FYE 2023 Contribution Rate	26.27%	25.45%	24.64%	23.82%	23.01%	22.19%	21.38%	20.56%	19.75%	18.93%	18.12%

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

	Valuation Date June 30	Fiscal Year Ending June 30	Pension			Health		
			Normal Cost	Unfunded Amortization	Total	Normal Cost	Unfunded Amortization	Total
TIERS 1 & 2	2018	2020	14.88%	84.97%	99.85%	0.33%	(0.33%)	0.00%
	2019	2021	15.74%	79.45%	95.19%	0.48%	(0.48%)	0.00%
	2020	2022	14.60%	86.86%	101.46%	0.44%	(0.44%)	0.00%
	2021	2023	14.10%	12.15%	26.25%	0.45%	(0.43%)	0.02%
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	\$ 13,080,639	\$ 13,106,949
DROP Members	2,232,898	1,294,802
Vested Members	15,715	116,594
Active Members	<u>6,672,839</u>	<u>6,989,588</u>
Total Actuarial Present Value of Benefits	22,002,091	21,507,933
Actuarial Accrued Liability (AAL)		
All Inactive Members	15,329,252	14,518,345
Active Members	<u>4,554,864</u>	<u>4,661,355</u>
Total Actuarial Accrued Liability	19,884,116	19,179,700
Actuarial Value of Assets (AVA)	18,472,615	6,037,915
Unfunded Actuarial Accrued Liability		
Gross Unfunded Actuarial Accrued Liability	1,411,501	13,141,785
Stabilization Reserve	<u>0</u>	<u>0</u>
Net Unfunded Actuarial Accrued Liability	1,411,501	13,141,785
Funded Ratio (AVA / AAL)	92.9%	31.5%
Health		
Present Value of Benefits		
Retirees and Beneficiaries	\$ 170,116	\$ 152,452
DROP Members	38,389	19,607
Active Members	<u>133,052</u>	<u>139,429</u>
Total Present Value of Benefits	341,557	311,488
Actuarial Accrued Liability (AAL)		
All Inactive Members	208,505	172,059
Active Members	<u>90,119</u>	<u>94,558</u>
Total Actuarial Accrued Liability	298,624	266,617
Actuarial Value of Assets (AVA)	357,417	350,613
Unfunded Actuarial Accrued Liability	(58,793)	(83,996)
Funded Ratio (AVA / AAL)	119.7%	131.5%

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	<u>288,612,448</u>	<u>203,486,437</u>
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	<u>40,442,927</u>	<u>22,066,495</u>
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	<u>3,998,992</u>	<u>2,785,857</u>
Total Present Value of Benefits	3,998,992	2,785,857
Actuarial Accrued Liability (AAL)		
All Inactive Members	0	0
Active Members	<u>680,877</u>	<u>353,563</u>
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 Tucson Airport Authority Fire 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	13,141,785	(83,996)	(330,845)	(367,516)
(2) Normal Cost Developed in Last Valuation	176,683	5,325	7,910,126	113,626
(3) Actual Contributions	13,262,977	0	9,445,404	586,975
(4) Expected Interest On (1), (2), and (3)	496,676	(5,743)	214,602	(39,581)
(5) Expected Unfunded Actuarial Accrued Liability as of June 30, 2021 (1)+(2)-(3)+(4)	552,167	(84,414)	(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	<u>859,334</u>	<u>25,621</u>	<u>(1,478,343)</u>	<u>131,517</u>
(8) Unfunded Actuarial Accrued Liability as of June 30, 2021	1,411,501	(58,793)	(3,129,864)	(748,929)

Amortization of Unfunded Liabilities - Tiers 1 & 2

	Date Established	Outstanding Balance ¹	Years Remaining	Amortization Rate
Pension	06/30/2019	383,864	15	2.72%
	06/30/2021 ²	<u>1,122,888</u>	15	<u>9.43%</u>
	Total	1,506,752		12.15%
Health	06/30/2019	0	15	0.00%
	06/30/2021 ²	<u>(58,793)</u>	20	<u>(0.43%)</u>
	Total	(58,793)		(0.43%)

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	<u>(2,834,549)</u>	10	<u>(0.35%)</u>
	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	<u>(409,544)</u>	10	<u>(0.05%)</u>
	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	<u>0</u>	<u>4,005,856</u>	<u>0</u>	<u>1,358,038</u>
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	<u>(50,004,841)</u>	<u>(1,785,590)</u>	<u>(490,613)</u>	<u>(16,082)</u>
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	<u>12,184,527</u>	<u>0</u>	<u>576,884</u>	<u>0</u>
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

B. Amortization Schedule	Year Ended June 30						
	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	20,205,933
C5. Final Actuarial Value of Assets, 06/30/2021 (C3 Within 20% Corridor of C4)	10,462,717,622	18,472,615

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

B. Amortization Schedule	Year Ended June 30						
	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	392,089
C5. Final Actuarial Value of Assets, 06/30/2021 (C3 Within 20% Corridor of C4)	367,789,300	357,417

D. Rates of Return

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

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

B. Amortization Schedule	Year Ended June 30				
	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%

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

B. Amortization Schedule	Year Ended June 30				
	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	11	1	12	0
Average Current Age	41.9	25.1	41.0	N/A
Average Age at Employment	27.3	24.5	26.9	N/A
Average Past Service	14.6	0.6	14.1	N/A
Average Annual Salary	\$84,153	\$68,927	\$82,712	N/A
Actives (transferred)				
Number	2	1	2	1
Average Current Age	34.4	31.0	33.4	30.0
Average Age at Employment	25.7	28.3	29.1	28.2
Average Past Service	8.7	2.8	4.3	1.8
Average Annual Salary	\$64,270	\$65,158	\$63,937	\$64,172
Retirees				
Number	16	0	16	0
Average Current Age	64.3	N/A	63.3	N/A
Average Annual Benefit	\$56,107	N/A	\$55,007	N/A
Drop Retirees				
Number	2	N/A	1	N/A
Average Current Age	48.3	N/A	52.3	N/A
Average Annual Benefit	\$62,358	N/A	\$71,749	N/A
Beneficiaries				
Number	1	0	1	0
Average Current Age	80.7	N/A	79.7	N/A
Average Annual Benefit	\$52,261	N/A	\$51,237	N/A
Disability Retirees				
Number	2	0	2	0
Average Current Age	61.3	N/A	60.3	N/A
Average Annual Benefit	\$40,396	N/A	\$39,604	N/A
Inactive / Vested				
Number	2	0	3	0
Average Current Age	51.1	N/A	46.6	N/A
Average Accumulated Contributions	\$7,858	N/A	\$22,052	N/A
Total Number	36	2	37	1
Former Members (transferred)	0	0	0	0

Counts and Pay Summary by Service - Tiers 1 & 2

Age	Past Service							Total Count	Total Pay	Average Pay
	0-4	5-9	10-14	15-19	20-24	25-29	30+			
<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	0	0	0	0	0	0	0	0	0	0
30 - 34	0	1	1	0	0	0	0	2	128,539	64,270
35 - 39	0	2	4	0	0	0	0	6	482,120	80,353
40 - 44	0	0	0	1	1	0	0	2	186,849	93,425
45 - 49	0	0	0	0	1	0	0	1	83,139	83,139
50 - 54	0	0	1	1	0	0	0	2	173,571	86,786
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+	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	3	6	2	2	0	0	13	1,054,218	81,094

Counts and Pay Summary by Service - Tier 3

Age	Past Service							Total Count	Total Pay	Average Pay
	0-4	5-9	10-14	15-19	20-24	25-29	30+			
15 - 19	0	0	0	0	0	0	0	0	0	0
20 - 24	0	0	0	0	0	0	0	0	0	0
25 - 29	1	0	0	0	0	0	0	1	68,927	68,927
30 - 34	1	0	0	0	0	0	0	1	65,158	65,158
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+	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	2	0	0	0	0	0	0	2	134,085	67,043

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.

	Maricopa	Pima		Maricopa	Pima	
	County	County	Other	County	County	Other
Age	Police	Police	Police	Fire	Fire	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:

	Maricopa County	Pima County	Other	Maricopa County	Pima County	Other
<u>Service</u>	<u>Police</u>	<u>Police</u>	<u>Police</u>	<u>Fire</u>	<u>Fire</u>	<u>Fire</u>
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:

<u>Age</u>	Maricopa	Pima	Other	Maricopa	Pima	Other
	County	County		County	County	
	<u>Police</u>	<u>Police</u>	<u>Police</u>	<u>Fire</u>	<u>Fire</u>	<u>Fire</u>
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.

<u>Service</u>	Maricopa	Pima	Other	Maricopa	Pima	Other
	County	County		County	County	
	<u>Police</u>	<u>Police</u>	<u>Police</u>	<u>Fire</u>	<u>Fire</u>	<u>Fire</u>
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.

<u>Age</u>	Maricopa	Pima	Other	Maricopa	Pima	Other
	County	County		County	County	
	<u>Police</u>	<u>Police</u>	<u>Police</u>	<u>Fire</u>	<u>Fire</u>	<u>Fire</u>
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	14	15	14	13
Total Inactives	22	23	23	23
Actives / Inactives	63.6%	65.2%	60.9%	56.5%
Asset Volatility Ratio				
Market Value of Assets (MVA)		5,353,106	5,607,863	20,205,933
Total Annual Payroll		1,140,342	1,120,421	1,054,218
MVA / Total Annual Payroll		469.4%	500.5%	1,916.7%
Accrued Liability (AL) Ratio				
Inactive Accrued Liability	13,857,797	14,438,435	14,518,345	15,329,252
Total Accrued Liability	17,519,385	18,474,681	19,179,700	19,884,116
Inactive AL / Total AL	79.1%	78.2%	75.7%	77.1%
Funded Ratio				
Actuarial Value of Assets (AVA)	5,308,231	5,536,808	6,037,915	18,472,615
Total Accrued Liability	17,519,385	18,474,681	19,179,700	19,884,116
AVA / Total Accrued Liability	30.3%	30.0%	31.5%	92.9%
Net Cash Flow Ratio				
Net Cash Flow ¹		(113,557)	190,964	12,234,060
Market Value of Assets (MVA)		5,353,106	5,607,863	20,205,933
Net Cash Flow / MVA		(2.1%)	3.4%	60.5%

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:

<u>Tier</u>	<u>Hire Date</u>
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.

Benefit

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.

Tier 1:

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

<u>Credited Service</u>	<u>Benefit Adjustment</u>
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):

<u>Credited Service</u>	<u>Benefit Multiplier</u>
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):

<u>Credited Service</u>	<u>Benefit Multiplier</u>
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

Date **Only applicable to Tier 3 members:**
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.

<u>Service</u>	<u>Additional % of Contributions</u>
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	<u>Beginning Year</u>	<u>Interest Rate</u>
	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)	<u>Member Only</u>	<u>With Dependents</u>
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.