

The Teachers' Pension and Annuity Fund of New Jersey

**GASB 68 Report
as of June 30, 2022**

Produced by Cheiron

May 2023

TABLE OF CONTENTS

<i>Section</i>		<i>Page</i>
Section I	Board Summary	1
Section II	Certification	2
Section III	Determination of Discount Rate	4
Section IV	Collective Employer Reporting Amounts.....	6
 <i>Appendices</i>		
Appendix A	Membership Information	10
Appendix B	Actuarial Assumptions and Methods	11
Appendix C	Summary of Plan Provisions.....	23
Appendix D	Determination of Discount Rate	29
Appendix E	Glossary of Terms.....	33

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

SECTION I – BOARD SUMMARY

The purpose of this report is to provide accounting and financial disclosure information under Governmental Accounting Standards Board Statement 68 for the Teachers' Pension and Annuity Fund of New Jersey (TPAF, Plan or Fund). This information includes:

- Disclosure of Deferred Inflows and Outflows, and
- Calculation of the Annual Pension Expense.

Highlights

The reporting date for the TPAF is June 30, 2022. Measurements as of the reporting date are based on the fair value of assets as of June 30, 2022 and the Total Pension Liability (TPL) as of the valuation date, July 1, 2021, updated to June 30, 2022. As a result of the Experience Study covering the period July 1, 2018 through June 30, 2021, the underlying demographic and economic assumptions were updated. To see a detailed comparison of the changes refer to the Experience Study. We are not aware of any other significant events that are measurable at this time between the valuation date and the measurement date, so the update procedures only include the addition of service cost and interest cost offset by actual benefit payments and an adjustment to reflect the changes in assumptions.

Additional information about the TPL can be found in the GASB 67 report. This report contains the GASB 68 collective employer reporting amounts. The individual employer reporting amounts can be found in the GASB 67-68 Employer Schedules provided separately in Excel format.

The following table provides a summary of the key results during this reporting period.

Table I-1 Summary of Collective Results		
Measurement Date	June 30, 2022	June 30, 2021
Net Pension Liability	\$ 51,676,587,303	\$ 48,165,991,182
Deferred Outflows	(4,885,289,911)	(6,230,825,389)
Deferred Inflows	<u>19,563,805,393</u>	<u>27,221,092,460</u>
Net Impact on Statement of Net Position	\$ 66,355,102,785	\$ 69,156,258,253
Total Pension Expense	\$ 1,391,156,884	\$ 1,133,770,138
Pension Expense (% of Payroll)	12.09%	10.00%

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

SECTION II – CERTIFICATION

The purpose of this report is to provide accounting and financial reporting information under GASB 68 for the Teachers' Pension and Annuity Fund of New Jersey (TPAF). This report is for the use of TPAF, the Division of Pensions and Benefits (DPB) and their auditors in preparing financial reports in accordance with applicable law and accounting requirements. This report is not appropriate for other purposes, including the measurement of funding requirements for TPAF and estimating the price to settle TPAF's obligations.

In preparing our report, we relied on information (some oral and some written) supplied by the DPB. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

Future actuarial measurements may differ significantly from the current measurements due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law.

For purposes of this report, the calculation of the Total Pension Liability and the projection of the Plan's contributions and benefit payments as of June 30, 2022 were based on the recommended demographic assumptions of the July 1, 2018 – June 30, 2021 Experience Study, which was approved by the Board of Trustees on December 1, 2022.

This report was prepared using census data as of the July 1, 2021 valuation date and financial information as of the June 30, 2022 measurement date.

This report reflects two changes to the plan provisions. Chapter 296, P.L. 2021 permits a certified school nurse who is retired from TPAF to return to employment for up to two years without reenrollment in TPAF. Chapter 408, P.L. 2021 permits teachers and professional staff members who provide special services and retired from TPAF to return to employment for up to two years without reenrollment in TPAF if the return to employment begins during the 2021-2022 or 2022-2023 school years. These legislations did not impact the Total Pension Liability for this report due to the current demographic assumptions and covered population.

Based on the State Treasurer's recommendation, the investment return assumption used to determine the actuarially determined contributions is 7.00% per annum.


In accordance with Paragraph 40 of GASB Statement No. 67, the projection of the Plan's fiduciary net position is based on a long-term expected rate of return of 7.00% per annum. The discount rate used to measure the Total Pension Liability is 7.00% as of June 30, 2022 and is described in Section III of the report.

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

SECTION II – CERTIFICATION

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This report was prepared for TPAF for the purposes described herein and for the use by the plan auditor in completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.



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**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

SECTION III – DETERMINATION OF DISCOUNT RATE

The discount rate used to measure the Total Pension Liability was 7.00% as of June 30, 2021 and June 30, 2022. As discussed with the DPB, the projection of cash flows used to determine the discount rate as of June 30, 2022 assumed:

- In accordance with Paragraph 40 of GASB Statement No. 67, the projection of the Plan's fiduciary net position is based on a long-term expected rate of return of 7.00% per annum.
- In accordance with Paragraph 37 of GASB Statement No. 67, the projection of the Plan's contributions and benefit payments are based on the same assumptions used to determine the expected contributions for the Fund. The demographic assumptions are based on the recommendations of the July 1, 2018 – June 30, 2021 Experience Study, which was approved by the Board of Trustees on December 1, 2022.

Based on the State Treasurer's recommendation, the investment return assumption used to determine the actuarially determined contributions is 7.00% per annum.

- It is assumed that the State will contribute 100% of the actuarially determined contribution and Non-Contributory Group Insurance Premium Fund (NCGIPF) contribution. The 100% contribution rate is the total State contribution rate expected to be paid in fiscal year ending June 30, 2023 with respect to the actuarially determined contribution for the fiscal year ending June 30, 2023 for all State-administered retirement systems.
- Consistent with Chapter 83, P.L. 2016, it is assumed that the State will make pension contributions in equal amounts at the end of each quarter.
- In accordance with Chapter 98, P. L. 2017, TPAF receives 77.78% of the proceeds of the Lottery Enterprise for a period of 30 years. Revenues received from lottery proceeds are assumed to be contributed to the Fund on a monthly basis.
- It is assumed that Local employers' contributions are expected to be received on April 1st, 21 months after the associated valuation date.
- The NCGIPF contributions are assumed to be paid monthly.
- Annual administrative expenses are assumed to be 0.27% of expected pension benefit payments.

The Fiduciary Net Position (FNP) includes Local employers' contributions receivable as reported in the financial statements provided to us by the DPB. In determining the discount rate in Appendix D, the FNP at the beginning of each year does not reflect receivable contributions as those amounts are not available at the beginning of the year to pay benefits. The receivable contributions for the current year include receivable contributions of \$2,660,969 for Local employers' Early Retirement Incentive (ERI).

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

SECTION III – DETERMINATION OF DISCOUNT RATE

In the event the Plan's fiduciary net position was no longer sufficient to make future benefit payments, municipal bond rates of 2.16% as of June 30, 2021 and 3.54% as of June 30, 2022 would be used to develop the blended GASB discount rate. As selected by the State Treasurer, the rates are based on the Bond Buyer GO 20-Bond Municipal Bond Index.

As of June 30, 2022, based on the assumptions above, the pension Plan's fiduciary net position is expected to be sufficient to make all projected future benefit payments for current Plan members; therefore, the GASB discount rate as of June 30, 2022 is equal to the long-term rate of return of **7.00%**. Similarly, the GASB discount rate as of June 30, 2021 was equal to the long-term rate of return of 7.00%. The assumed discount rates have been determined in accordance with the method prescribed by GASB Statement No. 67. See Appendix D for the determination of the discount rate.

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

We understand the State and Local employers have elected to use the 2022 measurement date for their 2023 reporting date. As a result, the schedules in this section will be used by the State and Local employers for their 2023 reporting.

The impact of experience gains or losses and assumption changes on the TPL are recognized in expense over the average expected remaining service life of all active and inactive members of the Fund. As of the measurement date, this recognition period was 7.83 years.

The following tables summarize the current balances of deferred outflows and deferred inflows of resources along with the net recognition over the next five years and thereafter.

Table IV-1		
Schedule of Collective Deferred Inflows and Outflows of Resources		
	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ 699,820,974	\$ 122,664,916
Changes in assumptions	3,013,097,864	19,441,140,477
Net differences between projected and actual earnings on pension plan investments	1,172,371,073	0
Total	<u>\$ 4,885,289,911</u>	<u>\$ 19,563,805,393</u>
Amounts reported as deferred outflows and deferred inflows of resources will be recognized in pension expense as follows:		
Measurement year ended June 30:		
2023	\$ (2,658,825,381)	
2024	(3,823,762,872)	
2025	(3,351,102,048)	
2026	(1,509,375,379)	
2027	(1,647,727,819)	
Thereafter	\$ (1,687,721,983)	

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

Table IV-2

Detailed Schedule of Collective Deferred Inflows and Outflows of Resources

Recognition of differences between expected and actual experience

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year							
			2022	2023	2024	2025	2026	2027	Thereafter	
2022	7.83	\$ (20,645,797)	\$ (2,636,756)	\$ (2,636,756)	\$ (2,636,756)	\$ (2,636,756)	\$ (2,636,756)	\$ (2,636,756)	\$ (2,636,756)	\$ (4,825,261)
2021	6.93	171,234,070	24,709,101	24,709,101	24,709,101	24,709,101	24,709,101	24,709,101	24,709,101	22,979,464
2020	5.99	(6,444,940)	(1,075,950)	(1,075,950)	(1,075,950)	(1,075,950)	(1,075,950)	(1,075,950)	(1,065,190)	0
2019	5.04	(97,553,990)	(19,355,950)	(19,355,950)	(19,355,950)	(19,355,950)	(19,355,950)	(19,355,950)	(774,240)	0
2018	4.29	618,845,893	144,253,122	144,253,122	144,253,122	144,253,122	144,253,122	41,833,405	0	0
2017	3.30	93,981,436	28,479,224	28,479,224	28,479,224	28,479,224	8,543,764	0	0	0
2016	2.30	(37,311,034)	(16,222,189)	(16,222,189)	(4,866,656)	0	0	0	0	0
2015	1.30	57,204,429	44,003,407	13,201,022	0	0	0	0	0	0
2014	0.50	(1,464,605)	(1,464,605)	0	0	0	0	0	0	0
Total		\$ 777,845,462	\$ 200,689,404	\$ 171,351,624	\$ 169,506,135	\$ 154,437,331	\$ 43,473,850	\$ 20,232,915	\$ 18,154,203	

Recognition of changes in assumptions

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year							
			2022	2023	2024	2025	2026	2027	Thereafter	
2022	7.83	\$ 110,219,657	\$ 14,076,585	\$ 14,076,585	\$ 14,076,585	\$ 14,076,585	\$ 14,076,585	\$ 14,076,585	\$ 14,076,585	\$ 25,760,147
2021	6.93	(12,903,483,645)	(1,861,974,552)	(1,861,974,552)	(1,861,974,552)	(1,861,974,552)	(1,861,974,552)	(1,861,974,552)	(1,861,974,552)	(1,731,636,333)
2020	5.99	1,209,286,241	201,884,181	201,884,181	201,884,181	201,884,181	201,884,181	201,884,181	199,865,336	0
2019	5.04	(2,510,940,613)	(498,202,502)	(498,202,502)	(498,202,502)	(498,202,502)	(498,202,502)	(498,202,502)	(19,928,103)	0
2018	4.29	(3,527,661,165)	(822,298,640)	(822,298,640)	(822,298,640)	(822,298,640)	(822,298,640)	(238,466,605)	0	0
2017	3.30	(5,282,196,290)	(1,600,665,542)	(1,600,665,542)	(1,600,665,542)	(480,199,664)	0	0	0	0
2016	2.30	3,000,278,784	1,304,469,036	1,304,469,036	391,340,712	0	0	0	0	0
2015	1.30	926,219,611	712,476,627	213,742,984	0	0	0	0	0	0
2014	0.50	153,774,925	153,774,925	0	0	0	0	0	0	0
Total		\$ (18,824,502,495)	\$ (2,396,459,882)	\$ (3,048,968,450)	\$ (4,175,839,758)	\$ (3,446,714,592)	\$ (2,382,682,893)	\$ (1,667,960,734)	\$ (1,705,876,186)	

Recognition of net differences between projected and actual earnings on pension plan investments

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year							
			2022	2023	2024	2025	2026	2027	Thereafter	
2022	5.00	\$ 4,149,168,324	\$ 829,833,665	\$ 829,833,665	\$ 829,833,665	\$ 829,833,665	\$ 829,833,664	\$ 0	\$ 0	\$ 0
2021	4.00	(3,554,633,811)	(888,658,453)	(888,658,453)	(888,658,453)	(888,658,452)	0	0	0	0
2020	3.00	724,186,621	241,395,541	241,395,541	241,395,539	0	0	0	0	0
2019	2.00	72,441,385	36,220,693	36,220,692	0	0	0	0	0	0
2018	1.00	(96,030,373)	(96,030,373)	0	0	0	0	0	0	0
Total		\$ 1,295,132,146	\$ 122,761,073	\$ 218,791,445	\$ 182,570,751	\$ (58,824,787)	\$ 829,833,664	\$ 0	\$ 0	\$ 0

Grand Total **\$ (16,751,524,887)** **\$ (2,073,009,405)** **\$ (2,658,825,381)** **\$ (3,823,762,872)** **\$ (3,351,102,048)** **\$ (1,509,375,379)** **\$ (1,647,727,819)** **\$ (1,687,721,983)**

* As of the beginning of the measurement year

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

The annual pension expense recognized by the State and Local employers can be calculated two different ways. First, it is the change in the amounts reported on the Statement of Net Position that relate to TPAF and are not attributable to employer contributions. That is, it is the change in NPL plus the changes in deferred outflows and inflows plus employer contributions.

Alternatively, annual pension expense can be calculated by its individual components. While GASB does not require or suggest the organization of the individual components shown in the table below, we believe it helps to understand the level and volatility of pension expense.

First, there are components referred to as operating expenses. These are items directly attributable to the operation of the plan during the measurement year. Service cost less employee contributions represents the increase in employer-provided benefits attributable to the year, and administrative expenses are the cost of operating TPAF for the year.

Second, there are the financing expenses: the interest on the Total Pension Liability less the expected return on assets.

The final category is changes. This category will drive most of the volatility in pension expense from year to year. It includes any changes in benefits made during the year and the recognized amounts due to assumption changes, gains or losses on the TPL, and investment gains or losses.

The following table shows the development of pension expense for the State and Local employers through both of these methodologies.

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

Table IV-3 Calculation of Collective Pension Expense		
Measurement Year Ending	2022	2021
Change in Net Pension Liability	\$ 3,510,596,121	\$ (17,827,507,506)
Change in Deferred Outflows	1,345,535,478	3,228,056,610
Change in Deferred Inflows	(7,657,287,067)	12,796,769,848
Employer Contributions*	<u>4,191,916,812</u>	<u>2,936,047,960</u>
Subtotal	\$ 1,390,761,344	\$ 1,133,366,912
Employer Contribution - delayed enrollments	395,540	403,226
Employer Contribution - delayed appropriations	<u>0</u>	<u>0</u>
Total Pension Expense	\$ 1,391,156,884	\$ 1,133,770,138
Total Pension Expense as % of Payroll	12.09%	10.00%
Operating Expenses		
Service cost	\$ 1,195,044,307	\$ 1,759,507,848
Employee contributions	(907,326,471)	(883,659,076)
Administrative expenses	<u>12,635,916</u>	<u>9,042,590</u>
Total	\$ 300,353,752	\$ 884,891,362
Financing Expenses		
Interest cost	\$ 5,146,965,905	\$ 4,695,758,765
Expected return on assets	<u>(1,983,153,368)</u>	<u>(1,458,899,157)</u>
Total	\$ 3,163,812,537	\$ 3,236,859,608
Changes		
Benefit changes	\$ 0	\$ 0
Recognition of assumption changes	(2,396,459,882)	(2,256,761,544)
Recognition of liability gains and losses	200,689,404	201,861,563
Recognition of investment gains and losses	<u>122,761,073</u>	<u>(933,080,851)</u>
Total	\$ (2,073,009,405)	\$ (2,987,980,832)
Total Pension Expense	\$ 1,391,156,884	\$ 1,133,770,138

* Includes appropriations and lottery revenue

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

APPENDIX A – MEMBERSHIP INFORMATION

Plan Membership		
	July 1, 2021	July 1, 2020
Contributing Actives	141,521	142,283
Non-Contributing Members	14,526	14,119
Terminated Vested	354	407
Inactive Receiving Benefits	109,677	107,890
Total	266,078	264,699
Annual Compensation for Contributing Actives	\$ 11,509,652,923	\$ 11,338,928,538
Annual Retirement Allowances for Those Receiving Benefits	\$ 4,578,893,564	\$ 4,478,447,877

* QDRO recipients are excluded from the counts.

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

- | | |
|--|---|
| 1. Investment Rate of Return for determining Actuarially Determined Contributions | 7.00% per annum, compounded annually. |
| 2. Long-Term Expected Rate of Return | 7.00% per annum, compounded annually. |
| 3. Interest Crediting Rate on Accumulated Deductions | 7.00% per annum, compounded annually. Interest credits are assumed to end upon termination. |
| 4. GASB 67 Effective Discount Rate | <ul style="list-style-type: none">• June 30, 2021: 7.00% per annum, compounded annually.• June 30, 2022: 7.00% per annum, compounded annually. |
| 5. Price Inflation | 2.75% per annum, compounded annually. |
| 6. Wage Inflation | 3.25% per annum, compounded annually. |
| 7. Cost-of-Living Adjustments (COLAs) | No future COLAs are assumed. Previously granted COLAs are included in the data. |

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

8. Salary Increases

Salary increases vary by years of service and time period. Annual salary increases are shown below.

Years of Service	Rate
0-2	4.25%
3	4.40
4	4.55
5	4.70
6	4.85
7	5.00
8	5.15
9	5.30
10	5.40
11	5.50
12-16	5.65
17	4.90
18	4.50
19	4.25
20	4.05
21	3.85
22	3.65
23	3.45
24	3.25
25	3.05
26	2.95
27-28	2.85
29+	2.75

Salary increases are assumed to occur on October 1.

9. 401(a)(17) Pay Limit \$290,000 in 2021 increasing 2.75% per annum, compounded annually.

10. Social Security Wage Base \$142,800 in 2021 increasing 3.25% per annum, compounded annually.

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

11. Termination

Termination rates are as follows:

Service	Rates
0	6.75%
1	6.75
2	5.50
3	4.50
4	4.00
5	3.00
6	2.75
7	2.50
8	2.50
9	2.25
10	2.25
11	2.10
12	1.95
13	1.65
14	1.35
15	1.05
16	1.00
17	0.90
18	0.70
19	0.55
20	0.55
21	0.50
22	0.40
23	0.30
24-29	0.30

No termination is assumed after attainment of retirement eligibility.

70% of members with 10 or more years of service at termination are assumed to elect a deferred retirement benefit.

All other members are assumed to receive a refund of Accumulated Deductions with credited interest.

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

12. Disability

Disability rates are as follows:

Age	Ordinary Disability	Accidental Disability	Age	Ordinary Disability	Accidental Disability
20	0.005%	0.006%	48	0.135%	0.006%
21	0.005	0.006	49	0.145	0.006
22	0.005	0.006	50	0.160	0.006
23	0.005	0.006	51	0.175	0.006
24	0.005	0.006	52	0.190	0.006
25	0.005	0.006	53	0.210	0.006
26	0.005	0.006	54	0.225	0.006
27	0.005	0.006	55	0.245	0.006
28	0.005	0.006	56	0.295	0.006
29	0.005	0.006	57	0.345	0.006
30	0.005	0.006	58	0.390	0.006
31	0.010	0.006	59	0.440	0.006
32	0.015	0.006	60	0.495	0.006
33	0.020	0.006	61	0.515	0.006
34	0.030	0.006	62	0.520	0.006
35	0.040	0.006	63	0.570	0.006
36	0.050	0.006	64	0.620	0.006
37	0.060	0.006	65	0.670	0.006
38	0.070	0.006	66	0.725	0.006
39	0.080	0.006	67	0.780	0.006
40	0.085	0.006	68	0.835	0.006
41	0.090	0.006	69	0.890	0.006
42	0.095	0.006	70	0.950	0.006
43	0.095	0.006	71	1.010	0.006
44	0.105	0.006	72	1.070	0.006
45	0.110	0.006	73	1.130	0.006
46	0.120	0.006	74	1.190	0.006
47	0.130	0.006			

Accidental disability rates apply at all ages.

Ordinary disability rates apply upon attainment of 10 years of service until the attainment of age 55 with at least 25 years of service.

Members are assumed to receive the greater of the applicable disability benefit or the early or service retirement benefit, depending on eligibility.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Tier 4 and Tier 5 members are not eligible for the Ordinary or Accidental Disability benefits but the disability rates still apply. Such members terminating under the disability decrement are assumed to separate from service and elect a deferred retirement benefit.

13. Mortality

Pre-Retirement Mortality (Non-Annuitants): The Pub-2010 Teachers Above-Median Income Employee mortality table [*PubT-2010(A) Employee*] as published by the Society of Actuaries with a 93.9% adjustment for males and 85.3% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2021. All pre-retirement deaths are assumed to be ordinary deaths.

Healthy Retirees and Beneficiaries (Healthy Annuitants): The Pub-2010 Teachers Above-Median Income Healthy Retiree mortality table [*PubT-2010(A) Healthy Retiree*] as published by the Society of Actuaries with a 114.7% adjustment for males and 99.6% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2021.

Disabled Retirees (Disabled Annuitants): The Pub-2010 Non-Safety Disabled Retiree mortality table [*PubNS-2010 Disabled Retiree*] as published by the Society of Actuaries with a 106.3% adjustment for males and 100.3% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2021.

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

14. Retirement

Retirement rates for Tier 1-4 members are as follows:

Age	Less Than 25 Years of Service	25 Years of Service	26 or More Years of Service
< 50	N/A	1.5%	1.5%
50	N/A	1.5	1.5
51	N/A	2.0	2.0
52	N/A	3.0	2.5
53	N/A	4.0	3.0
54	N/A	6.0	3.5
55	N/A	10.0	13.0
56	N/A	18.0	17.0
57	N/A	18.0	17.0
58	N/A	20.0	17.0
59	N/A	25.0	17.0
60	4.0	25.0	20.0
61	6.0	25.0	22.0
62	6.0	33.0	27.0
63	8.0	42.0	30.0
64	8.0	42.0	30.0
65	12.0	42.0	30.0
66	18.0	55.0	35.0
67	18.0	55.0	40.0
68	18.0	55.0	30.0
69	18.0	55.0	30.0
70	18.0	55.0	30.0
71	18.0	55.0	30.0
72	18.0	55.0	30.0
73	18.0	55.0	30.0
74	18.0	55.0	30.0
75	100.0	100.0	100.0

Rates apply upon retirement eligibility by tier.

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Retirement rates for Tier 5 members are as follows:

Age	Less Than 25 Years of Service	25 Years of Service	26 to 29 Years of Service	30 Years of Service	31 or More Years of Service
< 50	N/A	N/A	N/A	1.5%	1.5%
50	N/A	N/A	N/A	1.5	1.5
51	N/A	N/A	N/A	2.0	2.0
52	N/A	N/A	N/A	3.0	2.5
53	N/A	N/A	N/A	4.0	3.0
54	N/A	N/A	N/A	6.0	3.5
55	N/A	N/A	N/A	10.0	13.0
56	N/A	N/A	N/A	18.0	17.0
57	N/A	N/A	N/A	18.0	17.0
58	N/A	N/A	N/A	20.0	17.0
59	N/A	N/A	N/A	25.0	17.0
60	N/A	N/A	N/A	25.0	20.0
61	N/A	N/A	N/A	25.0	22.0
62	N/A	N/A	N/A	33.0	27.0
63	N/A	N/A	N/A	42.0	30.0
64	N/A	N/A	N/A	42.0	30.0
65	12.0	42.0	42.0	42.0	30.0
66	18.0	55.0	35.0	35.0	35.0
67	18.0	55.0	40.0	40.0	40.0
68	18.0	55.0	30.0	30.0	30.0
69	18.0	55.0	30.0	30.0	30.0
70	18.0	55.0	30.0	30.0	30.0
71	18.0	55.0	30.0	30.0	30.0
72	18.0	55.0	30.0	30.0	30.0
73	18.0	55.0	30.0	30.0	30.0
74	18.0	55.0	30.0	30.0	30.0
75	100.0	100.0	100.0	100.0	100.0

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

15. Family Composition Assumptions For members not currently in receipt, 60% of members are assumed married to spouses of the opposite sex. Males are assumed to be two years older than females.

For purposes of the optional form of payment death benefit for members currently in receipt, beneficiary status is based on the beneficiary allowance reported. If no beneficiary date of birth is provided, the beneficiary is assumed to be the member's spouse of the opposite sex with males assumed to be two years older than females.

No additional dependent children or parents are assumed.

16. Form of Payment Current actives are assumed to elect the Maximum Option.

17. Data Information provided by the prior actuary was relied upon for the purposes of setting the status of and valuing non-contributing records. For non-contributing terminated members, a deferred retirement benefit is estimated, when applicable, based on the last known salary. For non-contributing members with incomplete information, the benefit is based on the Annuity Savings Fund.

Deferred beneficiaries were reported separately from other non-contributing members for the first time in 2021. The benefit is based on the Annuity Savings Fund.

For current beneficiaries with incomplete information, reasonable assumptions were made based on information available in prior years.

Inactive participants receiving benefits according to the 2020 data but omitted from the 2021 data are assumed to have died without a beneficiary.

Tier 4 and 5 members on long-term disability appeared on the active data for the first time in 2019. The number of members on long-term disability is immaterial for valuation purposes. Therefore, we valued these members as regular contributing and non-contributing members while we gain clarity on what happens with these members.

18. Rationale for Assumptions The demographic assumptions used in this report reflect the results of the July 1, 2018 – June 30, 2021 Experience Study, which was approved by the Board of Trustees on December 1, 2022. The investment return assumption was recommended by the State Treasurer.

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

19. Projection Basis This report includes projections of future assets, benefit payments and contributions for the purpose of determining the GASB 67 discount rate.

The projections are based on the census data as of July 1, 2021 and the financial information as of June 30, 2022. The projections assume continuation of the plan provisions and actuarial assumptions in effect as of July 1, 2022 and do not reflect the impact of any changes in benefits or actuarial assumptions that may be adopted after July 1, 2022 unless otherwise indicated. While the assumptions individually are reasonable for the underlying valuation that supports the projections, specifically for projection purposes, they are also considered reasonable in the aggregate.

20. Changes in Assumptions Since Last Valuation Termination rates, ordinary disability rates, salary increase rates, and family composition assumptions were updated based on the July 1, 2018 – June 30, 2021 Experience Study, which was approved by the Board of Trustees on December 1, 2022.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

The actuarial methods used for determining State contributions are described below.

1. Actuarial Cost Method

The actuarial cost method for funding calculations is the Projected Unit Credit Cost Method. Non-contributory active members only use the Unit Credit Cost Method.

The actuarial liability is calculated as the actuarial present value of the projected benefits linearly allocated to periods prior to the valuation year based on service. Refunds are valued as the Accumulated Deductions with interest as of the valuation date provided by the Division of Pensions and Benefits. The unfunded actuarial liability is the actuarial liability on the valuation date less the actuarial value of assets.

In accordance with Chapter 78, P.L. 2011:

- Beginning with the July 1, 2010 actuarial valuation, the accrued liability contribution shall be computed so that if the contribution is paid annually in level dollars, it will amortize the unfunded accrued liability over an open 30 year period.
- Beginning with the July 1, 2019 actuarial valuation, the accrued liability contribution shall be computed so that if the contribution is paid annually in level dollars, it will amortize the unfunded accrued liability over a closed 30 year period (i.e., for each subsequent actuarial valuation the amortization period shall decrease by one year).
- Beginning with the July 1, 2029 actuarial valuation, when the remaining amortization period reaches 20 years, any increase or decrease in the unfunded accrued liability as a result of actuarial losses or gains for subsequent valuation years shall serve to increase or decrease, respectively, the amortization period for the unfunded accrued liability, unless an increase in the amortization period will cause it to exceed 20 years. If an increase in the amortization period as a result of actuarial losses for a valuation year would exceed 20 years, the accrued liability contribution shall be computed for the valuation year using a 20 year amortization period.

To the extent that the amortization period remains an open period in future years and depending upon the specific circumstances, it should be noted that in the absence of emerging actuarial gains or contributions made in excess of the actuarially determined contribution, any existing unfunded accrued liability may not be fully amortized in the future.

The non-contributory group life insurance benefit is funded separately through a term cost.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

2. Asset Valuation Method

For the purposes of determining contribution rates, an actuarial value of assets is used that dampens the volatility in the market value of assets, resulting in a smoother pattern of contributions.

The actuarial value of assets is adjusted to reflect actual contributions and benefit payments and administrative expenses, and an assumed rate of return on the previous year's assets and current year's cash flow at the prior year's actuarial valuation interest rate, with a further adjustment to reflect 20% of the difference between the resulting value and the actual market value of Fund assets.

3. Contributions

Chapter 83, P.L. 2016 requires the State to make the required pension contributions on a quarterly basis in each fiscal year according to the following schedule: at least 25% by September 30, at least 50% by December 31, at least 75% by March 31, and at least 100% by June 30. As such, contributions are assumed to be made on a quarterly basis with the first contribution 15 months after the associated valuation date, with the exception of the FYE 2022 contribution. For FYE 2022 only, we assumed that the entire contribution was made in a single payment on July 1, 2021 based on information provided by the DPB.

Chapter 98, P.L. 2017, the Lottery Enterprise Contribution Act, allows the TPAF to receive 77.78% of the proceeds of the Lottery Enterprise, based upon their members' past or present employment in schools and institutions in the State for a term of 30 years. Revenues from Chapter 98, P.L. 2017, the Lottery Enterprise Contribution Act, are assumed to be contributed to the trust on a monthly basis. The State's pension contribution is reduced by the product of the allocable percentage for the TPAF, the adjustment percentage, and the special asset value.

Contributions payable in the fiscal year starting on the valuation date are included in the actuarial value of assets as receivable contributions, discounted by the applicable valuation interest rate.

Legislation has provided for additional benefits and/or funding requirements which are included in this valuation and are described as follows.

Early Retirement Incentive Programs

State and Local employers which elected to participate in various early retirement incentive programs authorized by NJ Statute make contributions to cover the cost of these programs over amortization periods elected by the employer to the extent permitted by NJ Statute.

Chapter 133, P.L. 2001

Chapter 133, P.L. 2001 increased the accrual rate from 1/60 to 1/55. In addition, it lowered the age required for a veteran benefit equal to 1/55 of highest 12-month Compensation for each Year of Service from 60 to 55.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Chapter 133, P.L. 2001 established the Benefit Enhancement Fund (BEF) to fund the additional annual employer normal contribution due to the Statute's increased benefits. (Chapter 353, P.L. 2001 extended this coverage to this Statute's additional annual employer normal contribution.) If the assets in the BEF are insufficient to cover the normal contribution for the increased benefits for a valuation period, the State will pay such amount. As of July 1, 2021, there are no assets in the BEF.

4. Valuation Software

Cheiron utilizes ProVal, an actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have reviewed ProVal and have a basic understanding of it and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this actuarial valuation.

5. Changes in Methods Since the Last Valuation

None.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

This summary of Plan provisions provides an overview of the major provisions of the TPAF used in the actuarial valuation. It is not intended to replace the more precise language of the NJ State Statutes, Title 18A, Chapter 66, and if there is any difference between the description of the plan herein and the actual language in the NJ State Statutes, the NJ State Statutes will govern.

1. Eligibility for Membership

Employees appointed to positions requiring certification by the New Jersey Department of Education as members of a regular teaching or professional staff of a public school system in New Jersey are required to enroll as a condition of employment. Employees of the Department of Education holding unclassified, professional and certificated titles are eligible for membership. Temporary or substitute employees are not eligible. The eligible employee must be scheduled to work at least 32 hours per week effective May 22, 2010, per Chapter 1, P.L. 2010.

- a) Class B (or Tier 1) Member: Any member hired prior to July 1, 2007.
- b) Class D (or Tier 2) Member: Any member hired on or after July 1, 2007 and before November 2, 2008.
- c) Class E (or Tier 3) Member: Any member hired after November 1, 2008 and before May 22, 2010.
- d) Class F (or Tier 4) Member: Any member hired after May 21, 2010 and before June 28, 2011.
- e) Class G (or Tier 5) Member: Any member hired on or after June 28, 2011.

2. Plan Year

The 12-month period beginning on July 1 and ending on June 30.

3. Years of Service

A year of service for each year an employee is a Member of the Retirement System plus service, if any, covered by a prior service liability. Tier 4 members must be scheduled to work at least 32 hours per week, Tier 3 members must have an annual salary of \$7,500 (indexed for inflation) and other members must have an annual salary of \$500.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

4. Compensation

Base salary upon which contributions by a Member to the Annuity Savings Fund were based. Chapter 113, P.L. 1997 provides that Compensation cannot exceed the compensation limitation of Section 401(a)(17) of the Internal Revenue Code. Chapter 103, P.L. 2007 provides that for a Tier 2, 3, 4 or 5 Member, Compensation cannot exceed the annual maximum wage contribution base for Social Security, pursuant to the Federal Insurance Contribution Act.

5. Final Compensation

The average annual compensation upon which contributions by a Member are made for the three consecutive years of service immediately preceding retirement, or the highest three fiscal years of service, if greater. Chapter 1, P. L. 1997 provides that for a Tier 4 or Tier 5 Member, Final Compensation is the average annual compensation upon which contributions by a Member are made for the five consecutive years of service immediately preceding retirement, or the highest five fiscal years of service, if greater.

6. Final Year Compensation

The compensation upon which contributions by a Member to the Annuity Savings Fund are based in the last year of service.

7. Accumulated Deductions

The sum of all amounts deducted from the compensation of a Member or contributed by the Member or on the Member's behalf without interest.

8. Interest Credits on Accumulated Deductions

Members receive interest credits while contributing and for the first two years of inactivity. The rate depends on the type of benefit. Prior to July 1, 2018, members received interest credits for the entire period of inactivity until retirement or death.

9. Member Contributions

Each Member contributes a percentage of Compensation. Effective October 1, 2011, Chapter 78, P.L. 2011 set the member contribution rate at 6.5% and increased it by 1/7 of 1% each July thereafter until it attained an ultimate rate of 7.5% on July 1, 2018.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

10. Benefits

- a) **Service Retirement:** For a Tier 1 or Tier 2 Member, age 60. For a Tier 3 or Tier 4 Member, age 62. For a Tier 5 Member, age 65.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total allowance of:

- (1) For a Tier 1, 2 or 3 Member, 1/55 of Final Compensation for each Year of Service.
- (2) For a Tier 4 or 5 Member, 1/60 of Final Compensation for each Year of Service.

- b) **Early Retirement:** Prior to eligibility for Service Retirement. For a Tier 1, 2, 3 or 4 Member, 25 Years of Service. For a Tier 5 Member, 30 Years of Service.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total allowance of:

- (1) For a Tier 1 Member, the Service Retirement benefit reduced by 1/4 of one percent for each month the retirement date precedes age 55.
- (2) For a Tier 2 Member, the Service Retirement benefit reduced by 1/12 of one percent for each month the retirement date precedes age 60 through age 55 and by 1/4 of one percent for each month the retirement date precedes age 55.
- (3) For a Tier 3 or 4 Member, the Service Retirement benefit reduced by 1/12 of one percent for each month the retirement date precedes age 62 through age 55 and by 1/4 of one percent for each month the retirement date precedes age 55.
- (4) For a Tier 5 Member, the Service Retirement benefit reduced by 1/4 of one percent for each month the retirement date precedes age 65.

- c) **Veteran Retirement:** Age 55 with 25 Years of Service or Age 60 with 20 Years of Service for a qualified military veteran who retires directly from active service.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total allowance of the greater of:

- (1) 54.5% of highest 12-month Compensation, or
- (2) For a member who is at least age 55 with 35 Years of Service, 1/55 of highest 12-month Compensation for each Year of Service.

Veterans may receive a Service Retirement benefit if greater.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

- d) **Deferred Retirement:** Termination of service prior to eligibility for Service Retirement with 10 Years of Service.

Benefit is either:

- (1) A refund of Accumulated Deductions plus, if the member has completed three years of service, interest accumulated at 2.0% per annum; or
- (2) A deferred life annuity, commencing at age 60 for a Tier 1 or Tier 2 Member, age 62 for a Tier 3 or Tier 4 Member or age 65 for a Tier 5 Member, comprised of a member annuity plus an employer pension which together will provide a total allowance of the Service Retirement benefit based on Final Compensation and Years of Service at date of termination.

For Members who die during the deferral period, the benefit is a return of Accumulated Deductions with credited interest.

- e) **Non-Vested Termination:** Termination of service prior to eligibility for Service Retirement and less than 10 Years of Service.

Benefit is a refund of Accumulated Deductions plus, if the member has completed three Years of Service, interest accumulated at 2.0% per annum.

- f) **Death Benefits**

- (1) **Ordinary Death Before Retirement:** Death of an active contributing Member. Benefit is equal to:

- a. Lump sum payment equal to 150% of Final Year Compensation, also known as the non-contributory group life insurance benefit, plus
- b. Accumulated Deductions with credited interest.

- (2) **Accidental Death Before Retirement:** Death of an active Member resulting from injuries received from an accident during performance of duty and not a result of willful negligence. Benefit is equal to:

- a. Lump sum payment equal to 150% of Final Year Compensation, also known as the non-contributory group life insurance benefit, plus
- b. Spouse life annuity of 50% of Final Year Compensation payable until spouse's death or remarriage. If there is no surviving spouse or upon death or remarriage, a total of 20% (35%, 50%) of Final Year Compensation payable to one (two, three or more) dependent child(ren). If there is no surviving spouse or dependent child(ren), 25% (40%) of Final Year Compensation to one (two) dependent parent(s). If there is no surviving spouse, dependent child(ren) or parent(s), the benefit is a refund of Accumulated Deductions with credited interest.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

- (3) Death After Retirement: Death of a retired Member. Benefit is equal to:
- a. Lump sum payment equal to 3/16 of Final Year Compensation for a Member retired under service, early, veteran or deferred retirement with 10 Years of Service. For a Member receiving a disability benefit, lump sum payment of 150% of Final Year Compensation if death occurs prior to age 60 and 3/16 of Final Compensation if death occurs after age 60. This benefit is also known as the non-contributory group life insurance benefit, plus
 - b. Any survivor benefit due under the Member's optional form of payment election. Previously granted COLAs also apply to life annuities.

Members are also eligible for a voluntary, employee-paid life insurance policy, known as the contributory group life insurance policy. This benefit is not paid through the Fund and is not considered for valuation purposes.

g) Disability Retirement

- (1) Ordinary Disability Retirement: 10 Years of Service and totally and permanently incapacitated from the performance of normal or assigned duties. Only available to Tier 1, 2 and 3 Members.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total allowance of:

- a. 1.64% of Final Compensation for each Year of Service; or
- b. 43.6% of Final Compensation.

- (2) Accidental Disability Retirement: Total and permanent incapacitation as a direct result of a traumatic event occurring during and as a result of the performance of regular or assigned duties. Only available to Tier 1, 2 and 3 Members.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total allowance of 72.7% of the Compensation at the date of injury.

The pension portion of the benefit will be offset for any periodic Workers' Compensation benefits.

Tier 4 and Tier 5 Members are eligible for long-term disability coverage. This benefit is not paid through the Fund and is not considered for valuation purposes. Both Member and employer contributions to the Fund continue while on long-term disability, with the policy covering the Member portion. The long-term disability benefit equals 60% of Final Year Compensation and may be offset for other periodic benefits, such as Workers' Compensation, short-term disability or Social Security. The long-term disability benefit may continue through the earlier of age 70 or commencement of a retirement benefit under the Fund.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

11. Optional Forms of Payment

The member may elect the following forms of payment.

- a) Maximum Option: Single life annuity with a return of the balance of the Accumulated Deductions with credited interest.
- b) Option 1: Single life annuity with a return of the balance of the initial reserve.
- c) Option 2: 100% joint and survivor annuity.
- d) Option 3: 50% joint and survivor annuity.
- e) Option 4: Other percentage joint and survivor annuity.
- f) Option A: 100% pop-up joint and survivor annuity.
- g) Option B: 75% pop-up joint and survivor annuity.
- h) Option C: 50% pop-up joint and survivor annuity.
- i) Option D: 25% pop-up joint and survivor annuity.

12. Cost-of-Living Adjustments

Also known as Pension Adjustments. Provided annually to retirees and survivors after 24 months of retirement prior to July 1, 2011. Chapter 78, P.L. 2011 eliminated future adjustments effective July 1, 2011. Adjustments may be reinstated in the future subject to certain conditions outlined in Chapter 78, P.L. 2011.

13. Changes in Plan Provisions Since Last Valuation

Chapter 296, P.L. 2021 permits a certified school nurse who is retired from TPAF to return to employment for up to two years without reenrollment in TPAF.

Chapter 408, P.L. 2021 permits teachers and professional staff members who provide special services and retired from TPAF to return to employment for up to two years without reenrollment in TPAF if the return to employment begins during the 2021-2022 or 2022-2023 school years.

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

APPENDIX D – DETERMINATION OF DISCOUNT RATE

Table 1 - Projection of the Pension Plan's Fiduciary Net Position
(In Thousands)
Projections Commence June 30, 2022

Year	Projected Beginning Fiduciary Net Position (a)	Projected Member Contributions (b)	Projected Employer Contributions (c)	Projected Lottery Contributions (d)	Projected Benefit Payments (e)	Projected Administrative Expenses (f)	Projected Investment Earnings (g)	Projected Ending Fiduciary Net Position (h) = (a) + (b) + (c) + (d) - (e) - (f) + (g)
1	\$ 24,637,870	\$ 847,536	\$ 3,251,948	\$ 857,939	\$ 4,912,342	\$ 12,901	\$ 1,698,415	\$ 26,368,465
2	26,368,465	833,715	3,430,693	867,755	5,008,412	13,150	1,820,749	28,299,816
3	28,299,816	819,616	3,495,357	875,751	5,105,524	13,401	1,954,077	30,325,692
4	30,325,692	804,375	3,554,079	882,943	5,208,659	13,668	2,093,592	32,438,354
5	32,438,354	794,366	3,606,329	891,786	5,321,536	13,961	2,238,917	34,634,254
6	34,634,254	785,069	3,645,024	899,574	5,440,562	14,270	2,389,494	36,898,582
7	36,898,582	774,529	3,675,732	908,412	5,563,386	14,590	2,544,517	39,223,797
8	39,223,797	762,198	3,701,382	925,676	5,692,417	14,925	2,703,686	41,609,398
9	41,609,398	747,860	3,720,483	934,943	5,829,527	15,282	2,866,288	44,034,163
10	44,034,163	731,510	3,719,077	944,302	5,975,864	15,664	3,030,717	46,468,241
11	46,468,241	713,210	3,714,130	953,755	6,126,730	16,057	3,195,486	48,902,035
12	48,902,035	692,931	3,705,315	963,303	6,282,296	16,464	3,359,910	51,324,736
13	51,324,736	670,627	3,693,272	972,946	6,442,154	16,882	3,523,256	53,725,802
14	53,725,802	646,631	3,677,622	982,686	6,601,950	17,300	3,684,940	56,098,431
15	56,098,431	621,467	3,659,268	992,523	6,756,858	17,705	3,844,694	58,441,818
16	58,441,818	595,511	3,639,526	1,002,458	6,905,021	18,094	4,002,572	60,758,771
17	60,758,771	569,294	3,619,193	1,012,493	7,042,757	18,455	4,158,936	63,057,475
18	63,057,475	543,279	3,598,979	1,022,628	7,166,272	18,779	4,314,526	65,351,836
19	65,351,836	517,667	3,579,513	1,032,865	7,275,321	19,065	4,470,345	67,657,840
20	67,657,840	491,581	3,561,234	1,043,204	7,373,385	19,323	4,627,374	69,988,524
21	69,988,524	463,617	3,543,471	1,053,646	7,468,453	19,574	4,786,184	72,347,415
22	72,347,415	433,028	3,524,638	1,064,193	7,564,855	19,829	4,946,805	74,731,395
23	74,731,395	399,765	3,503,672	1,074,845	7,663,671	20,091	5,108,953	77,134,868
24	77,134,868	364,355	3,480,167	1,085,604	7,763,218	20,356	5,272,303	79,553,723
25	79,553,723	327,819	3,454,192	1,096,470	7,859,891	20,614	5,436,728	81,988,427
26	81,988,427	290,921	4,168,038	0	7,951,931	20,859	5,583,454	84,058,050
27	84,058,050	253,439	4,138,899	0	8,043,581	21,104	5,723,116	86,108,820
28	86,108,820	215,687	4,107,547	0	8,132,909	21,343	5,861,471	88,139,273
29	88,139,273	178,651	1,380,226	0	8,213,478	21,558	5,928,960	87,392,073
30	87,392,073	144,651	360,641	0	8,272,840	21,718	5,847,045	85,449,852
31	85,449,852	115,385	281,500	0	8,301,354	21,795	5,707,045	83,230,633
32	83,230,633	90,549	247,792	0	8,291,033	21,768	5,550,325	80,806,498
33	80,806,498	69,957	219,822	0	8,259,037	21,684	5,380,305	78,195,862
34	78,195,862	53,220	195,898	0	8,196,701	21,519	5,198,516	75,425,276
35	75,425,276	39,805	175,878	0	8,104,995	21,275	5,006,761	72,521,450
36	72,521,450	29,208	159,414	0	7,986,797	20,961	4,806,784	69,509,098
37	69,509,098	21,002	146,133	0	7,843,102	20,578	4,600,256	66,412,809
38	66,412,809	14,801	135,711	0	7,676,116	20,134	4,388,801	63,255,872
39	63,255,872	10,257	127,799	0	7,487,760	19,632	4,173,960	60,060,495
40	60,060,495	7,015	122,048	0	7,280,279	19,079	3,957,191	56,847,392
41	56,847,392	4,745	118,051	0	7,055,933	18,481	3,739,842	53,635,616
42	53,635,616	3,175	115,374	0	6,817,303	17,845	3,523,137	50,442,154
43	50,442,154	2,099	113,627	0	6,566,971	17,178	3,308,159	47,281,890
44	47,281,890	1,372	112,492	0	6,307,481	16,487	3,095,848	44,167,634
45	44,167,634	890	111,725	0	6,040,289	15,776	2,887,041	41,111,224
46	41,111,224	559	111,136	0	5,766,907	15,049	2,682,505	38,123,470
47	38,123,470	337	110,557	0	5,488,421	14,309	2,482,954	35,214,588
48	35,214,588	190	109,892	0	5,205,965	13,559	2,289,059	32,394,205
49	32,394,205	95	109,073	0	4,920,679	12,801	2,101,452	29,671,344
50	29,671,344	38	108,050	0	4,633,731	12,041	1,920,723	27,054,384
51	27,054,384	10	106,785	0	4,346,344	11,280	1,747,415	24,550,970
52	24,550,970	0	105,255	0	4,059,875	10,522	1,582,014	22,167,843
53	22,167,843	0	103,440	0	3,775,746	9,771	1,424,942	19,910,708
54	19,910,708	0	101,323	0	3,495,440	9,031	1,276,548	17,784,109
55	17,784,109	0	98,887	0	3,220,325	8,306	1,137,101	15,791,466
56	15,791,466	0	96,134	0	2,951,759	7,599	1,006,794	13,935,036
57	13,935,036	0	93,074	0	2,691,053	6,913	885,740	12,215,884
58	12,215,884	0	89,723	0	2,439,435	6,253	773,972	10,633,891
59	10,633,891	0	86,103	0	2,198,026	5,620	671,443	9,187,790
60	9,187,790	0	82,232	0	1,967,822	5,018	578,031	7,875,212

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

APPENDIX D – DETERMINATION OF DISCOUNT RATE

Table 1 - Projection of the Pension Plan's Fiduciary Net Position
(In Thousands)
Projections Commence June 30, 2022

Year	Projected Beginning Fiduciary Net Position (a)	Projected Member Contributions (b)	Projected Employer Contributions (c)	Projected Lottery Contributions (d)	Projected Benefit Payments (e)	Projected Administrative Expenses (f)	Projected Investment Earnings (g)	Projected Ending Fiduciary Net Position (h) = (a) + (b) + (c) + (d) - (e) - (f) + (g)
61	7,875,212	0	78,138	0	1,749,676	4,449	493,541	6,692,766
62	6,692,766	0	73,852	0	1,544,297	3,914	417,714	5,636,121
63	5,636,121	0	69,404	0	1,352,261	3,415	350,226	4,700,074
64	4,700,074	0	64,828	0	1,174,015	2,953	290,699	3,878,634
65	3,878,634	0	60,157	0	1,009,884	2,528	238,705	3,165,084
66	3,165,084	0	55,422	0	860,062	2,142	193,766	2,552,068
67	2,552,068	0	50,662	0	724,613	1,795	155,368	2,031,692
68	2,031,692	0	45,908	0	603,450	1,485	122,962	1,595,627
69	1,595,627	0	41,204	0	496,336	1,212	95,974	1,235,256
70	1,235,256	0	36,594	0	402,858	976	73,817	941,834
71	941,834	0	32,125	0	322,421	773	55,901	706,666
72	706,666	0	27,843	0	254,242	603	41,646	521,309
73	521,309	0	23,792	0	197,370	463	30,495	377,764
74	377,764	0	20,015	0	150,715	348	21,928	268,644
75	268,644	0	16,558	0	113,112	257	15,469	187,302
76	187,302	0	13,454	0	83,362	186	10,696	127,904
77	127,904	0	10,726	0	60,277	132	7,241	85,462
78	85,462	0	8,376	0	42,722	92	4,795	55,820
79	55,820	0	6,397	0	29,651	62	3,104	35,607
80	35,607	0	4,771	0	20,132	41	1,962	22,166
81	22,166	0	3,469	0	13,360	26	1,210	13,459
82	13,459	0	2,455	0	8,656	17	728	7,969
83	7,969	0	1,686	0	5,470	10	427	4,602
84	4,602	0	1,123	0	3,369	6	244	2,595
85	2,595	0	724	0	2,020	3	137	1,431
86	1,431	0	450	0	1,180	2	75	775
87	775	0	270	0	671	1	40	414
88	414	0	156	0	372	1	21	219
89	219	0	87	0	202	0	11	115
90	115	0	47	0	108	0	6	60
91	60	0	25	0	57	0	3	31
92	31	0	13	0	30	0	2	16
93	16	0	7	0	15	0	1	8
94	8	0	3	0	8	0	0	4
95	4	0	2	0	4	0	0	2
96	0	0	0	0	2	0	0	0
97	0	0	0	0	1	0	0	0
98	0	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0
103	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0	0
107	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0
111	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0
113	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

APPENDIX D – DETERMINATION OF DISCOUNT RATE

Table 2 - Actuarial Present Values of Projected Benefit Payments
(In Thousands)

Projections Commence June 30, 2022

* From Table 1 - Projection of the Pension Plan's Fiduciary Net Position, column (a)

** From Table 1 - Projection of the Pension Plan's Fiduciary Net Position, column (e)

Year	Projected Beginning Fiduciary Net Position*	Projected Benefit Payments for current Plan participants**	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments	Present Value of "Funded" Benefit Payments (f) = (d) / (1+7.00%) ^[(a) - .5]	Present Value of "Unfunded" Benefit Payments (g) = (e) / (1+3.54%) ^[(a) - .5]	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) / (1+7.00%) ^[(a) - .5]
(a)	(b)	(c)	(d) = (c) if (b) >= (c)	(e) = (c) - (d)	(f) = (d) / (1+7.00%) ^[(a) - .5]	(g) = (e) / (1+3.54%) ^[(a) - .5]	(h) = (c) / (1+7.00%) ^[(a) - .5]
1	\$ 24,637,870	\$ 4,912,342	\$ 4,912,342	\$ 0	\$ 4,748,940	\$ 0	\$ 4,748,940
2	26,368,465	5,008,412	5,008,412	0	4,525,061	0	4,525,061
3	28,299,816	5,105,524	5,105,524	0	4,311,028	0	4,311,028
4	30,325,692	5,208,659	5,208,659	0	4,110,387	0	4,110,387
5	32,438,354	5,321,536	5,321,536	0	3,924,732	0	3,924,732
6	34,634,254	5,440,562	5,440,562	0	3,750,015	0	3,750,015
7	36,898,582	5,563,386	5,563,386	0	3,583,807	0	3,583,807
8	39,223,797	5,692,417	5,692,417	0	3,427,034	0	3,427,034
9	41,609,398	5,829,527	5,829,527	0	3,279,980	0	3,279,980
10	44,034,163	5,975,864	5,975,864	0	3,142,352	0	3,142,352
11	46,468,241	6,126,730	6,126,730	0	3,010,919	0	3,010,919
12	48,902,035	6,282,296	6,282,296	0	2,885,393	0	2,885,393
13	51,324,736	6,442,154	6,442,154	0	2,765,247	0	2,765,247
14	53,725,802	6,601,950	6,601,950	0	2,648,447	0	2,648,447
15	56,098,431	6,756,858	6,756,858	0	2,533,262	0	2,533,262
16	58,441,818	6,905,021	6,905,021	0	2,419,449	0	2,419,449
17	60,758,771	7,042,757	7,042,757	0	2,306,271	0	2,306,271
18	63,057,475	7,166,272	7,166,272	0	2,193,195	0	2,193,195
19	65,351,836	7,275,321	7,275,321	0	2,080,905	0	2,080,905
20	67,657,840	7,373,385	7,373,385	0	1,970,985	0	1,970,985
21	69,988,524	7,468,453	7,468,453	0	1,865,792	0	1,865,792
22	72,347,415	7,564,855	7,564,855	0	1,766,239	0	1,766,239
23	74,731,395	7,663,671	7,663,671	0	1,672,252	0	1,672,252
24	77,134,868	7,763,218	7,763,218	0	1,583,153	0	1,583,153
25	79,553,723	7,859,891	7,859,891	0	1,498,007	0	1,498,007
26	81,988,427	7,951,931	7,951,931	0	1,416,401	0	1,416,401
27	84,058,050	8,043,581	8,043,581	0	1,338,996	0	1,338,996
28	86,108,820	8,132,909	8,132,909	0	1,265,296	0	1,265,296
29	88,139,273	8,213,478	8,213,478	0	1,194,234	0	1,194,234
30	87,392,073	8,272,840	8,272,840	0	1,124,173	0	1,124,173
31	85,449,852	8,301,354	8,301,354	0	1,054,250	0	1,054,250
32	83,230,633	8,291,033	8,291,033	0	984,056	0	984,056
33	80,806,498	8,259,037	8,259,037	0	916,129	0	916,129
34	78,195,862	8,196,701	8,196,701	0	849,733	0	849,733
35	75,425,276	8,104,995	8,104,995	0	785,258	0	785,258
36	72,521,450	7,986,797	7,986,797	0	723,184	0	723,184
37	69,509,098	7,843,102	7,843,102	0	663,712	0	663,712
38	66,412,809	7,676,116	7,676,116	0	607,086	0	607,086
39	63,255,872	7,487,760	7,487,760	0	553,448	0	553,448
40	60,060,495	7,280,279	7,280,279	0	502,908	0	502,908
41	56,847,392	7,055,933	7,055,933	0	455,524	0	455,524
42	53,635,616	6,817,303	6,817,303	0	411,326	0	411,326
43	50,442,154	6,566,971	6,566,971	0	370,301	0	370,301
44	47,281,890	6,307,481	6,307,481	0	332,400	0	332,400
45	44,167,634	6,040,289	6,040,289	0	297,495	0	297,495
46	41,111,224	5,766,907	5,766,907	0	265,449	0	265,449
47	38,123,470	5,488,421	5,488,421	0	236,103	0	236,103
48	35,214,588	5,205,965	5,205,965	0	209,301	0	209,301
49	32,394,205	4,920,679	4,920,679	0	184,889	0	184,889
50	29,671,344	4,633,731	4,633,731	0	162,717	0	162,717
51	27,054,384	4,346,344	4,346,344	0	142,641	0	142,641
52	24,550,970	4,059,875	4,059,875	0	124,523	0	124,523
53	22,167,843	3,775,746	3,775,746	0	108,232	0	108,232
54	19,910,708	3,495,440	3,495,440	0	93,642	0	93,642
55	17,784,109	3,220,325	3,220,325	0	80,628	0	80,628
56	15,791,466	2,951,759	2,951,759	0	69,069	0	69,069
57	13,935,036	2,691,053	2,691,053	0	58,849	0	58,849
58	12,215,884	2,439,435	2,439,435	0	49,857	0	49,857
59	10,633,891	2,198,026	2,198,026	0	41,984	0	41,984
60	9,187,790	1,967,822	1,967,822	0	35,128	0	35,128

**TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2022 MEASUREMENT DATE**

APPENDIX D – DETERMINATION OF DISCOUNT RATE

Table 2 - Actuarial Present Values of Projected Benefit Payments
(In Thousands)

Projections Commence June 30, 2022

* From Table 1 - Projection of the Pension Plan's Fiduciary Net Position, column (a)

** From Table 1 - Projection of the Pension Plan's Fiduciary Net Position, column (e)

Year	Projected Beginning Fiduciary Net Position*	Projected Benefit Payments for current Plan participants**	"Funded" Portion of Benefit Payments (d) = (c) if (b) >= (c)	"Unfunded" Portion of Benefit Payments (e) = (c) - (d)	Present Value of "Funded" Benefit Payments (f) = (d) / (1+7.00%) ^[(a) - .5]	Present Value of "Unfunded" Benefit Payments (g) = (e) / (1+3.54%) ^[(a) - .5]	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) / (1+7.00%) ^[(a) - .5]
(a)	(b)	(c)	(d) = (c) if (b) >= (c)	(e) = (c) - (d)	(f) = (d) / (1+7.00%) ^[(a) - .5]	(g) = (e) / (1+3.54%) ^[(a) - .5]	(h) = (c) / (1+7.00%) ^[(a) - .5]
61	7,875,212	1,749,676	1,749,676	0	29,190	0	29,190
62	6,692,766	1,544,297	1,544,297	0	24,078	0	24,078
63	5,636,121	1,352,261	1,352,261	0	19,705	0	19,705
64	4,700,074	1,174,015	1,174,015	0	15,988	0	15,988
65	3,878,634	1,009,884	1,009,884	0	12,853	0	12,853
66	3,165,084	860,062	860,062	0	10,230	0	10,230
67	2,552,068	724,613	724,613	0	8,055	0	8,055
68	2,031,692	603,450	603,450	0	6,270	0	6,270
69	1,595,627	496,336	496,336	0	4,819	0	4,819
70	1,235,256	402,858	402,858	0	3,656	0	3,656
71	941,834	322,421	322,421	0	2,734	0	2,734
72	706,666	254,242	254,242	0	2,015	0	2,015
73	521,309	197,370	197,370	0	1,462	0	1,462
74	377,764	150,715	150,715	0	1,043	0	1,043
75	268,644	113,112	113,112	0	732	0	732
76	187,302	83,362	83,362	0	504	0	504
77	127,904	60,277	60,277	0	341	0	341
78	85,462	42,722	42,722	0	226	0	226
79	55,820	29,651	29,651	0	146	0	146
80	35,607	20,132	20,132	0	93	0	93
81	22,166	13,360	13,360	0	58	0	58
82	13,459	8,656	8,656	0	35	0	35
83	7,969	5,470	5,470	0	21	0	21
84	4,602	3,369	3,369	0	12	0	12
85	2,595	2,020	2,020	0	7	0	7
86	1,431	1,180	1,180	0	4	0	4
87	775	671	671	0	2	0	2
88	414	372	372	0	1	0	1
89	219	202	202	0	1	0	1
90	115	108	108	0	0	0	0
91	60	57	57	0	0	0	0
92	31	30	30	0	0	0	0
93	16	15	15	0	0	0	0
94	8	8	8	0	0	0	0
95	4	4	4	0	0	0	0
96	0	2	0	2	0	0	0
97	0	1	0	1	0	0	0
98	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0
103	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0
107	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0
111	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0
113	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0
					\$ 89,856,052	\$ 0	\$ 89,856,052

APPENDIX E – GLOSSARY OF TERMS

1. Actuarially Determined Contribution

A target or recommended contribution for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

2. Actuarial Valuation Date

The date as of which an actuarial valuation is performed. This date may be up to 24 months prior to the measurement date and up to 30 months prior to the employer's reporting date.

3. Deferred Inflow of Resources

An acquisition of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience gains on the Total Pension Liability, assumption changes reducing the Total Pension Liability, or investment gains that are recognized in future reporting periods.

4. Deferred Outflow of Resources

A consumption of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience losses on the Total Pension Liability, assumption changes increasing the Total Pension Liability, or investment losses that are recognized in future reporting periods.

5. Entry Age Actuarial Cost Method

The actuarial cost method required for GASB 68 calculations. Under this method, 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 Service Cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future service costs is called the Total Pension Liability.

6. Measurement Date

The date as of which the Total Pension Liability and Plan Fiduciary Net Position are measured. The Total Pension Liability may be projected from the Actuarial Valuation Date to the Measurement Date. The Measurement Date must be the same as the Reporting Date for the plan.

APPENDIX E – GLOSSARY OF TERMS

7. Net Pension Liability

The liability of employers and nonemployer contributing entities for employees for benefits provided through a defined benefit pension plan. It is calculated as the Total Pension Liability less the Plan Fiduciary Net Position.

8. Plan Fiduciary Net Position

The fair or market value of assets.

9. Reporting Date

The last day of the plan or employer's fiscal year.

10. Service Cost

The portion of the actuarial present value of projected benefit payments that is attributed to the current period of employee service in conformity with the requirements of GASB 68. The Service Cost is the normal cost calculated under the entry age actuarial cost method.

11. Total Pension Liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of GASB 68. The Total Pension Liability is the actuarial liability calculated under the entry age actuarial cost method. This measurement generally is not appropriate for estimating the cost to settle the Plan's liabilities.