

Appendix A: Actuarial Procedures and Methods

Valuation of Assets

The actuarial asset valuation method spreads asset gains and losses over four years. The expected return is determined each year based on the beginning of year market value and actual cash flows during the year. Any difference between the expected market value return and the actual market value return is recognized evenly over a period of four years.

Investment Earnings

The annual rate of investment earnings of the assets of the System is assumed to be 7.30% per year net of investment and administrative expenses, compounded annually.

Interest on Member Contributions

Interest on member contributions is assumed to accrue at the most recent actual rate granted, or at a rate of 0.22% per annum, compounded annually.

Future Salaries

The rates of annual salary increase assumed for the purpose of the valuation are illustrated in Table B-2. In addition to increases in salary due to merit and longevity, this scale includes an assumed 3.50% annual rate of increase in the general wage level of the membership.

Service Retirement

Table B-3 shows the annual assumed rates of retirement for actives members meeting the service retirement eligibilities.

Disablement

The rates of disablement used in this valuation are illustrated in Table B-4.

Mortality

A written description of each table used is included in Table B-1.

Other Terminations of Employment

The rates of assumed future withdrawal from active service for reasons other than death, disability or retirement are shown for representative ages in Table B-5.

Probability of Marriage & Dependent Children

If death occurs in active status, all members are assumed to have an eligible surviving spouse with no dependent children. Female spouses are assumed to be three years younger than their male spouse.

Records with no Birth Date

New records with no birth date are assumed to be 37 years old. Records that are not new and have no birth date used the same birth date as the prior year's valuation.



Appendix A: Actuarial Procedures and Methods

Active Records with a Salary Less than \$1,000

These members are included in the active headcounts, however the pay of these members is not included in the Valuation Projected Salaries summarized in Appendix D. The liability for these members is their accumulated member contributions payable on the valuation date.



Appendix B: Summary of Valuation Assumptions

Table B-1

Summary of Valuation Assumptions

I. Economic assumptions		
A.	General wage increases	3.50%
B.	Investment return	7.30%
C.	Price inflation assumption	2.75%
D.	Payroll growth	3.25%
E.	Growth in membership	0.00%
F.	Interest on member accounts	0.22%
II. Demographic assumptions		
A.	Individual salary increase due to promotion and longevity	Table B-2
B.	Retirement	Table B-3
C.	Disablement	Table B-4
D.	Mortality among Active Participants PUB-2010 Safety Amount Weighted Employee Mortality projected to 2021 for males and females. Projected generationally using MP-2021.	
E.	Mortality among Disabled pensioners PUB-2010 Safety Amount Weighted Disabled Retiree Mortality projected to 2021, set forward one year for males.	
F.	Mortality among Contingent Survivor pensioners PUB-2010 Safety Amount Weighted Contingent Survivor Mortality projected to 2021, set forward one year for males. Projected generationally using MP-2021.	
G.	Mortality among Healthy pensioners PUB-2010 Safety Amount Weighted Healthy Retiree Mortality Table projected to 2021, set forward one year for males and adjusted 105% for males and 100% for females. Projected generationally using MP-2021.	
H.	Other terminations of employment	Table B-5



Appendix B: Summary of Valuation Assumptions

Table B-2

Future Salaries

	(a)	(b)	(1+(a))*(1+(b))
Years of Service	Individual Merit & Longevity	General Wage Increase	Total Salary Increase
1	6.40%	3.50%	10.12%
2	4.70	3.50	8.36
3	3.60	3.50	7.23
4	2.70	3.50	6.29
5	2.00	3.50	5.57
6	1.40	3.50	4.95
7	1.00	3.50	4.54
8	1.00	3.50	4.54
9	1.00	3.50	4.54
10 & Up	1.00	3.50	4.54



Appendix B: Summary of Valuation Assumptions

Table B-3
Retirement
Annual Rates

<u>Age</u>	<u>Less than 26 Years of Service</u>	<u>26 or More Years of Service</u>
Less than 50	26.0%	42.0%
50	26.0	42.0
51	26.0	42.0
52	26.0	42.0
53	26.0	42.0
54	26.0	42.0
55	26.0	42.0
56	26.0	42.0
57	26.0	42.0
58	26.0	42.0
59	26.0	42.0
60	26.0	42.0
61	26.0	42.0
62	26.0	42.0
63	26.0	42.0
64	26.0	42.0
65 & Over	100.0	100.0



Appendix B: Summary of Valuation Assumptions

Table B-4
Disablement
Annual Rates

<u>Age</u>	<u>All Members</u>
22	0.00%
27	0.11
32	0.11
37	0.11
42	0.37
47	0.37
52	0.37
57	0.36
62	0.00

All disabilities are assumed to be permanent and without recovery.



Table B-5
Other Terminations of Employment
Among Members Not Eligible to Retire
Annual Rates

<u>Years of Service</u>	<u>All Members</u>
0	16.0%
1	13.0
2	10.0
3	8.0
4	7.0
5	7.0
6	7.0
7	7.0
8	5.0
9	5.0
10	5.0
11	5.0
12	3.0
13 and over	2.0

Family Composition

Female spouses are assumed to be three years younger than males. 100% of active members are assumed to be married. Actual marital characteristics are used for pensioners.

Vested Benefits for Termination Members

Vested benefits for members who terminated during years ending June 30, 2009 and later were estimated based upon compensation and service information in the census data. For members who terminated prior to June 30, 2008, vested benefits valued were the same as had been calculated by the prior actuary for the June 30, 2008 actuarial valuation.



Appendix C: Summary of Benefit Provisions

- | | |
|--|---|
| Service credit | <ul style="list-style-type: none">• Service credit is used to determine the amount of a member's retirement benefit.• One month of service credit is earned for each month where the member is paid for 160 hours. This includes certain transferred and purchased service. |
| Membership service | <ul style="list-style-type: none">• Membership service is used to determine eligibility for vesting, retirement or other benefits.• One month of membership service is earned for any month member contributions are made, regardless of the number of hours worked.• Eligible members in all systems may purchase service that counts toward membership service.• Additionally, eligible active and inactive Sheriffs' Retirement System (SRS) members may purchase 1 for 5 (additional) service that will count as membership service. |
| Contributions | <ul style="list-style-type: none">• Member contributions are made through an "employer pick-up" arrangement which results in deferral of taxes on the contributions. |
| Compensation | <ul style="list-style-type: none">• Compensation generally means all remuneration paid, excluding certain allowances, benefits, and lump sum payments. Compensation is specifically defined in law and differs amongst the systems.• Bonuses paid on or after July 1, 2013 to any member will not be treated as compensation for retirement purposes. No member or employer contributions will be paid on bonuses. |
| Withdrawal of employee contributions | <ul style="list-style-type: none">• A member is eligible for a withdrawal of their contributions when they terminate service and are either not eligible for or have not taken a retirement benefit.• The member receives the accumulated member contributions, which consists of member contributions and regular interest.• Upon receipt of a refund of accumulated contributions a member's vested right to a monthly benefit is forfeited. |
| Member contributions interest credited (regular interest) | <ul style="list-style-type: none">• Interest is credited to member accounts at the rates determined by the Board.• The current interest rate credited to member accounts is 0.22%. |



Appendix C: Summary of Benefit Provisions

Working Retiree Limitations

Applies to retirement system members who return **on or after** July 1, 2017 to covered employment in the system from which they retired. These limits already applied to SRS members before July 1, 2017.

- Members who return for **less than 480 hours** in a **calendar year**:
 - may not become an active member in the system; and
 - are subject to a \$1 reduction in their retirement benefit for each \$3 earned in excess of \$5,000 in the calendar year.
- Members who return for **480 or more hours** in a **calendar year**;
 - must become an active member of the system;
 - will stop receiving a retirement benefit from the system; and
 - will be eligible for a second retirement benefit if they earn 5 or more years of service credit through their second employment.
- Employee, employer and state contributions apply as follows:
 - Employer contributions and state contributions (if any) must be paid on all working retirees;
 - Employee contributions must be paid on working retirees who return to covered employment for 480 or more hours in a calendar year.

NOTE: PERS has its own limits.

Second Retirement Benefit

Applies to retirement system members who return on or after July 1, 2017 to active service covered by the system from which they retired.

- If the member works more than 480 hours in a calendar year and accumulates less than 5 years of service credit before terminating again, the member:
 - is not awarded service credit for the period of reemployment;
 - is refunded the accumulated contributions associated with the period of reemployment;
 - starting the first month following termination of service, receives the same retirement benefit previously paid to the member; and
 - does not accrue post-retirement benefit adjustments during the term of reemployment but receives a GABA in January immediately following second retirement.
- If the member works more than 480 hours in a calendar year and accumulates at least 5 years of service credit before terminating again, the member:
 - is awarded service credit for the period of reemployment;
 - starting the first month following termination of service, receives:



Appendix C: Summary of Benefit Provisions

- the same retirement benefit previously paid to the member; **and**
 - * a second retirement benefit for the period of reemployment calculated based on the laws in effect as of the member's rehire date; **and**
 - o does not accrue post-retirement benefit adjustments during the term of reemployment but receives a GABA:
 - * on the initial retirement benefit in January immediately following second retirement; **and**
 - * on the second retirement benefit starting in January after receiving that benefit for at least 12 months.
 - A member who returns to covered service is **not** eligible for a disability benefit.
- Refunds**
- Terminating members eligible to retire may, in lieu of receiving a monthly retirement benefit, refund their accumulated contributions in a lump sum.
 - Terminating members with accumulated contributions between \$200 and \$1,000 who wish to rollover their refund must do so within 90 days of termination of service.
 - Trusts, estates, and charitable organizations listed as beneficiaries are entitled to receive only a lump sum payment.
- Lump-sum payouts**
- Effective July 1, 2017, lump sum payouts in all systems are limited to the member's accumulated contributions rather than the present value of the member's benefit.
- Type of plan**
- Multiple-employer cost sharing
- Membership eligibility**
- Police officers of first- and second-class cities, and
 - Police officers of other cities with the state that adopt the plan, other than those cities which maintain a separate local police fund
- Member contributions**
- Members **not electing** GABA:
- Hired **after** June 30, 1975 but **on or before** June 30, 1979: 7.0% of member's compensation
 - Hired **after June 30, 1979** but **before** July 1, 1997: 8.5% of member's compensation
 - Hired **on or after** July 1, 1997: 9.0% of member's compensation
- Members **electing** GABA:
- 9.0% of member's compensation



Appendix C: Summary of Benefit Provisions

- Employer contributions**
- 14.41% of each member's compensation
- State contributions**
- 29.37% of each member's compensation
- Compensation period used in benefit calculation**
- FAC = Final Average Compensation
 - FAC is the average over the last 36 months (or shorter period of total service) of compensation paid to the member.
 - Hired **on or after** July 1, 2013: 110% annual cap on compensation considered as part of a member's FAC.
- Service retirement eligibility and benefit formula**
- **Age 50** with **5 years** of membership service, or
 - **Any age** with **20 years** of membership service
 - 2.5% of FAC x years of service credit
- Second retirement eligibility and benefit formula**
- **Re-employed** in a **MPORS position** and **at least age 50**
Re-calculated using criteria below:
 - **Less than 20 years** of membership service:
 - a. Initial retirement benefit will cease;
 - b. The retiree becomes a vested active MPORS member;
 - c. The member must repay all initial benefits received plus interest at the actuarially assumed rate of return;
 - d. The second retirement will be based on total MPORS service; **and**
 - e. The member will be treated as a new retiree who after having been retired at least 12 months, will receive a 3% GABA each year in January. This applies only to members who were GABA members initially.
 - **More than 20 years** of membership service:
 - a. The initial retirement benefit will cease;
 - b. The retiree becomes a vested active MPORS member;
 - c. At second retirement the initial benefit resumes and a new benefit will be calculated on new service credit and FAC after re-employment; and
 - d. The retiree will receive GABA on their first benefit in January immediately following second retirement but waits 12 months for GABA on the second retirement benefit. If not initially retired 12 months, the retiree will wait 12 months for GABA on both parts of benefit. This applies only to members who were GABA members initially.
- Disability retirement eligibility and benefit formula**
- Any active member
 - **Before completing 20 years** of membership service: 50% of FAC
 - **After completing 20 years or more** of membership service: 2.5% of FAC for each year of service credit



Appendix C: Summary of Benefit Provisions

- | | |
|---|---|
| Survivor's eligibility and benefit formula | <ul style="list-style-type: none">• Any active member• Before completing 20 years of membership service:
50% of member's FAC• After completing 20 years or more of membership service:
2.5% of member's FAC for each year of service credit• Benefits are paid to the surviving spouse (or equally to dependent children if there is no surviving spouse or after a surviving spouse dies, for as long as they remain dependent children).• In the absence of a spouse or child, the accumulated contributions minus any benefits already paid will be paid to the member's designated beneficiary. |
| Vesting eligibility and benefit | <ul style="list-style-type: none">• 5 years of membership service• Accrued normal retirement benefit, payable when eligible for retirement.• In lieu of a pension, a member may receive a refund of accumulated contributions.• Upon receipt of a refund of accumulated contributions, a member's vested right to a monthly benefit is forfeited. |
| Retirement benefits - Form of payment | <ul style="list-style-type: none">• The normal form of payment is a life annuity, with 100% continuation after death to a surviving spouse.• If there is no surviving spouse, or after the death of a surviving spouse, benefits are paid to the dependent children, if any, for as long as they remain dependent children. |
| Post retirement benefit increases | <ul style="list-style-type: none">• For retired members who became active members on or after July 1, 1997, or those who elected to be covered under GABA and who have been retired at least 12 months, a GABA will be made each year in January equal to 3%.• For retired members who were hired prior to July 1, 1997 and who did not elect GABA, the minimum benefit adjustment provided should not be less than 50% of the current base compensation of a newly confirmed police officer of the employer that last employed the member as a police officer. |
| Changes since last valuation | <ul style="list-style-type: none">• None |



Appendix C: Summary of Benefit Provisions

MPORS Deferred Retirement Option Plan (DROP)

- | | |
|-------------------------|--|
| Eligibility | <ul style="list-style-type: none">• 20 years of membership service |
| DROP period | <ul style="list-style-type: none">• Maximum of five years.• Member may not receive membership service or service credit during the DROP Period. |
| Contributions | <ul style="list-style-type: none">• State, employer and member contributions continue during the DROP Period and are made to the retirement system. |
| Disability | <ul style="list-style-type: none">• If a member becomes disabled during the DROP Period, the member will not be eligible for MPORS disability benefits.• If the member must terminate service, the member's service retirement benefit will be paid to the member rather than to the member's monthly DROP Account. The member will also be eligible to receive the DROP Account. |
| Survivor benefit | <ul style="list-style-type: none">• If a member dies before the end of the DROP Period, the surviving spouse or dependent children are entitled to receive a lump-sum payment equal to the member's DROP Benefit and a survivorship benefit equal to the benefit the member would have received had the member retired rather than elected to participate in the DROP.• If the member does not have a surviving spouse or dependent children, then the member's designated beneficiary receives the balance of the member's retirement account and a lump-sum payment of the member's DROP Benefit.• The DROP Benefit paid must include interest credited to the participant's account as follows:<ul style="list-style-type: none">(a) through June 30, 2009, interest must be credited every fiscal year end at a rate reflecting the retirement system's annual investment earnings for the applicable fiscal year.(b) after June 30, 2009, interest must be credited every fiscal year end at the actuarially assumed rate of return. Proportionate interest must be credited for distributions taking place at other than a fiscal year end. |



Appendix C: Summary of Benefit Provisions

DROP benefit

- Member receives DROP accruals equal to the retirement benefit calculated at DROP commencement and added each month during the DROP Period, including any post retirement adjustments (GABA), plus interest reflecting the retirement system's annual investment earnings.
- Effective July 1, 2009, the interest rate credited to DROP Accounts was changed to the actuarial assumed rate of 8%.
- As a result of the experience study performed during fiscal year 2010, the interest rate credited to DROP Accounts was changed to the actuarial assumed rate of 7.75%.
- As a result of the experience study performed during fiscal year 2017, the interest rate credited to DROP Accounts was changed to the actuarial assumed rate of 7.65%
- As a result of the experience study performed during fiscal year 2021, the interest rate credited to DROP Accounts was changed to the actuarial assumed rate of 7.30%

Changes in DROP since last valuation

- None



Appendix D: Valuation Data

Valuation Data

This chart is presented for informational purposes only. The counts shown in the valuation line were used for preparation of the liabilities disclosed within this report. The counts disclosed for the Annual Financial Report and the Summary (page 1) match the ACFR at the request of the Board. The differences between counts, if any, have no material effect upon the liability calculation.

	<u>Active</u>	<u>Disabled</u>	<u>Retirees and Beneficiaries</u>	<u>Terminated Vested Members</u>	<u>Terminated Non-Vested Members</u>	<u>Total</u>
Participant Counts Used for Valuation	785	100	886	108	212	2,091
Disabled Members having attained normal retirement age		(75)	75			
Beneficiaries of Disabled Members						
Beneficiaries with less than one year of certain payments remaining						
DROP Members	53		(53)			
Other Adjustments	3			15		18
Participant Counts shown in the Annual Financial Report	841	25	908	123	212	2,109



Appendix D: Valuation Data

This valuation is based upon the membership of the System as of June 30, 2022. Membership data were supplied by the System and has been accepted for valuation purposes without audit. However, tests were performed to ensure that the data was sufficiently accurate for valuation purposes.

The salaries used in the tables and charts which follow are different than the salaries used for the Summary on page 1. The valuation projected salaries to be paid for the following fiscal year, whereas the Summary, salaries are applicable in the year ending on the valuation date.

<u>Active Members</u>	<u>Number</u>	<u>Valuation Projected Salaries</u>
Full-Time Members	703	\$ 54,719,341
Part-Time Members	<u>82</u>	<u>\$ 1,857,677</u>
Total Active Members*	785	\$ 56,577,018

* Data from the 53 DROP participants are excluded from the table above.

Table D-1 contains summaries of the data for active members. For full-time members, values shown in the tables are the numbers of members and their total and average annual salaries. For part-time members, only the numbers of members are shown.

Table D-2 presents distributions of the following:

- Members receiving service retirement benefits.
- Members receiving disability retirement benefits.
- Survivors of deceased retired members receiving benefits.
- Survivors of deceased active members.
- Terminated vested members.

Table D-3 is a reconciliation of membership data from June 30, 2021 to June 30, 2022.



Appendix D: Valuation Data

The following is a summary of retired members and beneficiaries currently receiving benefits. The chart reflects the counts and benefits used for valuation purposes as a result of data processing. Please refer to the chart on page 47 for an explanation of the number of annuitants used for valuation purposes.

Type of Annuitant	Number	Annual Benefits	Average Annual Benefits
Service Retirement	676	\$ 23,951,168	\$ 35,431
DROP Members	53	2,866,133	54,078
Total Service Retired Members	729	\$ 26,817,301	\$ 36,786
Survivors of Deceased Retired Members	129	4,401,424	34,120
Survivors of Deceased Active Members	28	819,290	29,260
Total Survivors and Beneficiaries	157	\$ 5,220,714	\$ 33,253
Disability Retirement	100	3,206,701	32,067
Total Annuitants	986	\$ 35,244,716	\$ 35,745

Terminated Members with Contributions Not Withdrawn	Number
Vested Terminated Members	108
Non-Vested Terminated Members	212
Total Terminated Members	320



**Table D-1:
Active Members Distribution of
Full-Time Employees and Salaries
as of June 30, 2022**

Number of Employees

Age	Completed Years of Service											Totals		
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39		40+	
<25	6	11	11	2	1									31
25 to 29	20	29	16	25	17									107
30 to 34	19	17	15	38	63	12								164
35 to 39	6	9	10	17	43	58	8							151
40 to 44	3	4	4	11	25	32	30	4						113
45 to 49		2	1	4	14	17	28	6	1					73
50 to 54			1	6	3	13	9	12	1					45
55 to 59					2	2	6	3	1					14
60 to 64							2	1						3
65 to 69							1				1			2
70 and up														
Totals	54	72	58	103	168	134	84	26	3	1		-		703

Data for the 53 DROP participants are excluded from the table above.



**Table D-1:
Active Members Distribution of
Full-Time Employees and Salaries
as of June 30, 2022**

Annual Salaries in Thousands

Age	Completed Years of Service											Totals	
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39		40+
<25	339	700	679	124	59								1,900
25 to 29	1,237	1,896	1,060	1,724	1,310								7,227
30 to 34	1,257	1,175	1,095	2,611	4,955	991							12,086
35 to 39	398	563	712	1,288	3,159	5,112	813						12,044
40 to 44	180	265	282	713	1,875	2,792	2,951	416					9,474
45 to 49		137	82	298	1,051	1,329	2,607	639	94				6,238
50 to 54			157	433	207	1,132	871	1,135	104				4,039
55 to 59					126	151	555	321	112				1,264
60 to 64							178	75					253
65 to 69							92			102			194
70 and up													
Totals	3,411	4,736	4,069	7,191	12,742	11,507	8,065	2,586	310	102		-	54,719

Data for the 53 DROP participants are excluded from the table above.
The salary shown in the above chart was used for valuation purposes and assumes pay increases for the year.



Appendix D: Valuation Data

**Table D-1:
Active Members Distribution of
Full-Time Employees and Salaries
as of June 30, 2022**

Average Annual Salary

Age	Completed Years of Service										Totals		
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34		35 to 39	40+
<25	56,433	63,607	61,753	61,999	58,526								61,293
25 to 29	61,845	65,387	66,261	68,964	77,056								67,545
30 to 34	66,173	69,135	73,024	68,722	78,658	82,611							73,696
35 to 39	66,367	62,576	71,214	75,746	73,462	88,133	101,569						79,764
40 to 44	60,165	66,156	70,502	64,803	75,007	87,239	98,356	104,032					83,837
45 to 49		68,565	82,420	74,487	75,086	78,202	93,095	106,516	94,294				85,455
50 to 54			157,348	72,196	68,930	87,039	96,732	94,624	104,075				89,755
55 to 59					62,866	75,488	92,456	106,886	112,042				90,296
60 to 64							88,913	74,699					84,175
65 to 69							92,455			101,541			96,998
70 and up													
Totals	63,176	65,780	70,151	69,817	75,843	85,871	96,018	99,464	103,470	101,541			77,837

Data for the 53 DROP participants are excluded from the table above.
The salary shown in the above chart was used for valuation purposes and assumes pay increases for the year.



**Table D-1:
Active Members Distribution of
Part-Time Employees
as of June 30, 2022**

Number of Employees

Age	Completed Years of Service											Totals		
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39		40+	
<25	9	1												10
25 to 29	20	1												21
30 to 34	13		1	2	2									18
35 to 39	4	2	3	1	1									11
40 to 44	4	1		1	2	2								10
45 to 49	5		1						1					7
50 to 54	2		1											3
55 to 59	1	1												2
60 to 64														
65 to 69														
70 and up														
Totals	58	6	6	4	5	2	1	-						82



Appendix D: Valuation Data

**Table D-2:
Distribution of Inactive Lives**

Please refer to the chart on page 47 for an explanation of the number of annuitants used for valuation purposes.

Members Receiving Service Retirement Benefits as of June 30, 2022

Age	Number of Persons	Annual Benefits	Average Annual Benefits
<50	23	\$ 883,344	\$ 38,406
50 to 54	102	3,710,690	36,379
55 to 59	115	3,517,933	30,591
60 to 64	123	4,153,681	33,770
65 to 69	108	3,798,600	35,172
70 to 74	101	4,006,525	39,669
75 to 79	57	2,292,346	40,217
80 to 84	24	814,593	33,941
85 to 89	14	461,656	32,975
90 and up	9	311,800	34,644
Totals	676	\$ 23,951,168	\$ 35,431

Members Receiving Disability Retirement Benefits as of June 30, 2022

Age	Number of Persons	Annual Benefits	Average Annual Benefits
<50	25	\$ 907,777	\$ 36,311
50 to 54	18	619,874	34,437
55 to 59	10	343,709	34,371
60 to 64	8	230,118	28,765
65 to 69	11	314,610	28,601
70 to 74	16	440,496	27,531
75 to 79	4	123,744	30,936
80 to 84	5	135,609	27,122
85 to 89	2	57,522	28,761
90 and up	1	33,242	33,242
Totals	100	\$ 3,206,701	\$ 32,067



Table D-2:
Distribution of Inactive Lives

Please refer to the chart on page 47 for an explanation of the number of annuitants used for valuation purposes.

Survivors of Deceased Retired Members as of June 30, 2022

Table with 4 columns: Age, Number of Persons, Annual Benefits, Average Annual Benefits. Rows include age groups from <50 to 90 and up, and a Totals row.

Survivors of Deceased Active Members as of June 30, 2022

Table with 4 columns: Age, Number of Persons, Annual Benefits, Average Annual Benefits. Rows include age groups from <45 to 90 and up, and a Totals row.



Appendix D: Valuation Data

**Table D-2:
Distribution of Inactive Lives**

Please refer to the chart on page 47 for an explanation of the number of annuitants used for valuation purposes.

DROP Members as of June 30, 2022

<u>Age</u>	<u>Number of Persons</u>	<u>Annual Benefits</u>	<u>Average Annual Benefits</u>
<50	7	\$ 335,021	\$ 47,860
50 to 54	23	1,288,321	56,014
55 to 59	17	926,850	54,521
60 to 64	6	315,941	52,657
65 to 69	-	-	-
70 to 74	-	-	-
75 to 79	-	-	-
80 to 84	-	-	-
85 to 89	-	-	-
90 and up	-	-	-
Totals	53	\$ 2,866,133	\$ 54,078

**Terminated Vested Members as of June 30, 2022
Number of Persons**

<u>Age</u>	<u>Number</u>
<25	
25 to 29	2
30 to 34	17
35 to 39	27
40 to 44	32
45 to 49	23
50 to 54	6
55 to 59	1
60 to 64	
65 to 69	
70 and above	
Total	108



**Table D-3:
Data Reconciliation**

The following table shows a reconciliation of the participants used in the previous valuation to this valuation. This chart reflects the counts used for valuation purposes as a result of data processing.

	Active Members*	Terminated Vested Members	Service Retired Members**	Disabled Members	Survivors and Beneficiaries
June 30, 2021 Valuation	766	89	701	101	161
Refunds and Non-Vested Terminations	(36)	(3)			(16)
Vested Terminations	(27)	27			
Service Retirements	(35)	(3)	38		
Disability Retirements	(3)			3	
Deaths	(1)		(13)	(3)	(8)
New Entrants	113				20
Rehires	8	(2)			
Other			3	(1)	
June 30, 2022 Valuation	785	108	729	100	157

* Excludes members in DROP

** Includes members in DROP



Appendix E: Comparative Schedules

Comparative Schedules

This section contains tables that summarize the experience of the System shown in present and past valuation reports.

Table E-1 shows a summary of the active members covered as of the various valuation dates.

Table E-2 shows a summary of the retired and inactive members as of the various valuation dates.

Table E-3 summarizes the contribution rates determined by each annual actuarial valuation.



Table E-1:
Active Membership Data

Valuation Date June 30,	Actives	Annual Salaries in Thousands	Average Annual Salary	Average Age	Average Years of Service	Average Hire Age
2022*	841	\$ 61,329	\$72,924	38.4	8.2	30.1
2021*	823	59,217	71,952	38.8	8.7	30.1
2020*	829	56,784	68,497	38.9	8.8	30.1
2019*	806	54,282	67,348	39.0	9.0	30.0
2018*	787	52,036	66,119	39.3	9.4	29.9
2017*	775	48,604	62,715	38.2	8.5	29.5
2016*	762	47,234	61,987	38.4	8.6	29.8
2015	694	45,162	60,783	38.7	8.8	29.9
2014	743	44,454	59,830			
2013	734	42,324	57,662			
2012	701	41,584	56,500			

* Includes members in DROP



Appendix E: Comparative Schedules

Table E-2: Retired and Inactive Membership Data

Valuation Date June 30,	Number	All Annuitants					Terminated Members	
		Annual Benefits in Thousands	Average Annual Benefit	Average Current Age	Average Age at Retirement	Average Service at Retirement	Number Vested Terminated	Number Non-Vested Terminated
2022*	933	\$ 32,379	\$34,704	61.6	50.0	21.0	108	212
2021*	910	30,599	33,625	61.3	49.9	21.0	89	199
2020*	870	28,196	32,409	65.8	49.9	21.0	79	181
2019*	850	26,903	31,650	65.6	49.8	21.1	77	164
2018*	812	25,032	30,827	65.9	48.9	18.4	78	153
2017*	791	23,809	30,099	65.8	47.5	18.6	75	143
2016*	768	22,539	29,347	66.0	47.4	19.0	61	112
2015	744	21,203	28,499	66.6	47.9	19.4	60	103
2014	716	19,815	27,675				55	90
2013	710	18,948	26,687				52	77
2012	676	17,665	26,132				49	76

* Retired members excludes members in DROP



Table E-3:
Contribution Rates

Valuation Date June 30,	Contribution Rates			Normal Cost Rate*	UAAL Rate**
	Employee	Employer/State	Total		
2022	9.00 %	43.78 %	52.78 %	30.19 %	22.59 %
2021	9.00	43.78	52.78	25.95	26.83
2020	9.00	43.78	52.78	25.75	27.03
2019	9.00	43.78	52.78	25.92	26.86
2018	9.00	43.78	52.78	26.01	26.77
2017	9.00	43.78	52.78	25.70	27.08
2016	9.00	43.78	52.78	27.92	24.86
2015	9.00	43.78	52.78	26.04	26.74
2014	9.00	43.78	52.78	25.85	26.93
2013	9.00	43.78	52.78	26.29	26.49
2012	9.00	43.78	52.78	26.26	26.52

* Includes administrative expenses for the 2014 to 2021 Valuation Dates.

** The UAAL rate is the amount available to amortize the UAAL. It is equal to the total contribution rate, minus the normal cost rate.



Appendix F: Financial Statement Information

The information presented in the required supplementary schedules was determined as part of the actuarial valuation as of June 30, 2022. Additional information as of the latest actuarial valuation follows.

Valuation date	June 30, 2022
Actuarial cost method	Entry Age Normal
Amortization method	Open
Remaining amortization period	24 Years
Asset valuation method	Four-year smoothed market
Actuarial assumptions:	
Investment rate of return*	7.30%
General wage growth*	3.50%
Merit salary increases	1.0% - 6.4%
*Includes inflation	2.75%



Appendix F: Financial Statement Information

Gain and Loss in Accrued Liability During Years Ended June 30 Resulting from Differences Between Assumed Experience and Actual Experience						
Type of Activity	Gain or (Loss) for Year Ending June 30, (expressed in thousands)					
	2017	2018	2019	2020	2021	2022
Investment Income on Actuarial Value of Assets	\$ 922	\$ (3,238)	\$ (2,458)	\$ (3,720)	\$ 13,389	\$ 1,140
Combined Liability Experience	(485)	(21,525)	949	1,910	(1,278)	148
(Loss)/Gain During Year from Financial Experience	\$ 437	\$ (24,763)	\$ (1,510)	\$ (1,810)	\$ 12,111	\$ 1,289
Non-Recurring Items	(16,473)	0	0	0	0	(52,878)
Composite Gain or (Loss) During Year	\$ (16,037)	\$ (24,763)	\$ (1,510)	\$ (1,810)	\$ 12,111	\$ (51,589)

Schedule of Funding Progress (expressed in thousands)						
Valuation Date June 30,	Actuarial Value of Assets	Actuarial Liability (AAL)	Funded Ratio	Unfunded AAL (UAAL)	Covered Payroll	UAAL as a Percentage of Covered Payroll
2022	\$ 555,005	\$ 778,865	71%	\$ 223,860	\$ 61,329	365%
2021	516,144	694,611	74%	178,467	59,217	301%
2020	471,328	666,099	71%	194,770	56,784	343%
2019	441,565	637,866	69%	196,300	54,282	362%
2018	413,608	611,056	68%	197,448	52,036	379%
2017	386,259	562,570	69%	176,311	48,604	363%



Appendix F: Financial Statement Information

Solvency Test								
Aggregate Accrued Liabilities for (expressed in thousands)								
Valuation Date June 30,	Active Member Contributions (1)	Retirees & Beneficiaries (2)	Active Member Employer Financed Contributions (3)	Actuarial Value of Reported Assets	Portion of Accrued Liability Covered by Reported Assets			
					(1)	(2)	(3)	
2022	\$ 42,816	\$ 498,624	\$ 237,425	\$ 555,005	100%	100%	6%	
2021	42,904	447,236	204,471	516,144	100%	100%	13%	
2020	42,767	412,367	210,964	471,328	100%	100%	8%	
2019	43,542	397,171	197,153	441,565	100%	100%	0%	
2018	43,686	374,355	193,014	413,608	100%	99%	0%	
2017	42,364	346,374	173,832	386,259	100%	99%	0%	



Appendix G: Glossary

The following definitions are largely excerpts from a list adopted in 1981 by the major actuarial organizations in the United States. In some cases the definitions have been modified for specific applicability to the Municipal Police Officers' Retirement System. Defined terms are capitalized throughout this Appendix.

Accrued Benefit

The amount of an individual's benefit (whether or not vested) as of a specific date, determined in accordance with the terms of a pension plan and based on compensation and service to that date.

Actuarial Accrued Liability

That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement, and retirement; changes in compensation, rates of investment earnings, and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; and other relevant items.

Actuarial Cost Method

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Normal Cost and an Actuarial Accrued Liability.

Actuarial Gains and Loss

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

Actuarial Present Value

The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions.

Actuarial Valuation

The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

Actuarial Value of Assets

The value of cash, investments and other property belonging to a pension plan, as used by the actuary for the purpose of an Actuarial Valuation.

Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

Amortization Payment

That portion of the pension plan contribution which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.



Appendix G: Glossary

Entry Age Actuarial Cost Method

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a valuation date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability.

Market Value of Assets

The fair value of cash, investments and other property belonging to a pension plan that could be acquired by exchanging them on the open market.

Normal Cost

That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.

Projected Benefits

Those pension plan benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits.

Unaccrued Benefit

The excess of an individual's Projected Benefits over the Accrued Benefits as of a specified date.

Unfunded Actuarial Accrued Liability

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.