

**TEACHERS' PENSION AND ANNUITY FUND
OF NEW JERSEY**

June 30, 2016 Actuarial Valuation Report
Prepared as of July 1, 2016



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February 3, 2017

Board of Trustees
Teachers' Pension and Annuity Fund of New Jersey
State of New Jersey
Department of the Treasury
Division of Pensions and Benefits, CN 295
Trenton, NJ 08625-0295

Ladies and Gentlemen:

This report presents the results of the actuarial valuation of Teachers' Pension and Annuity Fund of New Jersey as of June 30, 2016. Section I contains highlights of the valuation including a general discussion and comments on the various schedules included in the report. The subsequent Sections contain schedules summarizing the underlying calculations, asset information, participant data, plan benefits and actuarial assumptions.

Purpose

The main purposes of this report are:

- to provide the annual state contribution in accordance with N.J. Statutes to be made in the Fiscal Year ending June 30, 2018 which represents the contribution for the valuation year beginning July 1, 2016;
- to determine the Target Funded Ratio as of July 1, 2016 in accordance with N.J. Statutes to potentially provide for the formation of a special pension committee;
- to review the experience under the plan for the valuation year ending June 30, 2016.

Actuarial computations presented in this report are for purposes of determining the statutory contribution amounts and Target Funded Ratio for TPAF. Actuarial computations under GASB Statements No. 67 and No. 68 are provided in a separate report and are for purposes of assisting TPAF and participating employers in fulfilling their financial accounting requirements. The computations prepared for these two purposes may differ. The calculations in the enclosed report have been made on a

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basis consistent with our understanding of the N.J. statutes. Determinations for purposes other than these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the use and benefit of the Teachers' Pension and Annuity Fund ("System") for the State of New Jersey Division of Pension and Benefits. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exception:

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No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

Data Reliance

In preparing this report, we relied, without audit, on statutory provisions, member census data, plan provisions, asset statements and other information (both written and oral) provided by the State of New Jersey Division of Pensions and Benefits. We have not audited or verified the census data, asset statements or other information. To the extent any of these are inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete.

We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have not found material defects in the data. If there are material defects in the data, it is possible that they would be uncovered by a

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detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Future Measurements

This valuation report is only an estimate of TPAF's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of TPAF benefits, only the timing of TPAF contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

Future actuarial measurements may differ significantly from the current measurements presented in this report 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; changes in actuarial methods; and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The Board and State Treasurer have the final decision regarding the appropriateness of the assumptions and actuarial cost methods.

Certification

We hereby certify that, to the best of our knowledge, this report, including all costs and liabilities based on actuarial assumptions and methods adopted by the Board or mandated by statute, is complete and accurate and determined in conformance with generally recognized and accepted actuarial principles and practices, which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions and supporting Recommendations of the American Academy of Actuaries.

In compliance with New Jersey statute, this actuarial valuation is based on an investment return assumption of 7.65%, which is 25 basis points lower than the assumption of 7.90% used in the prior valuation. The investment return assumption is specified by the State Treasurer and is considered a *prescribed assumption* as defined by Actuarial Standard of Practice No. 27 (ASOP 27). Based on Milliman's capital market outlook model, this assumption is anticipated to be achieved approximately 1/3rd of the time, which is an increase from approximately 1/4th of the time, based on

projected annualized 30-year returns. We believe consideration should be given to reducing the investment return assumption further. If the investment return was lowered, the actuarial accrued liability and statutory contributions would increase and the funded ratio would decrease. Determining results at an alternative investment return assumption is outside the scope of our assignment.

This actuarial valuation is based on the asset valuation method in compliance with New Jersey Statute. This method recognizes 20% of the difference between the market value of assets and the actuarial value of assets. Per Actuarial Standards of Practice (ASOP) No. 44, a reasonable asset valuation method produces values within a sufficiently narrow range around market value or recognizes differences from market value in a sufficiently short period. As of June 30, 2016, the Actuarial Value of Assets is 114.5% of market value. Investment losses have occurred each year since the July 1, 2000 actuarial valuation on an actuarial value of asset basis. Combining an optimistic investment return assumption with a current actuarial value of assets that exceeds the market value of assets, along with an asset smoothing method which recognizes investment losses very slowly over time, will result in upward pressure on actuarially determined contribution requirements in future years.

We are members of the American Academy of Actuaries and meet its Qualification Standard to render this actuarial opinion.

Respectfully submitted,

By: 
Richard L. Gordon, F.S.A.
Member American Academy of Actuaries


Scott F. Porter, F.S.A.
Member American Academy of Actuaries

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY

A. Summary of Principal Results

PARTICIPANT DATA

	<u>June 30, 2016</u>		<u>June 30, 2015</u>		<u>June 30, 2014</u>	Percentage	Percentage
	Valuation		Valuation		Valuation	Change	Change
						<u>2015 to 2016</u>	<u>2014 to 2015</u>
Active Contributing Members							
Number	140,563		140,227		139,350	0.2 %	0.6 %
Number of Veteran Members	347		400		462	(13.3)	(13.4)
Average Pay	\$ 74,283	\$	73,522	\$	72,957	1.0	0.8
Total Payroll	10,441,386,406		10,309,792,863		10,166,606,997	1.3	1.4
Total Appropriation Payroll *	10,436,205,103		10,305,472,484		10,162,263,470	1.3	1.4
Avg. Member Accumulated Contributions	78,925		75,435		72,436	4.6	4.1
Total Member Accumulated Contributions	11,093,901,397		10,577,991,354		10,093,952,591	4.9	4.8
Non-Contributing Members							
Number	13,600		13,225		13,462	2.8 %	(1.8) %
Number of Veteran Members	47		48		61	(2.1)	(21.3)
Number of Active Members **	2,282		2,227		2,524	2.5	(11.8)
Average Pay for Active Members	\$ 64,464	\$	64,384	\$	63,140	0.1	2.0
Total Payroll for Active Members	147,107,300		143,383,785		159,365,746	2.6	(10.0)
Avg. Member Accumulated Contributions	45,239		41,721		39,431	8.4	5.8
Total Member Accumulated Contributions	615,248,682		551,754,254		530,825,507	11.5	3.9

* Excludes salary in excess of the Taxable Wage Base for employees hired after June 30, 2007

** The Division terminated numerous noncontributory records prior to the June 30, 2014 valuation

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY

(continued)

A. Summary of Principal Results (continued)

PARTICIPANT DATA

	<u>June 30, 2016</u>		<u>June 30, 2015</u>		<u>June 30, 2014</u>	Percentage	Percentage
	Valuation		Valuation		Valuation	Change	Change
						<u>2015 to 2016</u>	<u>2014 to 2015</u>
Service Retirees, Including Domestic Relations Beneficiaries							
Number	91,721		89,092		86,017	3.0 %	3.6 %
Average Annual Pension	\$ 41,542	\$	41,233	\$	40,911	0.7	0.8
Total Annual Pensions	\$ 3,810,269,332	\$	3,673,500,726	\$	3,519,020,046	3.7	4.4
Average Retirement Age of New Retirees	62.3		62.1		61.9	0.3	0.3
Average Annual Pension of New Retirees	\$ 46,569	\$	47,230	\$	48,145	(1.4)	(1.9)
Disabled Retirees							
Number	3,430		3,298		3,190	4.0 %	3.4 %
Average Annual Pension	\$ 28,770	\$	28,350	\$	28,012	1.5	1.2
Total Annual Pensions	\$ 98,682,444	\$	93,498,895	\$	89,357,528	5.5	4.6
Beneficiaries and Dependents							
Number	6,095		5,840		5,615	4.4 %	4.0 %
Average Annual Pension	\$ 26,025	\$	25,677	\$	25,343	1.4	1.3
Total Annual Pensions	\$ 158,623,208	\$	149,956,523	\$	142,302,680	5.8	5.4
Terminated Vested Participants							
Number	222		210		276	5.7 %	(23.9) %
Average Annual Pension	\$ 15,669	\$	15,006	\$	14,317	4.4	4.8
Total Annual Pensions	\$ 3,478,572	\$	3,151,200	\$	3,951,528	10.4	(20.3)

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY

(continued)

A. Summary of Principal Results (continued)

STATUTORY PENSION CONTRIBUTIONS WITH BUDGET ADJUSTMENTS

	June 30, 2016	June 30, 2015	June 30, 2014	Percentage	Percentage
	Valuation (State's	Valuation (State's	Valuation (State's	Change	Change
	Fiscal Year 2018	Fiscal Year 2017	Fiscal Year 2016	2015 to 2016	2014 to 2015
	<u>Contributions)</u>	<u>Contributions)</u>	<u>Contributions)</u>		
Normal Contribution (1/60th formula) ¹	\$ 291,633,684	\$ 284,765,709	\$ 300,837,572	2.4 %	(5.3) %
Additional Formula Contribution	70,807,655	71,559,513	70,146,274	(1.1) %	2.0 %
Accrued Liability Contribution	<u>2,637,136,345</u>	<u>2,380,849,929</u>	<u>2,173,827,688</u>	10.8 %	9.5 %
Total Pension Contribution by Statute ²	\$ 2,999,577,684	\$ 2,737,175,151	\$ 2,544,811,534 *	9.6 %	7.6 %
State Appropriation for Pension ³	(1,499,788,842)	(1,094,870,060)	(764,489,000)	37.0 %	43.2 %
Percentage of Statutory Pension Contribution Appropriated	50.0%	40.0%	30.0%	10.0 %	10.0 %

¹ Excludes cost of non-contributory group life insurance. State reimburses TPAF for actual amounts paid.

² These amounts should be increased for assumed interest at the rate of 7.65%, 7.90%, 7.90%, per annum if payment is delayed beyond June 30, 2018, June 30, 2017 and June 30, 2016, respectively.

³ Chapter 1, P.L. 2010 requires payment of the statutory pension contribution to be phased-in over a 7-year period from the fiscal year ending June 30, 2012 to the fiscal year ending June 30, 2018. The Chapter 1 contribution percentages are 71.4%, 85.7% and 100% for fiscal years ending June 30, 2016, 2017 and 2018, respectively. A portion of the appropriation will be allocated to State ERI 3 & 5 beginning with the fiscal year ending June 30, 2016. For fiscal years ending June 30, 2017 and 2018, the State appropriation is an expected amount.

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY

(continued)

A. Summary of Principal Results (continued)

LOCAL EMPLOYER CONTRIBUTIONS

	June 30, 2016	June 30, 2015	June 30, 2014	Percentage	Percentage
	<u>Valuation</u>	<u>Valuation</u>	<u>Valuation</u>	Change	Change
				<u>2015 to 2016</u>	<u>2014 to 2015</u>
Early Retirement Incentive Contributions payable April 1, 2018					
April 1, 2017 and April 1, 2016, respectively					
ERI 1 - Local Employers	\$ 894,162	\$ 901,208	\$ 901,208	(0.8) %	0.0 %
ERI 2 - Local Employers	350,348	355,700	975,324	(1.5) %	(63.5) %
ERI 4 - Local Employers	2,790,541	2,812,524	2,812,524	(0.8) %	0.0 %
Unauthorized ERIs - Local Employers *	<u>0</u>	<u>8,393,900</u>	<u>8,393,900</u>	<u>(100.0) %</u>	<u>0.0 %</u>
Total	\$ 4,035,051	\$ 12,463,332	\$ 13,082,956	(67.6) %	(4.7) %

* One Local Employer has settled their unauthorized ERI. A receivable has been included for remaining Local Employers first established in the 2011 valuation. The amount of the receivable has been reduced to exclude any interest for delayed payment after date of retirement.

Terminal Funding Contributions payable April 1, 2018, April 1, 2017 and April 1, 2016, respectively

No Locations	\$ 0	\$ 0	\$ 0	N/A	N/A
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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY

(continued)

A. Summary of Principal Results (continued)

	ASSETS AND LIABILITIES				
	<u>June 30, 2016</u>	<u>June 30, 2015</u>	<u>June 30, 2014</u>	Percentage Change	Percentage Change
	<u>Valuation</u>	<u>Valuation</u>	<u>Valuation</u>	<u>2015 to 2016</u>	<u>2014 to 2015</u>
Market Value of Pension Assets	\$ 23,732,571,086	\$ 26,320,738,690	\$ 27,643,078,116	(9.8) %	(4.8) %
Actuarial Value of Pension Assets	\$ 27,169,758,348	\$ 28,301,404,184	\$ 29,044,777,902	(4.0) %	(2.6) %
Ratio of Actuarial Value to Market Value	114.5 %	107.5 %	105.1 %	7.0 %	2.4 %
Actuarial Accrued Pension Liability	\$ 57,865,971,163	\$ 55,359,377,071	\$ 53,749,976,641	4.5 %	3.0 %
Unfunded Pension Liability					
Based on Market Value	\$ 34,133,400,077	\$ 29,038,638,381	\$ 26,106,898,525	17.5 %	11.2 %
Based on Actuarial Value	\$ 30,696,212,815	\$ 27,057,972,887	\$ 24,705,198,739	13.4 %	9.5 %
Funded Ratio					
Based on Market Value	41.01 %	47.55 %	51.43 %	(6.54) %	(3.88) %
Based on Actuarial Value	46.95 %	51.12 %	54.04 %	(4.17) %	(2.92) %
Target Funded Ratio	79.286 %	78.571 %	77.857 %	0.71 %	0.71 %
Change in Funded Ratio since June 30, 2006, 2005 and 2004, respectively					
Based on Market Value	(28.3) %	(21.5) %	(19.4) %	(6.8) %	(2.1) %
Based on Actuarial Value	(31.1) %	(29.7) %	(31.6) %	(1.4) %	1.9 %

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY

(continued)

A. Summary of Principal Results (continued)

	RISK MEASURES				
	June 30, 2016	June 30, 2015	June 30, 2014	Percentage	Percentage
	<u>Valuation</u>	<u>Valuation</u>	<u>Valuation</u>	Change	Change
				<u>2015 to 2016</u>	<u>2014 to 2015</u>
Market Value of Pension Assets	\$ 23,732,571,086	\$ 26,320,738,690	\$ 27,643,078,116	(9.8) %	(4.8) %
Annuity Savings Fund **	<u>11,783,696,363</u>	<u>11,199,306,391</u>	<u>10,695,781,560</u>	5.2 %	4.7 %
Net Market Value of Pension Assets	11,948,874,723	15,121,432,299	16,947,296,556	(21.0) %	(10.8) %
Actuarial Accrued Liability (AAL) for Retirees	37,997,277,608	36,103,778,885	34,555,715,163	5.2 %	4.5 %
% of AAL for Retirees Covered by Assets *	62.5%	72.9%	80.0%	(10.4) %	(7.1) %
% of AAL for Retirees Covered by Net Assets *	31.4%	41.9%	49.0%	(10.5) %	(7.1) %
Prior Year's Benefit Payments for Retirees	4,075,562,466	3,920,924,262	3,755,010,520	3.9 %	4.4 %
Ratio of Assets to Benefit Payments ^	5.8	6.7	7.4	(13.4) %	(9.5) %
Ratio of Net Assets to Benefit Payments ^	2.9	3.9	4.5	(25.6) %	(13.3) %
Ratio of AAL to Benefit Payments ^	9.3	9.2	9.2	1.1 %	0.0 %

* Percentage is limited to 100%.

** Accumulated active and inactive member contributions.

^ Does not include impact of future investment income, member and State contributions, and increases in benefit payments.

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

B. General Comments

This report summarizes the results of the actuarial valuation of the Teacher's Pension and Annuity Fund (TPAF) as of June 30, 2016, which determines the statutory contribution payable for the fiscal year ending June 30, 2018. This valuation reflects that the State is expected to appropriate contributions less than those required by Chapter 1, P.L. 2010 for the 2018 fiscal year (50% versus 100%). State contributions have been or are expected to be less than Chapter 1 phase-in contributions since the 2014 fiscal year. Chapter 1 provided for a 7-year phase-in to the full statutory contribution beginning with the 2012 fiscal year. The State anticipates utilizing a 10-year phase-in approach, with fiscal year 2018 being the fifth year of the phase-in. Unless State contributions follow a reasonable pattern to reach full funding of the statutory contribution, ***continued funding at low levels would put TPAF at significant risk of insolvency within a relatively short period of time.***

Assumptions

This valuation reflects the actuarial assumptions based on the July 1, 2012 – June 30, 2015 Experience Study. The experience study modified the assumed rates of mortality to be based on the 2006 white-collar tables recently published by the Society of Actuaries, with appropriate adjustments. The assumed rates of mortality improvement have been modified to a full generational approach based on a 60-year average of rates of improvement using Social Security data. It also slightly modified the assumed rates of termination and retirement from the prior assumptions. Furthermore, the salary scale assumption was modified from assuming average increases of 3.37% for periods ending up to June 30, 2016, 3.90% for periods ending up to June 30, 2021 and 4.71% thereafter to 3.40% for periods ending up to June 30, 2026 and 4.21% thereafter. Please refer to the Experience Study report for more information.

The adoption of these assumptions decreased the actuarial accrued liability as of June 30, 2016 by \$201.9 million or 0.4% and the statutory pension contribution for the fiscal year ending June 30, 2018 by \$39.5 million or 1.3%.

In compliance with New Jersey statute, this actuarial valuation is based on an investment return assumption of 7.65%, which is 25 basis points lower than the assumption of 7.90% used in the prior valuation. The investment return assumption

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

B. General Comments (continued)

is specified by the State Treasurer. The reduction in the investment return assumption increased the likelihood that it is expected to be achieved. Based on Milliman's capital market outlook model, this assumption is anticipated to be achieved approximately 1/3rd of the time, which is an increase from approximately 1/4th of the time, based on projected annualized 30-year returns. We believe consideration should be given to reducing the investment return assumption further. If the investment return was lowered, the actuarial accrued liability and statutory contributions would increase and the funded ratio would decrease. Determining results at an alternative investment return assumption is outside the scope of our assignment.

The reduction in the investment return assumption increased the actuarial accrued liability as of June 30, 2016 by \$1,346.1 million or 2.4% and the statutory pension contribution for the fiscal year ending June 30, 2018 by \$90.5 million or 3.1%.

Funding Methods

The actuarial funding method for determining the statutory contributions is the Projected Unit Credit method. This method determines the actuarial accrued liability for each member based on service accrued as of the valuation date and projected compensation increases. The normal cost is equal to the present value of the benefit based on projected compensation and service assumed to be earned in the upcoming year. For statutory contribution purposes, the normal cost is divided between the portion based on the 1/60th benefit formula and the additional formula component.

The State portion of the normal cost is reduced by expected member contributions during the upcoming year. Chapter 78, P.L. 2011 increased the employee contribution rate from 5.5% to 6.5% effective October 1, 2011 and by 1/7 of 1% each following July 1 over the next 7 years until 7.5% is attained effective July 1, 2018. Typically, all member contributions are used as an offset in developing an employer's normal cost. When Chapter 78 was passed, it was our understanding that the additional member contributions in excess of 5.5% would serve to reduce the unfunded actuarial accrued liability rather than serve as a direct offset to the State's Normal Contribution.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

B. General Comments (continued)

Beginning with the July 1, 2012 valuation, a change was made in the treatment of the contributions in excess of 5.5% to serve as a direct offset to the State's Normal Contribution. The long-term impact of this change in treatment of member contributions in excess of 5.5% of pay is that fewer contributions will be made to TPAF each year in the future resulting in a decrease in the projected funded ratio.

This actuarial valuation is based on the asset valuation method in compliance with Statute. This method recognizes 20% of the difference between the market value of assets and the actuarial value of assets. Per Actuarial Standards of Practice (ASOP) No. 44, a reasonable asset valuation method produces values within a sufficiently narrow range around market value or recognizes differences from market value in a sufficiently short period. As of June 30, 2016, the Actuarial Value of Assets is 114.5% of market value, which is an increase from the prior year of 107.5%. Investment losses have occurred each year since the July 1, 2000 actuarial valuation on an actuarial value of asset basis. Combining an optimistic investment return assumption with a current actuarial value of assets that exceeds the market value of assets, along with an asset smoothing method which recognizes investment losses very slowly over time, will result in upward pressure on actuarially determined contribution requirements in future years.

The unfunded liability equals the difference in the actuarial accrued liability and the actuarial value of assets. For purposes of determining the statutory contributions, the unfunded liability is amortized over 30 years on a level dollar basis. Since a level dollar method is used, the full amount of interest on the unfunded liability plus a principal portion of the unfunded liability is expected to be paid each year (if the total contribution is paid). The amortization period will remain at 30 years until the June 30, 2019 valuation (2021 fiscal year). At that time, the period will be reduced by 1 each year until 20 years is attained with the June 30, 2028 valuation (2030 fiscal year).

Statutory Contributions

The statutory pension contribution requirements are highlighted on the Summary Exhibits shown on page 3. Included on these exhibits is our understanding of the contributions appropriated or to be appropriated for the 2017 and 2018 fiscal years as well as the actual paid contribution in the 2016 fiscal year.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

B. General Comments (continued)

For the 2017 fiscal year, this report was prepared assuming the State has or will appropriate 40% of the statutory contribution of \$1,094.9 million. For the 2018 fiscal year, the State anticipates funding 50% of the statutory contribution, which equals \$1,499.8 million. These contribution levels are less than those indicated by the Chapter 1 phase-in percentages of 71.4%, 85.7% and 100% for fiscal years 2016 – 2018, respectively.

The statutory pension contribution consists of the Normal Contribution, the Additional Formula Contribution and the Accrued Liability Contribution. Chapter 133 P.L. 2001 allows the Additional Formula Contribution to be reduced based on the balance in the Benefit Enhancement Fund (BEF). As of July 1, 2016, there are no assets in the BEF. Furthermore, since there are no Excess Assets as of July 1, 2016, no assets will be transferred to the BEF.

The statutory contribution increased 9.6% from \$2,737.2 million for the 2017 fiscal year to \$2,999.6 million for the 2018 fiscal year. Prior to changes in actuarial assumptions, the statutory contribution would have increased 7.7% to \$2,948.5 million. This increase is due to the increase in the Accrued Liability Contribution and the Normal Contribution, offset by the decrease in the Additional Formula Normal Cost. The increase in the Accrued Liability Contribution of 10.8% from \$2,380.8 million for the 2017 fiscal year to \$2,637.1 million for the 2018 fiscal year is due to the increase in the unfunded liability discussed in detail below. The Normal Contribution increased by 2.4% from \$284.8 million for the 2017 fiscal year to \$291.6 million for the 2018 fiscal year and the Additional Formula Normal Cost decreased by 1.1% from \$71.6 million for the 2017 fiscal year to \$70.8 million for the 2018 fiscal year, respectively. Excluding the impact of the changes in the actuarial assumptions, the combined normal cost would have decreased from the prior year primarily due lower benefits provided to new hires and the increase in the expected member contributions. The member contribution rate increased from 7.06% as of July 1, 2015 to 7.20% as of July 1, 2016. Since all member contributions are used as a direct offset to the Normal Contribution, this increase will result in a decrease in the Normal Contribution.

In addition to the pension contributions, the State contributes the actual amount of non-contributory group insurance claims. In years prior to the 2014 valuation, the

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

B. General Comments (continued)

costs for past ERI programs had been segregated as a receivable contribution and was included in the market value of assets. Beginning with the 2014 valuation, the receivable contribution has been removed from the asset value and the ERI contributions are now included in the development of the Accrued Liability Contribution.

Plan Provisions

There have been several changes to TPAF over the past several years modifying the retirement conditions, determination of final average compensation, disability benefits, and the benefit accrual rate for newly hired members. This has resulted in many new tiers of members. The effect of these tiers will take many years to have a significant impact on the normal cost portions of the contribution. Section VIII outlines the plan provisions of TPAF in detail.

In addition, Chapter 78, P.L. 2011 eliminated additional pension adjustment benefits (COLAs) effective July 1, 2011 for all members of TPAF. However, upon attainment of the Target Funded Ratio (TFR), a new pension committee will be formed to review possible changes to member contributions, retirement benefits including eligibility conditions, and with priority consideration, reactivation of pension adjustment benefits. The committee may modify the basis for the calculation of the adjustment and set the duration and extent of the reactivation. No decision of the committee will be implemented if the system's funded ratio falls below the TFR in any projected valuation period during the 30 years following implementation.

The Target Funded Ratio (TFR) is defined as the ratio of the Actuarial Value of Assets to the Actuarially Accrued Liability and equals 75% for fiscal year 2012 (June 30, 2010 actuarial valuation) increasing to 80% in equal increments over the following 7 years. As shown on page 5, the funded ratio as of July 1, 2016 is 46.95%, which is lower than the TFR of 79.286%. Thus, no changes in benefits can be contemplated for the 2018 fiscal year.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

B. General Comments (continued)

Unfunded Actuarial Accrued Liability

The unfunded Actuarial Accrued Liability increased by \$3,638.2 million from \$27,058.0 million as of July 1, 2015 to \$30,696.2 million as of July 1, 2016. The following table summarizes the reasons for the increase in the unfunded liability.

Unfunded Liability as of June 30, 2015	\$27,058.0
Impact of 2015 Experience Study	(201.9)
Reduction in Investment Return Assumption to 7.65%	1,346.1
Scheduled Amortization Payment less/(more) than Interest Accrual	(243.3)
State Appropriation less than Statutorily Required Contribution ¹	1,730.5
Actuarial Loss/(Gain)	1,047.3
Member Contributions Less/(More) than current level anticipated	(40.5)
Total Change in Unfunded Liability	\$3,638.2
Unfunded Liability as of June 30, 2016	\$30,696.2

¹ includes adjustment for local unauthorized ERI contribution not paid

Funded Ratio

As a result of the increase in the unfunded liability, the funded ratio based on the actuarial value of assets was reduced 4.1% from 51.1% as of June 30, 2015 to 47.0% as of June 30, 2016. Due to the asset valuation method, investment losses are expected on an actuarial value basis as the actuarial value of assets was 107.5% of market value as of the beginning of the year. Investment losses have occurred each year since the July 1, 2000 actuarial valuation on an actuarial value of asset basis. Without significant investment gains, the current method recognizes investment losses very slowly. Combining an optimistic investment return assumption with a current actuarial value of assets that exceeds the market value of assets, along with an asset smoothing method which recognizes investment losses very slowly over time, will result in continued downward pressure on the funded ratio on an actuarial value basis.

On a market value basis, the funded ratio decreased 6.6% from 47.6% to 41.0%. The ratio decreased on a market value basis due to 1) investment performance less

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

B. General Comments (continued)

than expected during the prior year, 2) State contributions less than the statutory required contribution for the 2017 fiscal year and 3) the decrease in the investment return assumption. Since July 1, 2006, the funded ratio on a market value basis has been reduced by 28.3%. This decrease is primarily due to investment losses experienced over the period, State contributions less than the statutory required contribution, and changes to the actuarial assumptions.

As of June 30, 2016, the market value of assets is significantly below the actuarial liability attributable to retirees primarily due to significant investment losses, State contributions significantly less than the statutory required contribution and other factors. Furthermore, if the assets contained in the Annuity Savings Fund (ASF) are excluded, the funded ratio of the remaining market value of assets to the actuarial accrued liability for retirees is 31.4%.

As of June 30, 2016, the ratio of market value of assets to the prior year's benefit payments decreased from 6.7 to 5.8. This is a simplistic measure of the number of years that the assets can cover benefit payments, excluding: investment income, State and member contributions, and future increases in those payments. If ASF assets are excluded, since they represent accumulated contributions from active and inactive members, the ratio is 2.9. The ratio for the prior year was 3.9.

Actuarial Gain/(Loss) Analysis

TPAF experienced an actuarial loss of \$1,047.3 million during the period July 1, 2015 to June 30, 2016 based on the actuarial assumptions adopted in the 2012 Experience Study. This loss is approximately 1.8% of the Actuarial Accrued Liability as of July 1, 2016. The major factors contributing to this loss are summarized below and are compared to the experience for the prior two plan years.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

B. General Comments (continued)

	<u>June 30, 2016</u>	<u>Gain/(Loss)</u> <i>(Amounts in Millions)</i> <u>June 30, 2015</u>	<u>June 30, 2014</u>
Economic Factors:			
Investment Return	\$(859.3)	\$(495.2)	\$(350.4)
Salary Increases	22.7	50.0	33.8
Expenses	(14.3)	(14.3)	(12.5)
Demographic Factors:			
Active Members	(69.2)	(22.8)	(41.9)
New Entrants	(55.5)	(48.1)	(44.1)
Non-Contributing Members	(39.6)	(32.7)	(8.2)
Retirees and Beneficiaries	23.2	5.0	(18.4)
Year of Mortality Improvement ¹	(55.3)	(54.1)	(36.1)
Other ²	<u>N/A</u>	<u>(295.9)</u>	<u>N/A</u>
Total	(1,047.3)	(908.1)	(477.8)

¹ For 2014, reflects impact on only retirees. For 2015 and 2016, reflects impact on both actives and retirees

² Includes changes in method to determine gain/loss and valuation system to determine liabilities

Total pension assets earned investment returns of approximately -1.12% on a market value basis and 4.68% on an actuarial value basis for the period ending June 30, 2016. The determination of the approximate rate of return on the market value of assets is based on all assets of the fund including receivables and payables in addition to the investment holdings. This will result in a different rate of return than reported by the Division of Investments. The resulting loss of \$859.3 million represents the shortfall in the actuarial value of assets relative to the 7.9% assumed investment return.

Salary increases for contributory members who were active on both July 1, 2015 and July 1, 2016 averaged 3.19% versus expected salary increases of 3.33% resulting in an actuarial gain of \$22.7 million. Salaries for new entrants averaged \$55,012, which is significantly below the average salary of all contributory members of \$74,283. This resulted in the average salary of all contributory members increasing by 1.0% over last year and combined with the number of active contributing members increasing by 0.2%, total contributory payroll increased by 1.3%.

Actuarial losses among active members include the impact of changes in participant data, including changes in service partially due to service purchases. The actuarial gain among retirees is due to reflecting 7 years of mortality improvement included in

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

B. General Comments (continued)

the valuation, offset by the impact of participant data changes, including changes in benefit amounts and beneficiaries who appear in the valuation for the first time where a prior member record was not determined. The impact of maintaining the 7-year mortality improvement margin on retirees and the 15-year mortality improvement margin on active members results in an actuarial loss of \$55.3 million.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

C. Discussion of Supporting Exhibits

Assets

Section II summarizes the System assets taken into account in the preparation of the actuarial valuation. Subsection A summarizes the market value of System assets as of June 30, 2016 and includes expected contributions from local employers for ERI and Terminal Funding retirements plus the discounted value of expected contributions from the State as of June 30, 2016.

Subsection B reconciles the development of the market value of pension assets starting from the market values as of June 30, 2015. Subsection C summarizes the development of the actuarial value of pension assets as of July 1, 2016. The exhibit reflects the growth in the pension assets based on the expected investment income at an assumed rate of 7.90% adjusted to reflect 20% of the difference between the market value of pension assets as of the valuation date and the expected actuarial value.

Subsection D estimates the annual rate of return for the year ending June 30, 2016 on the actuarial value and the market value of pension assets. Subsection E summarizes the estimated annual rates of return for the five previous plan years. The 5-year compounded annual return on the actuarial value of assets and the market value of assets are 5.23% and 6.56%, respectively.

Actuarial Liabilities and Contributions

Section III summarizes the actuarial liabilities and the development of the required State contribution for the plan year beginning July 1, 2016, which reflect the assumptions developed in the 2015 Experience Study and the economic assumptions prescribed by the Treasurer.

Subsection A summarizes the development of the Actuarial Accrued Liability as of July 1, 2016 for all current members and indicates the portion of those present values attributable to active participants, retirees and beneficiaries, and terminated vested participants. Projected benefits based on compensation in excess of the 401(a)(17) compensation cap for a group of grandfathered employees for certain School Districts under Chapter 113, P.L. 1997 have been included in the determination of the Accrued Liability.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

C. Discussion of Supporting Exhibits (continued)

Subsection B summarizes the development of the pension Normal Cost under the 1/60 and 1/55 formulas payable July 1, 2016. The schedule shows the portion of the Normal Cost covered by expected member contributions. All member contributions are used as a direct offset in determining the net employer cost. The Normal Cost as of July 1, 2016 was developed based on the Projected Unit Credit Method. Projected benefits based on compensation in excess of the 401(a)(17) compensation cap for a group of grandfathered employees for certain School Districts under Chapter 113, P.L. 1997 have been included in the determination of the Normal Cost.

Subsection C summarizes the Actuarial Accrued Liability and Gross Pension Normal Cost under the 1/55 formula (1/60 formula for Class F and G employees) for active contributory members by employee type as of July 1, 2016.

Subsection D summarizes the development of the Excess Valuation Assets which are \$0 as of July 1, 2016. The Excess Valuation Assets are determined by subtracting the Actuarial Accrued Liability for basic allowances and pension adjustment benefits, the Post-Retirement Medical Premium Fund, the present value of the total projected normal cost in excess of the projected phased-in normal cost for pension adjustment benefits of active members and the BEF (prior to reduction for the additional formula normal contribution for fiscal year 2017) from the Valuation Assets.

Subsection E summarizes the development of the BEF as of July 1, 2016 and the Additional Formula Normal Contribution. Chapter 133, P.L. 2001 established the BEF as of June 30, 1999. The BEF is \$0 as of June 30, 2016. The BEF is credited with excess assets not to exceed actual member contributions made to the system nor the present value of expected additional normal costs due to the formula change. Since there are no excess assets, there is no contribution to the BEF. Since the BEF is \$0, there is no offset to the additional formula normal cost.

Subsection F summarizes the development of the State's fiscal year 2018 pension Statutory Required Contributions to TPAF. The total pension contribution of \$2,999,577,684 equals the Normal Contribution of \$291,633,684 based on the 1/60 formula plus the Additional Formula Normal Contribution of \$70,807,655 plus the Accrued Liability Contribution of \$2,637,136,345. The State's combined ERI-3 and

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

C. Discussion of Supporting Exhibits (continued)

ERI-5 contributions are \$3,728,244, which is included in the Accrued Liability Contribution. In addition to these contributions, the State reimburses TPAF for actual noncontributory group insurance claims paid throughout the year. Since the State reimburses the actual amount, we have removed an estimate from the report.

Subsection G shows the Statutory Required Contribution as a percentage of appropriation payroll on two bases: (1) on a statutory basis – 28.74% and (2) if the Market Value of Assets were used to determine the Accrued Liability Contribution – 31.57%, which is 9.8% higher. Without future investment returns exceeding the assumed rate of return by a significant margin, contributions in future years will continually approach the amount based on market value.

Subsection H summarizes these contributions as a percentage of appropriation pay for the five previous fiscal years. The percentages shown have been adjusted to exclude the portion associated with noncontributory group life insurance claims from 2014 and earlier valuations.

Subsection I shows the fiscal year 2018 Statutory Required Contribution based on the 1/60 formula, the Additional Formula Contribution after application of the BEF, and the Accrued Liability Contribution, which includes the State ERI contribution, payable by the State and certain State Colleges. It does not reflect the phase-in under Chapter 1, P.L. 2010. In addition, a portion of the non-contributory group life insurance claims will also be allocated to each employer. The State's contribution is allocated between the Department of Higher Education, Department of Education, County Colleges, Charter Schools and other.

Subsection J shows the calculation of the total actuarial gain (loss). The general comments section outlines the areas where experience differed from that expected.

Subsection K shows the estimated benefit payments over the next 10 fiscal years based on the actuarial assumptions used in this valuation.

Subsection L shows a summary of the assets and liabilities over the past 10 actuarial valuations.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

C. Discussion of Supporting Exhibits (continued)

Subsection M shows a summary of the statutory contributions determined over the past 10 actuarial valuations and the actual contributions made by fiscal year. The 5-year average of the percentage of the statutory contribution made is 22.58% as of June 30, 2016 and 27.73% as of June 30, 2017, reflecting the contribution appropriated for June 30, 2017.

Actuarial Balance Sheet

Section IV provides the actuarial balance sheet summarizing the assets and liabilities by Fund as of June 30, 2016. The assets credited to the various funds include the portion of the investment income allocated to each fund for the year ending June 30, 2016. The actuarial value of assets is used as the basis for the balance sheet. Note that the actuarial value of assets is 14% higher than market value. The liabilities presented are based on the actuarial accrued liabilities summarized in Section III.

The actuarial balance sheet indicates the following transfers should be made:

(1) Retirement Reserve Fund

When a member retires, or when he dies and an allowance is payable to his beneficiary, the allowance including cost-of-living adjustments, if any, is paid from the Retirement Reserve Fund. The member's own contributions with interest are transferred from the Annuity Savings Fund, and the balance of the reserve on the total allowance is transferred from the Contingent Reserve Fund. As of June 30, 2016, the Retirement Reserve Fund has present assets of \$36,873,347,598 including accrued interest. The liabilities of the fund amount to \$37,997,277,608 so that there is a deficit of \$1,123,930,010 in the fund as of the valuation date. New Jersey statute states that the fund be put in balance as of June 30, 2016 by a transfer of assets from the Contingent Reserve Fund, and this transfer is shown in the balance sheet. Note that the balance in the Contingent Reserve Fund is negative so that the Retirement Reserve fund remains in balance.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

C. Discussion of Supporting Exhibits (continued)

(2) Annuity Savings Fund and Contingent Reserve Fund

The Annuity Savings Fund, which is the fund to which members' contributions with interest are credited, has assets amounting to \$11,783,696,363 as of June 30, 2016 after accrued interest has been added. The Contingent Reserve Fund is the fund to which contributions made by the State and local employers to provide the benefits paid from retirement fund monies are credited. The assets creditable on an actuarial value basis to the Contingent Reserve Fund amount to \$(22,611,215,623) as of June 30, 2016 after adjustment is made on account of accrued interest and the amounts transferable to the Retirement Reserve Fund and from the Pension Fund. If a market value basis was used, assets creditable to the Contingent Reserve Fund after transfers would amount to \$(26,048,402,885).

If a member withdraws from active service before qualifying for retirement, the amount of his accumulated deductions is paid to him from the Annuity Savings Fund. If he dies before retirement and no survivorship benefit is payable, his accumulated deductions are paid to his beneficiary from the Annuity Savings Fund. If he retires, or if he dies leaving a beneficiary eligible for a survivorship benefit, his accumulated deductions are transferred from the Annuity Savings Fund to the Retirement Reserve Fund, and the reserve on the allowance which is not provided by his own deductions is transferred from the Contingent Reserve Fund to the Retirement Reserve Fund. Any lump sum benefit payable upon the death of a member before or after retirement is paid by The Prudential Insurance Company of America.

(3) Benefit Enhancement Fund

The reserves held in the BEF are used to fund the additional formula normal contributions. The BEF is credited with excess assets not to exceed actual member contributions made to the system nor the present value of the expected additional formula normal contributions. No additional excess assets will be credited to the BEF after the maximum amount is attained. If excess assets permit, monies are transferred from the Contingent Reserve Fund. As of June 30, 2016, the BEF has no assets.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

C. Discussion of Supporting Exhibits (continued)

(4) Special Reserve Fund

The Special Reserve Fund is the fund to which any excess interest earnings are transferred and against which any losses from the sale of securities are charged. The maximum limit on the accumulations in this fund is set at one percent of the market value of the investments of the retirement fund; any amounts in excess of this limit are creditable to the Contingent Reserve Fund. The Special Reserve Fund is considered as an asset of the retirement fund. This fund has assets amounting to \$0 as of June 30, 2016.

Census Data

Section V summarizes the census data provided by the Division of Pensions and Benefits and utilized in the preparation of the actuarial valuation. Subsection A provides a reconciliation of the current year participant counts from the prior valuation. Subsection B shows the appropriation count and salary information by group. Subsection C shows the number and annual retirement allowances with pension adjustments by beneficiary type. Subsection D shows information on members who retired since the last valuation split between those who retired with less than and more than 25 years of service. Subsection E provides additional retiree information. Subsections F and G present a profile of Contributory and Non-contributory members split by gender, summarized by 5-year age and service groupings. Subsection H provides a profile of terminated vested members, retired members, disabled members, and beneficiaries broken down into 5-year age categories. The census data represents the status of plan participants as of June 30, 2016.

In performing this analysis, we relied, without audit, on census data, plan provisions, asset statements and other information (both written and oral) provided by the State of New Jersey Division of Pensions and Benefits. We have not audited or verified the census data, asset statements or other information. To the extent any of these are inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete.

We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have not found material defects in the data. If

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION I - SUMMARY (continued)

C. Discussion of Supporting Exhibits (continued)

there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Actuarial Assumptions and Methods

Section VI summarizes the actuarial assumptions and methods utilized in the preparation of this actuarial valuation. Subsection A identifies the various assumptions. These assumptions are based on the assumptions developed in the Experience Study from July 1, 2012 to June 30, 2015 and the economic assumptions prescribed by the Treasurer. Subsection B summarizes the actuarial valuation methodology set forth in Chapter 62, P.L. 1994 as modified by Chapters 115, P.L. 1997, 133, P.L. 2001 and 92 P.L. 2007.

Future actuarial measurements may differ significantly from the current measurements presented in this analysis due to actual plan experience deviating from the actuarial assumptions, and changes in plan provisions, actuarial assumptions, and applicable law. An assessment of the potential range and cost effect of such differences is beyond the scope of this analysis.

Summary of Principal Plan Provisions

Section VII summarizes the principal plan provisions as of the valuation date and denotes any changes from the previous valuation.

Early Retirement Incentive Contribution Schedule

Appendix I displays the contribution schedule for the early retirement incentive programs (ERI-1, ERI-2, ERI-3, ERI-4 and ERI-5) by location for the 2018 fiscal year. It also provides the present value of the future contributions as of June 30, 2016. This list reflects locations which paid off their ERI liabilities through June 2016 as a result of Chapter 42, P.L. 2002.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION II - ASSETS

A. Market Value of Pension Assets as of June 30, 2016

1. Assets		
Cash	\$	2,414,775
Investment Holdings		22,760,595,127
Employers' Contributions Receivable - NCGI		7,663,781
Employers' Contributions Receivable - State		0
Employers' Contributions Receivable - Local		19,992,329
Employers' Contributions Receivable - Delayed Enrollments		436,645
Employers' Contributions Receivable - Delayed Appropriations		4,984,284
Members' Contributions Receivable		82,176,124
Accrued Interest on Investments		33,129
Accounts Receivable		2,551,217
Loans Receivable		271,634,977
Dividends Receivable		<u>0</u>
Total	\$	<u>23,152,482,388</u>
2. Liabilities		
Pension Payroll Payable	\$	274,354,192
Pension Adjustment Payroll Payable		28,283,438
Withholdings Payable		47,321,966
CGIPF Payable		0
Death Benefits Payable		7,663,781
Net Securities Lending Collateral		(497,310)
Accounts Payable - Other		<u>77,493,354</u>
Total	\$	<u>434,619,421</u>
3. Market Value of Pension Assets as of June 30, 2016: (1) - (2)	\$	22,717,862,967
4. Unauthorized Local ERI Receivable Contributions		0
5. FY 2017 Discounted Receivable Contributions from State *		<u>1,014,708,119</u>
6. Adjusted Market Value of Pension Assets as of June 30, 2016:		
(3) + (4) + (5)	\$	<u>23,732,571,086</u>

* Receivable contribution of \$1,094,870,060 discounted with a year of interest at 7.90%

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION II - ASSETS

(continued)

B. Reconciliation of Market Value of Pension Assets from June 30, 2015 to June 30, 2016

	<u>Pension</u>
1. Market Value of Pension Assets as of June 30, 2015 (excluding receivable)	\$ 25,604,797,560
2. Increases	
Member Contributions excluding transfers from Other Systems	\$ 751,384,303
Member Transfer Contributions	7,568,468
Other Employer Contributions including Transfers From Other Systems, Delayed Appropriations and Delayed Enrollments	4,566,586
State and Local Appropriations (adjusted by unauthorized ERI receivable)	800,069,277
CGIPF Adjustment	0
Investment Income	<u>(267,684,353)</u>
Total	\$ <u>1,295,904,281</u>
3. Decreases	
Withdrawal of Member Contributions and Transfer Contributions	\$ 57,928,019
Retirement Allowances	3,744,665,144
Pension Adjustment Benefits	330,897,322
Death Benefit Claims	35,580,277
Administrative Expense	<u>13,768,112</u>
Total	\$ <u>4,182,838,874</u>
4. Market Value of Pension Assets as of June 30, 2016: (1) + (2) - (3)	\$ 22,717,862,967
5. FY2017 Discounted Receivable Contributions from State* and Local Employers	<u>1,014,708,119</u>
6. Adjusted Market Value of Pension Assets as of June 30, 2016: (4) + (5)	\$ <u>23,732,571,086</u>

* Receivable contribution of \$1,094,870,060 discounted with a year of interest at 7.90%

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION II - ASSETS

(continued)

C. Development of Actuarial Value of Assets as of July 1, 2016

1. Actuarial Value of Pension Assets as of July 1, 2015	\$ 28,301,404,184
2. Net Cash Flow without Investment Income	(3,391,164,151)
3. Investment Income at Actuarially Assumed Rate @ 7.90%	2,104,107,012
4. Receivable Contributions from State and Local Employers	<u>1,014,708,119</u>
5. Expected Actuarial Value of Pension Assets: (1) + (2) + (3) + (4)	28,029,055,164
6. Adjusted Market Value of Pension Assets as of June 30, 2016	23,732,571,086
7. Excess Market Value over Expected Actuarial Value Assets: (6) - (5)	(4,296,484,078)
8. 20% mark-up to reflect growth in Market Value: 20% x (7)	<u>(859,296,816)</u>
9. Actuarial Value of Pension Assets as of July 1, 2016: (5) + (8)	\$ <u>27,169,758,348</u>
10. Pension Actuarial/Market Value Ratio: (9) / (6)	114.5%

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION II - ASSETS

(continued)

D. Estimated Annual Rate of Return for year ending June 30, 2016

	<u>Pension Actuarial Value</u>	<u>Pension Market Value</u>
1. Value of Assets as of July 1, 2015	\$ 28,301,404,184	\$ 25,604,797,560
2. Employee Contributions	763,519,357	763,519,357
3. State and Local Appropriations (adjusted for prior year receivable contribution differences on AVA)	28,155,366	800,069,277
4. Receivable Contributions - State and Local Employers	1,014,708,119	1,014,708,119
5. Benefit Payments and Expenses	4,182,838,874	4,182,838,874
6. Value of Assets as of June 30, 2016	27,169,758,348	23,732,571,086
7. Non-Investment Increment: (2) + (3) - (5)	(3,391,164,151)	(2,619,250,240)
8. Investment Increment: (6) - (1) - (4) - (7)	1,244,810,196	(267,684,353)
9. Time Weighted Value: (1) +.5 x (7)	26,602,109,653	23,912,927,940
10. Estimated Annual Rate of Return: (8) / (9)	4.68%	-1.12%

E. Estimated Historical Rates of Return

<u>Plan Year Ending</u>	<u>Actuarial Value</u>	<u>Market Value</u>
June 30, 2016	4.68%	-1.12%
June 30, 2015	6.10%	4.15%
June 30, 2014	6.67%	16.58%
June 30, 2013	4.86%	11.69%
June 30, 2012	3.85%	2.46%
 5-Year Compounded Annual Rate of Return	 5.23%	 6.56%

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION III - LIABILITIES AND CONTRIBUTIONS

A. Actuarial Accrued Liability as of July 1, 2016- 1/55th Formula

1. Projected Benefits Payable to Beneficiaries and Retirees	
Service Retirees (Including ERI Benefits)	\$ 35,947,053,447
Disability Retirees	840,039,714
Beneficiaries	<u>1,210,184,447</u>
Total	\$ 37,997,277,608
2. Projected Benefits for Vested Terminated Members	30,699,784
3. Projected Benefits for Non-Contributory Members	\$ 800,073,422
4. Projected Benefits for Active Members	
Service Retirement	\$ 17,859,631,795
Ordinary Disability Retirement	496,234,751
Accidental Disability Retirement	23,234,717
Return of Members' Contributions - Death	127,046,421
Return of Members' Contributions - Withdrawal	174,273,334
Deferred Retirement	357,499,331
Pension Adjustment Benefits	<u>0</u>
Total	\$ 19,037,920,349
5. Total Pension Accrued Liability: (1) + (2) + (3) + (4)	\$ 57,865,971,163

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Section III - A

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION III - LIABILITIES AND CONTRIBUTIONS

(continued)

B. Development of Normal Cost payable July 1, 2016

	<u>1/60th Formula</u>	<u>1/55th Formula</u>
1. Basic Allowances	\$ 993,223,430	\$ 1,058,999,236
2. Expected Member Contributions (adjusted to valuation date)	<u>722,314,295</u>	<u>722,314,295</u>
3. Net Pension Normal Cost: (1) - (2)	270,909,135	336,684,941

C. Summary of Active Member Actuarial Accrued Liability & Normal Cost payable July 1, 2016

<u>Employee Type</u>	<u>Number of Members</u>	<u>Total Appropriation Salary</u>	<u>Actuarial Accrued Liability</u>	<u>Gross Pension Normal Cost (1/55th Formula) *</u>
Class A & B	90,125	\$7,491,712,657	\$17,835,532,013	\$835,274,339
Class D	10,875	683,364,318	538,908,482	59,532,372
Class E	5,476	332,613,358	205,108,396	27,820,700
Class F	3,202	191,095,824	87,780,004	14,252,520
Class G	<u>30,885</u>	<u>1,737,418,946</u>	<u>370,591,454</u>	<u>122,119,305</u>
Total	140,563	\$10,436,205,103	\$19,037,920,349	\$1,058,999,236

* 1/60th formula for Class F and G employees

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION III - LIABILITIES AND CONTRIBUTIONS

(continued)

D. Development of Excess Valuation Assets as of July 1, 2016

1. Valuation Assets	\$ 27,169,758,348
2. Actuarial Accrued Liability for Basic Allowances & Pension Adjustment Benefits	57,865,971,163
3. Present Value of Total Projected Normal Cost in Excess of the Projected Phased-in Normal Cost for Pension Adjustment Benefits	0
4. Benefit Enhancement Fund (prior to reduction for additional formula normal cost)	<u>0</u>
5. Excess Valuation Assets as of July 1, 2016: (1)-(2)-(3)-(4)-(5), not less than \$0	\$ 0

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION III - LIABILITIES AND CONTRIBUTIONS

(continued)

E. Development of Benefit Enhancement Fund and Additional Formula Contribution As of July 1, 2016

1. Benefit Enhancement Fund as of July 1, 2015	\$	0
2. Accrued Interest		<u>0</u>
3. Benefit Enhancement Fund as of July 1, 2016		0
4. Additional Formula Normal Cost to be paid by Benefit Enhancement Fund		
a. Gross Normal Cost payable July 1, 2016 - 1/55th Formula (B)(3)(a)		1,058,999,236
b. Gross Normal Cost payable July 1, 2016 - 1/60th Formula (B)(3)(a)		<u>993,223,430</u>
c. Additional Formula Normal Cost: (a) - (b)		65,775,806
5. Net Benefit Enhancement Fund Balance as of July 1, 2016 before Fiscal Year 2018 Contribution: (3) - (4c), not less than \$0		0
6. State Additional Formula Contribution as of July 1, 2016: (4c) - (3), not less than \$0		65,775,806
7. Estimated Fiscal Year 2018 Employee Contributions as of July 1, 2016		706,261,934
8. Limit on Fiscal Year 2018 Contribution to Benefit Enhancement Fund		
a. Present Value of Future Normal Costs as of June 30, 2016 - 1/55th Formula		10,348,504,022
b. Present Value of Future Normal Costs as of June 30, 2016 - 1/60th Formula		<u>9,640,697,415</u>
c. Limit: (a) - (b) - (5)		707,806,607
9. Excess Assets Available (D6)		0
10. Fiscal Year 2018 Allowable Contribution to Benefit Enhancement Fund: Lesser of (7), (8c), (9)	\$	0

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION III - LIABILITIES AND CONTRIBUTIONS

(continued)

F. Development of State's Fiscal Year 2018 Statutory Required Contributions

1. Net Pension Normal Contribution as of July 1, 2016: B(3)	\$ 270,909,135
2. Net Pension Normal Contribution as of June 30, 2017	291,633,684
3. Additional Formula Contribution as of July 1, 2016: E(6)	65,775,806
4. Additional Formula Contribution as of June 30, 2017	70,807,655
5. Accrued Liability Contribution	
a. Actuarial Accrued Liability for Basic Allowances & Pension Adjustment Benefits	\$ 57,865,971,163
b. Adjusted Actuarial Value of Assets (excluding BEF)	<u>27,169,758,348</u>
c. Unfunded Pension Accrued Liability: (a) - (b)	\$ 30,696,212,815
d. 30 - Year Level Dollar Amortization with payments of Unfunded Pension Accrued Liability payable June 30, 2017	2,637,136,345
6. Total Pension Contribution for State's Fiscal Year 2018: (2) + (4) + (5d) *	\$ 2,999,577,684

* State ERI contributions are included in Accrued Liability Contribution. In addition, State will also reimburse the actual amount of noncontributory group insurance claims paid from TPAF.

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION III - LIABILITIES AND CONTRIBUTIONS

(continued)

G. Statutory Required Contribution as a Percentage of Appropriation Payroll

	<u>Percent of Payroll</u>
Basic Allowances Net of Member Contributions - 1/60th Formula	2.79%
Additional Formula Normal Cost (after any BEF reductions)	0.68%
Accrued Liability Contribution	<u>25.27%</u>
Total Pension Contribution for State's Fiscal Year 2018	28.74%
Increases in contribution if:	
No BEF reductions existed	0.00%
Market Value of Assets used to determine the Accrued Liability Contribution	<u>2.83%</u>
Total Increases as a percent of payroll	2.83%
Total Contribution with these increases as a percent of payroll	31.57%

H. Historical Statutory Required Contributions as a Percentage of Appropriation Payroll *

<u>Fiscal Year Ending</u>	<u>Statutory Pension</u>	<u>With Increases Above Included</u>
June 30, 2018	28.74%	31.57%
June 30, 2017	26.55%	28.24%
June 30, 2016	25.04%	26.25%
June 30, 2015	22.98%	26.14%
June 30, 2014	22.07%	26.61%

* Historical percentages have been modified to remove noncontributory group insurance claims since the actual amounts are reimbursed by the State

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION III - LIABILITIES AND CONTRIBUTIONS

(continued)

I. Fiscal Year 2018 Full Statutory Required Contributions Payable by the State and Certain State Colleges *

<u>Group</u>	<u>Normal Contribution (1/60 Formula)</u>	<u>Additional Formula Contribution (After BEF reductions)</u>	<u>Accrued Liability Contribution **</u>	<u>Total</u>
<u>Certain State Colleges</u>				
NJ Institute of Technology	\$0	\$0	\$74,847	\$74,847
Rowan University	0	0	63,132	\$63,132
New Jersey University	3,445	836	403,299	\$407,580
Kean University	6,280	1,525	251,382	\$259,187
William Patterson University	10,432	2,533	166,085	\$179,050
Montclair State U. (Group 4)	0	0	154,009	\$154,009
The College of NJ	0	0	39,584	\$39,584
Stockton State College	<u>0</u>	<u>0</u>	<u>0</u>	<u>\$0</u>
Total for Certain State Colleges	\$20,157	\$4,894	\$1,152,338	\$1,177,389
<u>State</u>				
Dept of Higher Education	0	0	0	\$0
Dept of Education	332,531	80,737	5,760,632	\$6,173,900
County Colleges	26,982	6,551	243,640	\$277,173
Charter Schools	6,204,004	1,506,311	56,021,222	\$63,731,537
Other	<u>285,050,010</u>	<u>69,209,162</u>	<u>2,573,958,513</u>	<u>\$2,928,217,685</u>
Total for State	<u>\$291,613,527</u>	<u>\$70,802,761</u>	<u>\$2,635,984,007</u>	<u>\$2,998,400,295</u>
Total for System	<u>\$291,633,684</u>	<u>\$70,807,655</u>	<u>\$2,637,136,345</u>	<u>\$2,999,577,684</u>

* In addition, a portion of the non-contributory group life insurance claims will also be allocated to each employer.

** Includes State ERI contributions

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION III - LIABILITIES AND CONTRIBUTION

(continued)

J. Analysis of Actual Experience for the Year Ended June 30, 2016

1. Unfunded Accrued Liability as of June 30, 2015	\$	27,057,972,887
2. Gross Normal Cost as of June 30, 2015		1,027,801,067
3. Interest: ((1) + (2)) * 7.90%		2,218,776,142
4. Employee and Employer Contributions Made with Interest		<u>1,799,801,798</u>
5. Expected Unfunded Accrued Liability as of June 30, 2016: (1) + (2) + (3) - (4)	\$	28,504,748,298
6. Increase/(Decrease) in liability due to assumption changes		1,144,195,634
7. Increase/(Decrease) in liability due to statutory changes		0
8. Expected Unfunded Accrued Liability after changes as of June 30, 2016: (5) + (6) + (7)	\$	29,648,943,932
9. Actual Unfunded Accrued Liability as of June 30, 2016		<u>30,696,212,815</u>
10. Gain/(Loss): (8) - (9)	\$	<u>(1,047,268,883)</u>

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION III - LIABILITIES AND CONTRIBUTION

(continued)

K. Estimated Benefit Payments for next 10 Fiscal Years - Pension Only

<u>Fiscal Year Ending</u>	<u>Estimated Benefit Payments</u>
June 30, 2017	\$ 4,226,252,000
June 30, 2018	4,351,335,000
June 30, 2019	4,462,888,000
June 30, 2020	4,563,935,000
June 30, 2021	4,657,747,000
June 30, 2022	4,743,564,000
June 30, 2023	4,824,739,000
June 30, 2024	4,906,214,000
June 30, 2025	4,989,617,000
June 30, 2026	5,078,274,000

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION III - LIABILITIES AND CONTRIBUTION

(continued)

L. Historical Summary of Assets and Liabilities

Valuation Date	Market Value of Assets	Actuarial Value of Assets	Actuarial Accrued Liability	Funded Ratio	
				Market Value	Actuarial Value
2016	\$ 23,732,571,086	\$ 27,169,758,348	\$ 57,865,971,163	41.01%	46.95%
2015	26,320,738,690	28,301,404,184	55,359,377,071	47.55%	51.12%
2014	27,643,078,116	29,044,777,902	53,749,976,641	51.43%	54.04%
2013	26,859,612,370	30,469,857,304	52,366,655,055	51.29%	58.19%
2012	26,037,983,392	31,079,212,983	51,194,110,587	50.86%	60.71%
2011	27,654,006,602	32,156,229,300	50,222,688,750	55.06%	64.03%
2010	25,763,644,836	33,136,475,630	48,417,932,345	53.21%	68.44%
2009	24,973,886,910	34,708,001,341	53,418,328,576	46.75%	64.97%
2008	32,358,227,689	36,541,083,946	50,658,278,274	63.88%	72.13%
2007	35,070,757,170	36,594,817,062	48,127,453,410	72.87%	76.04%

M. Historical Summary of State Appropriation for Pension

Fiscal Year Ending June 30	Full Statutory Contribution	Actual State Appropriation	Contribution Deficiency (Excess)	Percentage of Contribution Made
2017 *	\$ 2,737,175,151	\$ 1,094,870,060	\$ 1,642,305,091	40.00%
2016	2,544,811,534	764,489,000	1,780,322,534	30.04%
2015	2,306,611,715	504,320,000	1,802,291,715	21.86%
2014	2,158,287,358	392,035,985	1,766,251,373	18.16%
2013	2,148,185,001	613,766,799	1,534,418,202	28.57%
2012	2,009,810,329	287,115,915	1,722,694,414	14.29%
2011	1,826,722,370	0	1,826,722,370	0.00%
2010	1,526,168,830	0	1,526,168,830	0.00%
2009	1,348,105,853	64,376,207	1,283,729,646	4.78%
2008	1,286,147,106	663,791,615	622,355,491	51.61%
2007	1,156,140,571	663,415,668	492,724,903	57.38%

* Assumes contribution of \$1,094,870,060 will be paid June 30, 2017

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION IV - ACTUARIAL BALANCE SHEET AS OF JUNE 30, 2016

<u>Assets</u>		<u>Liabilities</u>	
<u>Retirement Reserve Fund (RRF)</u>		<u>Payable from Retirement Reserve Fund</u>	
Credited to Fund w/ Distribution of Income	\$36,873,347,598	Retirees, Disableds and Beneficiaries currently receiving benefits	\$37,997,277,608
Add/(deduct) reserve transferable from/(to) CRF	<u>1,123,930,010</u>		
Adjusted Total	37,997,277,608		
 <u>Pension Fund (PF)</u>		 <u>Payable from Pension Fund</u>	
Credited to Fund w/ Distribution of Income	0	Retirees, Disableds and Beneficiaries currently receiving benefits	0
Add/(deduct) reserve transferable from/(to) CRF	<u>0</u>		
Adjusted Total	0		
 Annuity Savings Fund (ASF) w/ Distribution of Income	 11,783,696,363	 <u>Payable from Annuity Savings Fund and Contingent Reserve Fund</u>	
 <u>Contingent Reserve Fund (CRF)</u>		Active Members	19,837,993,771
Credited to Fund w/ Distribution of Income	(21,487,285,613)	Term Vested Members	<u>30,699,784</u>
Add/(Deduct) from/(to) RRF, PF & SRF	<u>(1,123,930,010)</u>	Total	19,868,693,555
Adjusted Total	(22,611,215,623)		
 <u>Benefit Enhancement Fund (BEF)</u>	 0		
 <u>Special Reserve Fund (SRF)</u>	 0		
Add/(deduct) reserve transferable from/(to) CRF	<u>0</u>		
Adjusted Total	0		
 Total Actuarial Value of Assets as of June 30, 2016	 \$27,169,758,348		
 Present Value of Prospective Contributions to the CRF and BEF for service accrued as of July 1, 2016	 <u>30,696,212,815</u>		
 Total Assets	 \$57,865,971,163	 Total Liabilities	 \$57,865,971,163

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION V - CENSUS DATA

A. Reconciliation with Prior Year

	<u>Active Contrib</u>	<u>Active NonContrib</u>	<u>Deferred Vested</u>	<u>Retirees</u>	<u>Disableds</u>	<u>Beneficiaries</u>	<u>Domestic Relation Beneficiaries</u>	<u>Total</u>
Members as of June 30, 2015	140,227	13,225	210	88,238	3,298	5,840	854	251,892
Terminated Vested	(13)	(46)	59	-	-	-	-	0
Terminated with Refund	(661)	(1,906)	-	-	-	-	-	(2,567)
Retired	(4,308)	(237)	(45)	4,590	-	-	-	0
Disabled	(164)	(77)	-	-	241	-	-	0
Died with Beneficiary	(1)	-	-	(427)	(31)	459	-	0
Died without Beneficiary	(46)	(26)	(1)	(1,595)	(78)	(277)	-	(2,023)
Payments Began	-	-	-	-	-	-	81	81
Payments Ceased	-	-	-	-	-	0	(26)	(26)
New Actives and Rehires	7,937	146	-	-	-	-	-	8,083
Changed to Contributing	2,112	(2,112)	-	-	-	-	-	0
Changed to Noncontributing	(4,503)	4,503	-	-	-	-	-	0
Data Corrections	<u>(17)</u>	<u>130</u>	<u>(1)</u>	<u>16</u>	<u>0</u>	<u>73</u>	<u>(10)</u>	<u>191</u>
Members as of June 30, 2016	<u>140,563</u>	<u>13,600</u>	<u>222</u>	<u>90,822</u>	<u>3,430</u>	<u>6,095</u>	<u>899</u>	<u>255,631</u>

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION V - CENSUS DATA

(continued)

B. Appropriation Number and Salary by Group *

<u>Group</u>	<u>Number of Employers</u>	<u>Number of Members</u>	<u>Appropriation Salary</u>
Department of Higher Education	0	0	\$ 0
Department of Education	3	124	11,899,744
New Jersey Institute of Technology	0	0	0
State Colleges	3	6	721,340
County Colleges	5	8	965,548
Charter Schools	96	3,752	222,012,291
Other	<u>590</u>	<u>136,673</u>	<u>10,200,606,180</u>
Total	<u>697</u>	<u>140,563</u>	\$ <u>10,436,205,103</u>

* Excludes salary in excess of Taxable Wage Base for members hired after June 30, 2007

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION V - CENSUS DATA

(continued)

C. Number and Annual Benefits Including Pension Adjustments of Retirees, Beneficiaries, and Dependents on Roll

<u>Group</u>	<u>Number</u>	<u>Annual Benefit</u>
Service and Early Retirements (incl Domestic Relation Beneficiaries)	91,721	\$ 3,810,269,332
Ordinary Disability Retirements	3,174	87,520,684
Accidental Disability Retirements	256	11,161,760
Ordinary Death Benefits	1	394
Accidental Death Benefits	2	85,075
Dependents of Deceased Beneficiaries	6,038	157,087,095
Dependents of Deceased Beneficiaries who elected to receive annuities certain instead of lump sum	<u>54</u>	<u>1,450,644</u>
Total	<u>101,246</u>	\$ <u>4,067,574,984</u>

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION V - CENSUS DATA

(continued)

D. New* Retirees from Active Contributory Status

	<u>Less than 25</u> <u>years of service</u>	<u>At least 25</u> <u>years of service</u>	<u>Total</u>
Number of Retirements	928	3,344	4,272
Total Annual Pension	\$22,988,250	\$175,955,413	\$198,943,663
Average Annual Pension	\$24,772	\$52,618	\$46,569
Average Age at Retirement	64.7	61.6	62.3
Average Service at Retirement	16.6	31.5	28.3

* Members indicated as retired since last actuarial valuation and have not subsequently died prior to the valuation date.

E. Average Age and Average Annual Pension at Retirement

	<u>Average Age</u> <u>at Retirement</u>	<u>Average Annual</u> <u>Pension at Retirement</u>	<u>Count</u>
New Retirees from Active Contributory Status			
Service Retirement	64.4	\$45,072	3,104
Early Retirement	56.8	50,543	1,168
Ordinary Disability	57.2	31,908	157
Accidental Disability	62.3	61,178	7
Survivors **	56.5	30,913	22
All Retirees			
Service Retirement	63.0	\$37,112	54,520
Early Retirement	56.3	41,329	36,302
Ordinary Disability	54.3	25,332	3,174
Accidental Disability	52.5	38,878	256
Survivors	55.9	21,207	6,095

** Members indicated as retired since last actuarial valuation and have subsequently died prior to the valuation date.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION V - CENSUS DATA

(continued)

F. Age, Service and Salary Profile of Active Contributing Participants

Age Group	Males									Total	Average Annual Salary
	Years of Service										
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+		
15-19	0	0	0	0	0	0	0	0	0	0	\$0
20-24	225	0	0	0	0	0	0	0	0	225	51,290
25-29	2,308	438	0	0	0	0	0	0	0	2,746	54,248
30-34	1,467	2,354	661	0	0	0	0	0	0	4,482	59,973
35-39	663	1,182	3,049	705	2	0	0	0	0	5,601	71,575
40-44	401	523	1,434	2,480	244	0	0	0	0	5,082	82,645
45-49	291	373	829	1,611	1,411	156	1	0	0	4,672	89,373
50-54	210	242	549	737	808	728	139	1	0	3,414	90,681
55-59	166	197	466	555	453	389	530	125	0	2,881	91,746
60-64	97	136	361	398	352	240	228	403	102	2,317	94,689
65 & Up	<u>32</u>	<u>62</u>	<u>240</u>	<u>215</u>	<u>180</u>	<u>133</u>	<u>59</u>	<u>73</u>	<u>215</u>	<u>1,209</u>	98,556
Total	5,860	5,507	7,589	6,701	3,450	1,646	957	602	317	32,629	

Average Age = 43.8
 Average Service = 13.8
 Average Annual Salary = \$79,077

Age Group	Females									Total	Average Annual Salary
	Years of Service										
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+		
15-19	0	0	0	0	0	0	0	0	0	0	\$0
20-24	1,256	0	0	0	0	0	0	0	0	1,256	51,911
25-29	9,402	1,787	9	0	0	0	0	0	0	11,198	54,405
30-34	4,673	8,298	2,194	3	0	0	0	0	0	15,168	59,183
35-39	2,114	3,437	9,027	1,661	1	0	0	0	0	16,240	67,661
40-44	1,710	1,781	4,211	6,328	617	1	0	0	1	14,649	75,263
45-49	1,501	1,741	2,662	3,887	3,488	522	0	0	0	13,801	79,020
50-54	872	1,382	2,343	2,323	1,636	2,445	603	0	0	11,604	80,790
55-59	492	806	2,230	2,708	1,678	1,522	1,716	281	1	11,434	83,165
60-64	211	371	1,216	2,184	1,902	1,356	772	859	142	9,013	86,787
65 & Up	<u>52</u>	<u>93</u>	<u>380</u>	<u>691</u>	<u>747</u>	<u>706</u>	<u>371</u>	<u>209</u>	<u>322</u>	<u>3,571</u>	91,202
Total	22,283	19,696	24,272	19,785	10,069	6,552	3,462	1,349	466	107,934	

Average Age = 43.9
 Average Service = 13.2
 Average Annual Salary = \$72,825

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION V - CENSUS DATA

(continued)

G. Age, Service and Salary Profile of Active Non-Contributing Participants *

Age Group	Males									Total	Average Annual Salary
	Years of Service										
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+		
15-19	0	0	0	0	0	0	0	0	0	0	\$0
20-24	2	0	0	0	0	0	0	0	0	2	44,800
25-29	40	1	0	0	0	0	0	0	0	41	53,207
30-34	30	17	0	0	0	0	0	0	0	47	58,944
35-39	12	11	14	3	0	0	0	0	0	40	68,445
40-44	4	8	17	11	1	0	0	0	0	41	72,366
45-49	6	2	5	11	4	0	0	0	0	28	80,157
50-54	6	0	5	7	0	3	0	0	0	21	87,422
55-59	3	4	9	3	4	0	2	0	0	25	75,281
60-64	3	3	2	5	4	2	0	0	0	19	87,626
65 & Up	<u>1</u>	<u>2</u>	<u>3</u>	<u>1</u>	<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>12</u>	80,845
Total	107	48	55	41	17	5	2	0	1	276	

Average Age = 42.4
 Average Service = 9.3
 Average Annual Salary = \$70,085

Age Group	Females									Total	Average Annual Salary
	Years of Service										
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+		
15-19	0	0	0	0	0	0	0	0	0	0	\$0
20-24	17	0	0	0	0	0	0	0	0	17	47,238
25-29	192	35	0	0	0	0	0	0	0	227	54,060
30-34	185	380	75	0	0	0	0	0	0	640	59,030
35-39	69	165	292	16	0	0	0	0	0	542	64,388
40-44	47	31	58	62	1	0	0	0	0	199	70,286
45-49	26	21	37	21	10	0	0	0	0	115	70,917
50-54	24	14	28	15	8	4	0	0	0	93	73,456
55-59	17	14	34	27	8	3	2	0	0	105	73,814
60-64	7	5	12	5	7	3	0	2	0	41	76,724
65 & Up	<u>2</u>	<u>2</u>	<u>5</u>	<u>9</u>	<u>6</u>	<u>2</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>27</u>	79,312
Total	586	667	541	155	40	12	3	2	0	2,006	

Average Age = 37.9
 Average Service = 8.5
 Average Annual Salary = \$63,691

* Excludes 11,318 terminated noncontributory records

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION V - CENSUS DATA

(continued)

H. Age and Benefit Profiles

Terminated Vested Participants

<u>Age</u>	<u>Male</u>		<u>Female</u>		<u>Total</u>	
	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>
Under 35	0	\$0	0	\$0	0	\$0
35-39	0	\$0	1	\$9,168	1	9,168
40-44	1	\$22,092	7	\$88,392	8	110,484
45-49	5	\$102,756	23	\$297,384	28	400,140
50-54	8	\$169,572	35	\$506,448	43	676,020
55-59	14	\$223,572	45	\$617,040	59	840,612
60 & Up	<u>10</u>	<u>\$219,588</u>	<u>73</u>	<u>\$1,222,560</u>	<u>83</u>	<u>1,442,148</u>
Total	38	\$737,580	184	\$2,740,992	222	\$3,478,572
		Average Age	=	55.5		
		Average Annual Pension	=	\$15,669		

Service Retired Participants

<u>Age</u>	<u>Male</u>		<u>Female</u>		<u>Total</u>	
	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>
Under 50	2	\$38,100	16	\$325,415	18	\$363,515
50-54	63	2,576,211	227	7,681,414	290	10,257,625
55-59	548	27,222,117	1,956	90,089,864	2,504	117,311,981
60-64	2,620	129,288,873	9,340	404,991,634	11,960	534,280,507
65-69	7,381	362,340,179	19,115	815,042,482	26,496	1,177,382,661
70-74	7,320	346,650,250	14,490	581,096,728	21,810	927,746,978
75-79	4,086	187,229,242	7,917	296,370,093	12,003	483,599,335
80-84	2,895	126,287,979	5,041	172,624,369	7,936	298,912,348
85-89	1,842	72,866,335	3,703	109,739,861	5,545	182,606,196
90-94	636	20,822,305	1,713	40,102,677	2,349	60,924,982
95-99	106	2,737,767	585	11,931,171	691	14,668,938
100 & Up	7	171,117	112	2,043,149	119	2,214,266
Total	27,506	\$1,278,230,475	64,215	\$2,532,038,857	91,721	\$3,810,269,332
		Average Age	=	72.0		
		Average Annual Pension	=	\$41,542		

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION V - CENSUS DATA

(continued)

H. Age and Benefit Profiles (continued)

Disabled Retired Participants

<u>Age</u>	<u>Male</u>		<u>Female</u>		<u>Total</u>	
	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>
Under 35	0	\$0	2	\$55,013	2	\$55,013
35-39	8	244,539	23	589,534	31	834,073
40-44	13	335,913	43	1,130,493	56	1,466,406
45-49	26	812,851	82	2,462,071	108	3,274,922
50-54	41	1,290,843	146	4,445,665	187	5,736,508
55-59	59	1,903,783	293	8,920,751	352	10,824,534
60-64	125	3,656,848	496	15,239,583	621	18,896,431
65-69	184	5,597,084	592	17,362,877	776	22,959,961
70-74	151	4,297,351	494	14,110,600	645	18,407,951
75-79	69	1,849,736	281	7,688,783	350	9,538,519
80-84	40	916,018	140	3,493,574	180	4,409,592
85 & Up	<u>25</u>	<u>422,320</u>	<u>97</u>	<u>1,856,214</u>	<u>122</u>	<u>2,278,534</u>
Total	741	\$21,327,286	2,689	\$77,355,158	3,430	\$98,682,444
		Average Age	=	66.4		
		Average Annual Pension	=	\$28,770		

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION V - CENSUS DATA

(continued)

H. Age and Benefit Profiles (continued)

Beneficiaries and Dependents

<u>Age</u>	<u>Male</u>		<u>Female</u>		<u>Total</u>	
	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>
Under 25	3	\$50,689	3	\$58,103	6	\$108,792
25-29	4	62,599	4	49,969	8	112,568
30-34	9	84,036	12	115,637	21	199,673
35-39	7	60,384	14	174,075	21	234,459
40-44	11	188,989	20	494,292	31	683,281
45-49	22	457,453	28	508,641	50	966,094
50-54	38	784,012	36	824,614	74	1,608,626
55-59	40	920,525	113	2,894,825	153	3,815,350
60-64	151	3,769,892	212	5,980,208	363	9,750,100
65-69	301	7,472,700	504	15,798,907	805	23,271,607
70-74	366	8,797,766	671	19,941,994	1,037	28,739,760
75-79	256	6,034,193	734	21,439,019	990	27,473,212
80-84	199	4,324,816	788	22,886,440	987	27,211,256
85-89	182	3,778,637	723	18,678,756	905	22,457,393
90-94	84	1,265,160	358	7,360,045	442	8,625,205
95-99	25	346,965	145	2,549,221	170	2,896,186
100 & Up	6	48,036	26	421,610	32	469,646
Total	1,704	38,446,852	4,391	120,176,356	6,095	158,623,208
		Average Age	=	76.4		
		Average Annual Pension	=	\$26,025		

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VI - ACTUARIAL ASSUMPTIONS AND METHODS
AS OF JUNE 30, 2016

This summary of actuarial assumptions is based on the Experience Study covering the period July 1, 2012 through June 30, 2015, unless noted otherwise.

A. Actuarial Assumptions

Interest: 7.65% per annum, compounded annually (as prescribed by the State Treasurer).

Salary Scale: Salary increases vary by years of employment and time period averaging 3.40% for periods prior to June 30, 2026 and averaging 4.21% thereafter. Average percentages based on 2015 Experience Study. Schedule of annual rates are shown below.

<u>Years of Employment</u>	<u>Period Ending June 30, 2026</u>	<u>Ultimate Period</u>
0-8	3.80%	4.90%
9-12	4.55	5.45
13	4.30	5.30
14	4.15	4.95
15	3.95	4.55
16	3.40	4.00
17	3.15	3.65
18	2.85	3.45
19	2.70	3.20
20	2.50	3.10
21	2.25	2.75
22	2.00	2.60
23-25	1.90	2.45
26-30	1.70	2.30
31+	1.55	2.00

Increases in Compensation Limits: The IRC Section 401(a)(17) limit is assumed to increase 2.3% per annum through June 30, 2026 and 2.6% thereafter, compounded annually. The Social Security Taxable Wage Base is assumed to increase 3.3% per annum through June 30, 2026 and 3.6% thereafter. The actual base is used for the 2017 plan year.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VI - ACTUARIAL ASSUMPTIONS AND METHODS
AS OF JUNE 30, 2016

A. Actuarial Assumptions (Continued)

Termination: Withdrawal rates vary by age, years of employment and gender. Illustrative rates are shown below:

Less Than 10 Years of Employment

<u>Years of Employment</u>	<u>Male</u>	<u>Female</u>	
		<u><40</u>	<u>40+</u>
0	10.23%	9.66%	10.96%
1	7.64	6.80	7.57
2	6.89	6.58	6.85
3	5.12	5.39	5.16
4	3.46	4.76	3.18
5	2.77	4.49	2.75
6	2.09	4.30	2.07
7	1.85	3.98	1.78
8	1.50	3.80	1.38
9	1.25	3.23	1.39

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VI - ACTUARIAL ASSUMPTIONS AND METHODS
AS OF JUNE 30, 2016

A. Actuarial Assumptions (Continued)

Annual Rates for Those With Deferred Annuity Benefits*

<u>Age</u>	<u>10-14 Years of Employment</u>		<u>15-19 Years of Employment</u>		<u>20-24 Years of Employment</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
30	0.67%	2.30%	0.47%	2.08%	0.27%	0.55%
35	0.63	1.88	0.42	1.40	0.27	0.55
40	0.60	1.17	0.38	0.70	0.26	0.43
45	0.63	0.74	0.36	0.46	0.25	0.27
50	0.77	0.22	0.50	0.48	0.31	0.28
55	1.10	1.20	0.83	0.80	0.54	0.53

*Members must have attained 10 years of service or 60 years of age (62 years of age for Class E and F members, 65 years of age for Class G members) in order to receive an annuity benefit.

Annual Rates for Those Receiving Return of Contributions

<u>Age</u>	<u>10-14 Years of Employment</u>		<u>15-19 Years of Employment</u>		<u>20-24 Years of Employment</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
30	0.45%	0.77%	0.31%	0.69%	0.18%	0.19%
35	0.42	0.62	0.28	0.47	0.18	0.19
40	0.39	0.39	0.25	0.24	0.18	0.14
45	0.42	0.25	0.25	0.15	0.16	0.09
50	0.33	0.24	0.22	0.16	0.13	0.09
55	0.28	0.21	0.21	0.14	0.13	0.09

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VI - ACTUARIAL ASSUMPTIONS AND METHODS
AS OF JUNE 30, 2016

A. Actuarial Assumptions (Continued)

Retirement: Rates of retirement vary by age, gender and eligibility for an unreduced pension and post-retirement medical benefits.

The rates listed below are for members hired prior to July 1, 2007 (Class A and B employees). Illustrative rates are shown below.

	<u>Less than Age 55 or Less than 25 Years of Service</u>		<u>Attainment of Age 55 and 25 Years of Service</u>			
	<u>Age</u>		<u>First Eligibility</u>		<u>After First Eligibility</u>	
			<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
<47	1.2%	1.2%	N/A	N/A	N/A	N/A
48	1.5	1.5	N/A	N/A	N/A	N/A
49	1.7	1.7	N/A	N/A	N/A	N/A
50	2.0	2.0	N/A	N/A	N/A	N/A
51	2.4	2.4	N/A	N/A	N/A	N/A
52	2.8	2.8	N/A	N/A	N/A	N/A
53	3.8	3.8	N/A	N/A	N/A	N/A
54	4.8	4.8	N/A	N/A	N/A	N/A
55	N/A	N/A	15.0%	17.0%	N/A	N/A
56	N/A	N/A	22.0	19.0	12.0%	13.0%
57	N/A	N/A	22.0	19.0	13.0	14.0
58	N/A	N/A	28.0	27.0	14.0	15.0
59	N/A	N/A	28.0	27.0	16.0	17.0
60	7.0	5.0	35.0	33.0	20.0	21.0
61	6.5	5.0	32.0	38.0	22.5	23.0
62	8.0	7.5	45.0	50.0	35.0	32.0
63	9.0	7.5	45.0	50.0	30.0	29.0
64	9.0	7.5	45.0	50.0	30.0	29.0
65	14.0	12.0	50.0	55.0	33.0	33.0
66-70	18.0	15.0	55.0	55.0	30.0	30.0
71+	19.0	16.0	55.0	55.0	27.0	30.0

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VI - ACTUARIAL ASSUMPTIONS AND METHODS
AS OF JUNE 30, 2016

A. Actuarial Assumptions (Continued)

The rates listed below are for members hired on or after July 1, 2007 and before November 2, 2008 (Class D employees). Illustrative rates are shown below.

	<u>Less than Age 60 or</u>		<u>Attainment of Age 60 and 25 Years of Service</u>			
	<u>Less than 25</u>		<u>First</u>		<u>After First</u>	
	<u>Years of Service</u>		<u>Eligibility</u>		<u>Eligibility</u>	
<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
<47	0.6%	0.6%	N/A	N/A	N/A	N/A
48	0.8	0.8	N/A	N/A	N/A	N/A
49	0.9	0.9	N/A	N/A	N/A	N/A
50	1.0	1.0	N/A	N/A	N/A	N/A
51	1.2	1.2	N/A	N/A	N/A	N/A
52	1.4	1.4	N/A	N/A	N/A	N/A
53	1.9	1.9	N/A	N/A	N/A	N/A
54	2.4	2.4	N/A	N/A	N/A	N/A
55	11.5	11.5	N/A	N/A	N/A	N/A
56	12.0	12.0	N/A	N/A	N/A	N/A
57	12.5	12.5	N/A	N/A	N/A	N/A
58	13.5	13.5	N/A	N/A	N/A	N/A
59	14.0	14.0	N/A	N/A	N/A	N/A
60	7.0	5.0	32.0%	31.0%	N/A	N/A
61	6.5	5.0	32.0	38.0	22.5%	23.0%
62	8.0	7.5	45.0	50.0	35.0	32.0
63	9.0	7.5	45.0	50.0	30.0	29.0
64	9.0	7.5	45.0	50.0	30.0	29.0
65	14.0	12.0	50.0	55.0	33.0	33.0
66-70	18.0	15.0	55.0	55.0	30.0	30.0
71+	19.0	16.0	55.0	55.0	27.0	30.0

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VI - ACTUARIAL ASSUMPTIONS AND METHODS
AS OF JUNE 30, 2016

A. Actuarial Assumptions (Continued)

The rates listed below are for members hired after November 1, 2008 and before June 28, 2011 (Class E and Class F employees). Illustrative rates are shown below.

	<u>Less than Age 62 or</u>		<u>Attainment of Age 62 and 25 Years of Service</u>			
	<u>Less than 25</u>		<u>First</u>		<u>After First</u>	
	<u>Years of Service</u>		<u>Eligibility</u>		<u>Eligibility</u>	
<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
<47	0.6%	0.6%	N/A	N/A	N/A	N/A
48	0.7	0.7	N/A	N/A	N/A	N/A
49	0.8	0.8	N/A	N/A	N/A	N/A
50	0.9	0.9	N/A	N/A	N/A	N/A
51	1.1	1.1	N/A	N/A	N/A	N/A
52	1.3	1.3	N/A	N/A	N/A	N/A
53	1.7	1.7	N/A	N/A	N/A	N/A
54	2.2	2.2	N/A	N/A	N/A	N/A
55	10.5	10.5	N/A	N/A	N/A	N/A
56	10.8	10.8	N/A	N/A	N/A	N/A
57	11.0	11.0	N/A	N/A	N/A	N/A
58	12.0	12.0	N/A	N/A	N/A	N/A
59	12.5	12.5	N/A	N/A	N/A	N/A
60	20.0	20.0	N/A	N/A	N/A	N/A
61	22.0	22.0	N/A	N/A	N/A	N/A
62	30.0	24.0	50.0%	46.0%	N/A	N/A
63	9.0	7.5	45.0	50.0	30.0%	29.0%
64	9.0	7.5	45.0	50.0	30.0	29.0
65	14.0	12.0	50.0	55.0	33.0	33.0
66-70	18.0	15.0	55.0	55.0	30.0	30.0
71+	19.0	16.0	55.0	55.0	27.0	30.0

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VI - ACTUARIAL ASSUMPTIONS AND METHODS
AS OF JUNE 30, 2016

A. Actuarial Assumptions (Continued)

The rates listed below are for members hired on or after June 28, 2011 (Class G employees). Illustrative rates are shown below.

	<u>Less than Age 65 or</u>		<u>Attainment of Age 65 and 30 Years of Service</u>			
	<u>Less than 30</u>		<u>First</u>		<u>After First</u>	
	<u>Years of Service</u>		<u>Eligibility</u>		<u>Eligibility</u>	
<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
<47	0.3%	0.3%	N/A	N/A	N/A	N/A
48	0.4	0.4	N/A	N/A	N/A	N/A
49	0.4	0.4	N/A	N/A	N/A	N/A
50	0.5	0.5	N/A	N/A	N/A	N/A
51	0.6	0.6	N/A	N/A	N/A	N/A
52	0.7	0.7	N/A	N/A	N/A	N/A
53	0.9	0.9	N/A	N/A	N/A	N/A
54	1.1	1.1	N/A	N/A	N/A	N/A
55	5.0	5.0	N/A	N/A	N/A	N/A
56	6.0	6.0	N/A	N/A	N/A	N/A
57	7.0	7.0	N/A	N/A	N/A	N/A
58	8.0	8.0	N/A	N/A	N/A	N/A
59	9.0	9.0	N/A	N/A	N/A	N/A
60	15.0	15.0	N/A	N/A	N/A	N/A
61	16.0	16.0	N/A	N/A	N/A	N/A
62	36.0	32.0	N/A	N/A	N/A	N/A
63	28.0	28.0	N/A	N/A	N/A	N/A
64	28.0	28.0	N/A	N/A	N/A	N/A
65	40.0	40.0	50.0%	55.0%	N/A	N/A
66-70	18.0	15.0	55.0	55.0	30.0%	30.0%
71+	19.0	16.0	55.0	55.0	27.0	30.0

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VI - ACTUARIAL ASSUMPTIONS AND METHODS
AS OF JUNE 30, 2016

A. Actuarial Assumptions (Continued)

Disability: Incidence of ordinary disabilities among active members apply upon the attainment of 10 years of service until the attainment of first eligibility for retirement. For members eligible for early retirement, the greater of the early retirement and disability benefit is valued. The rates vary by age, gender and type of disability. Illustrative rates are shown below:

<u>Age</u>	<u>Ordinary</u>		<u>Accidental</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
25	0.0301%	0.0379%	0.0060%	0.0060%
30	0.0473	0.0550	0.0060	0.0060
35	0.0609	0.0674	0.0060	0.0060
40	0.0701	0.0893	0.0060	0.0060
45	0.1023	0.1317	0.0060	0.0060
50	0.1421	0.1759	0.0060	0.0060
55	0.4686	0.3506	0.0060	0.0060

For Class F and G members assumed to receive a disability benefit under Chapter 3, P.L. 2010, it is assumed that these members will begin receiving their retirement benefit at age 70. The valuation excludes benefits paid from any disability income policy prior to retirement since these benefits are not paid from TPAF.

Pre-retirement Mortality: RP-2006 employee mortality table with white collar adjustments setback 5 years for females and 3 years for males. Mortality improvements are projected using a 60-year average of rates of improvement using Social Security data from 1953 to 2013. Illustrative rates for the base year are shown below. No accidental deaths are assumed.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VI - ACTUARIAL ASSUMPTIONS AND METHODS
AS OF JUNE 30, 2016

A. Actuarial Assumptions (Continued)

<u>Age</u>	<u>Ordinary</u>		<u>Mortality Improvement</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
25	0.0412%	0.0171%	0.82%	0.82%
30	0.0341	0.0157	0.76	0.76
35	0.0348	0.0176	0.91	0.91
40	0.0428	0.0253	1.18	1.18
45	0.0624	0.0398	1.18	1.18
50	0.1043	0.0640	1.19	1.19
55	0.1649	0.0971	1.17	1.17
60	0.2488	0.1464	1.24	1.24
65	0.4482	0.2358	1.25	1.25
70	0.8588	0.3783	1.22	1.22

Post-retirement Mortality: Rates of mortality vary by age, gender and type of retirement. For service retirees and beneficiaries, rates are based on RP-2006 white collar mortality table for males and females, with adjustments. For disabled annuitants, rates are equal to 90% of the mortality rates of the RP-2006 disability annuitant table for males and females. For non-disabled annuitants, mortality improvements are projected using a 60-year average of rates of improvement using Social Security data from 1953 to 2013. Illustrative rates are shown below:

<u>Age</u>	<u>Service Retirements and Beneficiaries</u>		<u>Mortality Improvement</u>		<u>Disability Retirement</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
45	0.0787%	0.0512%	1.18%	1.18%	1.9031%	0.9402%
50	0.3018	0.1735	1.19	1.19	2.1547	1.1194
55	0.3867	0.2253	1.17	1.17	2.2379	1.3512
60	0.5135	0.3563	1.24	1.24	2.5300	1.7513
65	0.8079	0.6354	1.25	1.25	3.2681	2.2769
70	1.3954	1.0254	1.22	1.22	4.3931	3.0828
75	2.4953	1.7459	1.16	1.16	6.0309	4.4208
80	4.5899	3.1836	1.10	1.10	8.4835	6.5331
85	8.6900	6.0945	0.79	0.79	12.3392	9.7648

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VI - ACTUARIAL ASSUMPTIONS AND METHODS AS OF JUNE 30, 2016

Non-contributory Active Members: Unit Credit cost method.

Beneficiaries: 100% of active members are assumed to have a beneficiary for receipt of the lump sum death benefit or employee contribution refund upon death.

Form of Payment: Modified Cash Refund Annuity.

Member Annuity: Valuation mortality and interest are assumed to be the basis for determining the member annuity in future years.

Special Data Adjustments:

- Determination of employee type is based on Class Code as provided by the Division.
- For non-contributory members where no salary was provided, no date of birth was provided, or ASF was negative a liability equal to the ASF was held.
- For terminated non-contributory members, the liability is based on an estimated benefit using last known salary.
- For beneficiaries where no gender code or date of birth was provided, reasonable assumptions were made based on records provided in prior years or the deceased retiree's records. For retirees with a joint annuitant option code that was missing a spouse's date of birth, husbands are assumed to be 3 years older than wives. All such records were included in the valuation.
- Retiree members where no benefit and monthly allowance was provided, or no cause, class, or option was provided, were excluded from the valuation.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VI - ACTUARIAL ASSUMPTIONS AND METHODS AS OF JUNE 30, 2016

B. Actuarial Valuation Method

The Projected Unit Credit Method was used as required by Chapter 62, P.L. 1994 as modified by Chapters 115, P.L. 1997 and 133, P.L. 2001 for active contributory members. The minimum actuarial accrued liability was equal to the greater of formula benefit under the Projected Unit Credit Cost method, value of the estimated member annuity as of the valuation date and the contributions with interest as of the valuation date provided by the Division. The normal cost was determined using the same methodology but reflecting an additional year of service and contributions less the final amount determined for the actuarial accrued liability.

C. Asset Valuation Method

The actuarial value is equal's the prior year' actuarial value increased with interest and cash flows plus 20% of the difference between it and the market value of assets. Cash flows are based on an accrual accounting approach. This method is prescribed by statute.

D. Changes in Actuarial Assumptions

This valuation reflects adoption of the 2015 Experience Study and a reduction in the investment return assumption from 7.9% to 7.65%.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VII – SUMMARY OF PRINCIPAL PLAN PROVISIONS AS OF JUNE 30, 2016

This summary of plan provisions is intended only to describe the essential features of the plan. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself.

1. Type of Plan

The Plan is a contributory, defined benefit plan. Effective October 1, 2011, contributions by Members are 6.5% and increase by 1/7 of 1% each July thereafter until an ultimate rate of 7.5% is attained on July 1, 2018. As of July 1, 2016, the contribution rate is 7.20%. For members hired on or after July 1, 2007, compensation for contributions is capped at the Social Security Taxable Wage Base (\$118,500 for 2016). For compensation in excess of the Social Security Taxable Wage Base, contributions on the excess compensation are made to the Defined Contribution Retirement Program.

2. Effective Date

The Plan was established in 1919. It was reorganized and integrated with Social Security in 1955. Social Security integration was eliminated in 1966, i.e., reductions in retirement benefits based on Social Security benefits were eliminated.

3. Eligibility for Membership

Employees, appointed to positions requiring certification 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.

4. Definitions

- a. Fiscal Year: A Fiscal Year is a 12-month period beginning on July 1 and ending on June 30.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VII – SUMMARY OF PRINCIPAL PLAN PROVISIONS AS OF JUNE 30, 2016

4. Definitions (continued)

- b. Credited Service: A year of Credited Service for each year an employee is a Member of the Retirement System plus service, if any, covered by a prior service liability. Class F members must be scheduled to work at least 32 hours per week, Class E members must have an annual salary of \$7,500 (indexed for inflation) and other members must have an annual salary of \$500.
- c. Final Compensation: This is the average annual compensation upon which contributions by a member are based on the period consecutive years of Creditable Service immediately preceding retirement or the period of highest fiscal years of Membership Service. The period equals three for members hired prior to May 22, 2010 and five for Class F and later members.
- d. Final Year Compensation: This is the compensation upon which contributions by a Member to the Annuity Savings Fund are based in the last year of Membership Service.
- e. Aggregate Member Contributions: This is the sum of all amounts deducted from the compensation of a Member or contributed by him or on his behalf without interest.
- f. Class A Member: Any member who contributes towards retirement allowance based on 1/64th benefit rate per year of creditable service.
- g. Class B Member: Any member hired prior to July 1, 2007 who contributes towards a retirement allowance based on 1/55th benefit rate per year of creditable service.
- h. Class D Member: Any member hired on or after July 1, 2007 and before November 2, 2008, who contributes up to the Social Security Taxable Wage Base towards a retirement allowance based on 1/55th benefit rate per year of creditable service payable at age 60.
- i. Class E Member: Any member hired after November 1, 2008 and before May 22, 2010 who contributes up to the Social Security Taxable Wage Base towards a retirement allowance based on 1/55th benefit rate per year of creditable service payable at age 62.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VII – SUMMARY OF PRINCIPAL PLAN PROVISIONS AS OF JUNE 30, 2016

4. Definitions (continued)

- j. Class F Member: Any member hired after May 21, 2010 and before June 28, 2011 who contributes up to the Social Security Taxable Wage Base towards a retirement allowance based on 1/60th benefit rate per year of creditable service payable at age 62.
- k. Class G Member: Any member hired on or after June 28, 2011 who contributes up to the Social Security Taxable Wage Base towards a retirement allowance based on 1/60th benefit rate per year of creditable service payable at age 65.

5. Cost-of-Living Adjustment

The Pension Adjustment Program provides a cost-of-living adjustment (COLA) to retirees and their survivors who receive a monthly retirement allowance from the TPAF. The first adjustment is received in the 25th month after the member's retirement. Subsequent cost-of-living adjustments are computed annually and are first reflected in February. The rate of increase is equal to 60 percent of the percentage change between the average CPI for the 12 month period ending December 31 in the year of retirement and the August 31 preceding the February adjustment. Pension adjustments to be paid on or after July 1, 2011 have been eliminated for all members unless the Target Funded Ratio is met as of the valuation date and for each of the next 30 years on a projected basis.

6. Retirement Benefits

a. Service Retirement

Service Retirement Eligibility: Eligibility means age 60 (Class A, B, and D), age 62 (Class E and F) or age 65 (Class G) with no minimum service requirement.

Service Retirement Benefit: An employee's annual service retirement allowance is equal to a member annuity plus an employer pension which together equals 1/64th of Final Compensation for each year of service for Class A members, 1/55th of Final Compensation for each year of service for Class B, D and E members and 1/60th of Final Compensation for each year of service for Class F and G members. The member annuity is based on the member contributions credited at the valuation interest rate.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VII – SUMMARY OF PRINCIPAL PLAN PROVISIONS
AS OF JUNE 30, 2016

6. Retirement Benefits (continued)

Note: See Section 12 for special benefits for veteran members.

b. Early Retirement

Early Retirement Eligibility: Class A, B, D, E and F members may retire after completion of 25 years of Creditable Service and Class G members may retire after completion of 30 years of Creditable Service.

Early Retirement Benefit: The benefit may be either:

- (i) the lump sum withdrawal benefit described in 7.a. below; or
- (ii) the Service Retirement Benefit reduced by 1/4 of one percent for each month the retirement date precedes age 55 for Class B members; or
- (iii) the Service Retirement Benefit reduced by 1/12 of one percent for each month the retirement date precedes age 60 but over age 55 and by ¼ of one percent for each month the retirement date precedes age 55, for Class D members.
- (iv) the Service Retirement Benefit reduced by 1/12 of one percent for each month the retirement date precedes age 62 but over age 55 and by ¼ of one percent for each month the retirement date precedes age 55, for Class E and F members.
- (v) the Service Retirement Benefit reduced by ¼ of one percent for each month the retirement date precedes age 65, for Class G members.

c. Deferred Retirement

Eligibility: A Member is eligible upon termination of service prior to age 60 (Class A, B, D), age 62 (Class E and Class F) or age 65 (Class G) and after 10 years of Creditable Service.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VII – SUMMARY OF PRINCIPAL PLAN PROVISIONS
AS OF JUNE 30, 2016

6. Retirement Benefits (continued)

Deferred Retirement Benefit: The benefit may be either:

- (i) the lump sum withdrawal benefit described in 7.a. above; or
- (ii) a deferred retirement benefit, commencing at age 60 (Class A, B, D), age 62 (Class E and Class F) or age 65 (Class G), equal to a member annuity plus an employer pension which together provide a retirement allowance equal to the service retirement benefit based on Final Compensation and Creditable Service at date of termination. Member annuity based on member contributions credited at the valuation interest rate.

7. Termination Benefits

a. Lump Sum Withdrawal

Eligibility: A Member is eligible upon termination of service.

Lump Sum Withdrawal Benefit: The benefit equals a refund of Aggregate Member Contributions plus, if the member has completed three years of service, interest accumulated at 2.0% per annum allowed thereon.

8. Death Benefits

a. Ordinary Death (Insured) Benefit - Lump Sum (Non-Contributory)

Pre-retirement Death Benefit Eligibility: Any current active member is eligible.

Pre-retirement Death Benefit: The benefit is a lump sum benefit equal to the Aggregate Contributions with interest allowed thereon plus an amount equal to 1-1/2 times Compensation at date of death.

Post-retirement Death Benefit Prior to Age 60 (Class A, B, D), Age 62 (Class E and Class F) or Age 65 (Class G) Eligibility: Eligible if disabled or retired early.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VII – SUMMARY OF PRINCIPAL PLAN PROVISIONS
AS OF JUNE 30, 2016

8. Death Benefits (continued)

Post-retirement Death Benefit Prior to Age 60 (Class A, B, D), Age 62 (Class E and Class F) or Age 65 (Class G) Benefit: The benefit is as follows:

- (i) For death while a Disabled Retiree the benefit is equal to 1-1/2 times Compensation.
- (ii) For death while an Early Retiree, the benefit is equal to 3/16 times Compensation.
- (iii) For death while vested terminated, the benefit is equal to his Aggregate Contributions with interest allowed thereon.

Post-retirement Death Benefit After Age 60 (Class A, B, D), Age 62 (Class E and F) or Age 65 (Class G) Eligibility: Eligible after attainment of service retirement, deferred and disabled retirements (if not disabled, 10 years of Creditable Service required for members enrolling on or after July 1, 1971).

Post-retirement Death Benefit After Age 60 (Class A, B, D), Age 62 (Class E and F) or Age 65 (Class G) Benefit: The benefit payable is equal to 3/16 times Compensation.

- b. Contributory Death Benefit: An additional, employee-paid, death benefit is also available through group insurance purchased by the Board of Trustees. Contributions for this benefit are required by Members during the first year of enrollment. Participation may be terminated after the first year. The benefit prior to retirement is 2 times compensation. The benefit after retirement is 1/4 times final year compensation (coverage at retirement, and 10 years of participation for Members enrolling on or after July 1, 1970, is required).

- c. Pre-retirement Accidental Death Benefit:

Eligibility: A death resulting from injuries received from an accident during performance of duty and not a result of willful negligence is eligible.

Pre-retirement Lump Sum Benefit: The benefit is a lump sum equal to 1-1/2 times Compensation.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VII – SUMMARY OF PRINCIPAL PLAN PROVISIONS
AS OF JUNE 30, 2016

8. Death Benefits (continued)

Pre-retirement Accidental Death Benefit: The benefit payable is as follows:

- (i) The annuity benefit to a widow or widower is equal to 50% of Compensation, payable for life or until remarriage.
- (ii) The annuity benefit, when there is no spouse, or the spouse is remarried, is equal to 20% of Compensation for one child, 35% for two children, 50% for three or more children. The benefit is payable while the children are under age 18 and it is payable for life if they are disabled.
- (iii) The annuity benefit, when there is no spouse or children, is equal to 25% of Compensation for one dependent parent and 40% for two dependent parents.
- (iv) The benefit, when there is no relation as stated above, is equal to the Aggregate Contributions with interest allowed thereon and is payable to a beneficiary or to the Member's estate. This is also the minimum benefit payable under (i), (ii) and (iii) above.

9. Disability Benefits

a. Ordinary Disability Retirement

Eligibility: A Member is eligible for Ordinary Disability Retirement if he (she) has 10 years of Creditable Service and is totally and permanently incapacitated from the performance of usual or available duties.

Ordinary Disability Retirement Benefit for Class A, B, D and E members: The total retirement allowance is equal to the greater of:

- (i) 1.64% of Final Compensation times the number of years of Creditable Service; or
- (ii) 43.6% of Final Compensation.

Note: See Section 12 for special benefits for veteran members.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VII – SUMMARY OF PRINCIPAL PLAN PROVISIONS AS OF JUNE 30, 2016

9. Disability Benefits (continued)

Ordinary and Accidental Disability Retirement Benefit for Class F and G members: A disability benefit equal to 60% of salary reduced by the initial Social Security benefit is paid until the earlier of age 70 or commencement of a retirement benefit from a disability income policy outside of TPAF. The policy also makes employee contributions during the period of disability.

b. Accidental Disability Retirement for Class A, B, D and E members

Eligibility: A Member is eligible upon 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.

Accident Disability Retirement Benefit: The benefit payable is equal to a Member annuity plus an employer pension which together equals 72.7% of the Compensation at date of injury.

10. Additional Old-Plan Benefit: An additional pension is payable to any retiree who was a member of the old Teachers' Retirement Fund. This pension is the actuarial equivalent of his contributions to the old Teachers' Retirement Fund without interest.

11. Special Minimum Benefit: A member who retired prior to 1955 with 20 or more years of service may receive a minimum pension of \$500 a month inclusive of any amounts payable under any pension adjustments.

12. Special Benefits for Veterans:

a. Service Retirement: Eligible if member attains age 60 and completes 20 years of service or attains age 55 and completes 25 years of service. Benefit equals 54.5% of highest 12-month contributory compensation.

b. Chapter 97 Benefit: Eligible if age 55 and completes 35 years of service. Benefit equals 1/55th of final year compensation for each year of service.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VII – SUMMARY OF PRINCIPAL PLAN PROVISIONS AS OF JUNE 30, 2016

13. Benefit and Compensation Limits

The provisions of IRC Section 415 and IRC Section 401(a)(17), which limit benefits paid and limit compensation used in determining benefits, has been reflected in this report. The IRC Section 415 limit is \$210,000 and the 401(a)(17) compensation cap is \$265,000 for 2016 and is applied on a calendar year basis.

14. Forms of Payment

- a. Maximum Option – Single life annuity.
- b. Option 1 – Single life annuity with return of reserve option.
- 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.

15. Contributions

- a. Member Contributions: Each member becoming a member on or after January 1, 1956 and prior to July 1, 2007 contributes at the rate of contribution applicable to Class B members. Any members hired after June 30, 2007 and prior to November 2, 2008 are Class D members. Members hired after November 1, 2008 and prior to May 22, 2010 are Class E members. Members hired after May 21, 2010 are Class F members and members hired after June 28, 2011 are Class G members.
 - (i) Class D, E, F or G Membership: Class D, E, F or G members contribute at their applicable contribution rate up to the Social Security Taxable Wage Base.
 - (ii) Class B Membership: Any member on December 31, 1955 may elect to be classified as a Class B member and contribute at the rate of contribution applicable to Class B members at his age at membership. Any such member may elect to increase his accumulated deductions by the amount required by the Board to receive credit as a Class B member for all or part of his service prior to such election.

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TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VII – SUMMARY OF PRINCIPAL PLAN PROVISIONS AS OF JUNE 30, 2016

15. Contributions (continued)

- (iii) Class A Membership: Any member who is not a veteran and does not elect to be classified as a Class B member continues to contribute at the rate of contribution applicable to his age at membership which was payable prior to the establishment of the integrated system, except that if he became a member subsequent to June 30, 1946 he will pay after January 1, 1955 at the rate of contribution in effect on June 30, 1946 applicable to his age at membership.

Prior to July 1, 1979 different contribution rates were established for men and women. Effective on that date members contribute at rates intermediate between the rates previously applicable to male and female members, computed to provide the same present value of future employee contributions at each entry age on the basis of the membership as constituted on the effective date.

b. Local Employer Contributions

- (i) Early Retirement Incentive Contributions: The State and Local employers which elected to participate in the early retirement incentive programs authorized by Chapters 137, 229 and 231, P.L. 1991, Chapters 48, 138 and 163, P.L. 1993, Chapter 23, P.L. 2001 and Chapters 128 and 129, P.L. 2003 pay contributions to cover the additional liability for these programs over amortization periods chosen by the employer (15 years for Chapters 128 and 129) or the amortization period for the Unfunded Accrued Liability of the system (Chapter 23, P.L. 2002 and Chapter 21, P.L. 2008). The remaining present values are re-amortized upon changes to the interest rate assumption. Effective with the revised June 30, 2011 actuarial valuation, for any local employer with an increasing payment amortization schedule, the increase factor is 3.25%
- (ii) Chapter 113 Contributions: Certain School Districts have elected to exempt a select group of employees from the compensation limit under IRC Section 401(a)(17) incorporated under Chapter 113. These school districts will pay the full cost of this exemption at a member's date of retirement.

This work product was prepared solely for the State of NJ and may not be appropriate for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

SECTION VII – SUMMARY OF PRINCIPAL PLAN PROVISIONS
AS OF JUNE 30, 2016

16. Changes in Plan Provisions Since Prior Valuation

None.

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Section VII

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

APPENDIX I - EARLY RETIREMENT INCENTIVE CONTRIBUTION SCHEDULE

<u>Group Number</u>	<u>Location Name</u>	<u>ERI 1 Present Value June 30, 2016</u>	<u>ERI 1 Fiscal Year 2018 Payment</u>	<u>ERI 2 Present Value June 30, 2016</u>	<u>ERI 2 Fiscal Year 2018 Payment</u>
3	981 NJ INST OF TECH	\$102,757	\$24,988	\$383,458	\$33,607
6	911 ALLAMUCHY BD OF ED	N/A	N/A	96,417	10,118
6	300 ASBURY PARK BD OF ED	1,668,912	405,842	N/A	N/A
6	969 ATLANTIC CO VOCATIONAL SCHOOLS	100,399	24,415	N/A	N/A
6	4015 BERLIN TWP BD OF ED	95,576	23,242	N/A	N/A
6	412 BOONTON TWP BD OF ED	65,090	15,828	N/A	N/A
6	774 BYRAM TWP BD OF ED	114,479	27,839	N/A	N/A
6	4017 CHESILHURST BORO BD OF ED	14,533	3,534	N/A	N/A
6	4018 CLEMENTON BD OF ED	54,069	13,148	N/A	N/A
6	753 GREEN BROOK BD OF ED	152,036	36,972	N/A	N/A
6	8082 GUTTENBERG BORO BD OF ED	81,773	19,885	N/A	N/A
6	956 HUDSON CO VOCATIONAL SCHOOL	N/A	N/A	647,672	67,965
6	521 LAKEHURST BORO BD OF ED	42,723	10,389	N/A	N/A
6	645 LAKELAND REGIONAL	384,091	93,402	N/A	N/A
6	111 MERCER CO SPECIAL SERVICES	189,907	46,181	N/A	N/A
6	346 MONMOUTH BEACH BD OF ED	52,074	12,663	N/A	N/A
6	987 MONMOUTH CO VOCATIONAL SCHOOLS	307,271	74,721	N/A	N/A
6	4069 PINE HILL BORO BD OF ED	\$138,237	\$33,616	N/A	N/A
6	5071 SHILOH TOWNSHIP	5,679	1,381	N/A	N/A
6	8070 WEST NEW YORK TWP BD OF ED	N/A	N/A	\$2,274,280	\$238,658
6	934 WHITE TWP BD OF ED	\$107,396	\$26,116	N/A	N/A
	Grand total for Local Employers	\$3,677,002	\$894,162	\$3,401,827	\$350,348

TEACHERS' PENSION AND ANNUITY FUND OF NEW JERSEY

APPENDIX I - EARLY RETIREMENT INCENTIVE CONTRIBUTION SCHEDULE

(continued)

<u>Group Number</u>	<u>Location Name</u>	ERI 3	ERI 3	ERI 4	ERI 4
		<u>Present Value June 30, 2016</u>	<u>Fiscal Year 2018 Payment</u>	<u>Present Value June 30, 2016</u>	<u>Fiscal Year 2018 Payment</u>
2	90400 EDUCATION DEPARTMENT	\$20,038,545	\$1,792,633	N/A	N/A
2	90416 MARIE KATZENBACK SCH FOR DEAF	\$3,565,984	\$319,010	N/A	N/A
2	90207 OFFICE OF ADM LAW	\$843,724	\$75,479	N/A	N/A
3	981 NJ INST OF TECH	\$836,657	\$74,847	N/A	N/A
4	90411 NEW JERSEY UNIVERSITY	\$4,160,435	\$372,189	N/A	N/A
4	90412 KEAN UNIVERSITY	\$2,176,138	\$194,676	N/A	N/A
4	90414 MONTCLAIR STATE UNIVERSITY	\$1,721,556	\$154,009	N/A	N/A
4	90410 ROWAN UNIVERSITY	\$705,702	\$63,132	N/A	N/A
4	90415 THE COLLEGE OF NEW JERSEY	\$442,483	\$39,584	N/A	N/A
4	90413 WILLIAM PATERSON UNIVERSITY	\$803,512	\$71,882	N/A	N/A
6	8083 HARRISON TWP BD OF ED	N/A	N/A	\$812,115	\$197,488
6	956 HUDSON CO VOCATIONAL SCHOOL	N/A	N/A	\$640,148	\$155,670
6	620 PASSAIC BD OF ED	N/A	N/A	\$10,023,059	\$2,437,383
Grand total for State Locations and Local Employers		\$35,294,736	\$3,157,441	\$11,475,322	\$2,790,541

<u>Group Number</u>	<u>Location Name</u>	ERI 5	ERI 5
		<u>Present Value June 30, 2016</u>	<u>Fiscal Year 2018 Payment</u>
2	90400 EDUCATION DEPARTMENT	\$4,936,454	\$441,611
2	90416 MARIE KATZENBACK SCH FOR DEAF	\$1,444,119	\$129,190
Grand total for State Locations		\$6,380,573	\$570,801