



Police and Firemen's Retirement System of New Jersey

**GASB 68 Report
as of June 30, 2019**

Produced by Cheiron

March 2020

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**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
GASB 68 REPORTING FOR JUNE 30, 2019 MEASUREMENT DATE**

SECTION I – BOARD SUMMARY

The purpose of this report is to provide accounting and financial disclosure information under Governmental Accounting Standards Board Statement 68 for the Police and Firemen's Retirement System of New Jersey (PFRS, Plan, or System). This information includes:

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

Highlights

The reporting date for the PFRS is June 30, 2019. Measurements as of the reporting date are based on the fair value of assets as of June 30, 2019 and the Total Pension Liability as of the valuation date, July 1, 2018, updated to June 30, 2019. As a result of the Experience Study covering the period July 1, 2013 through June 30, 2018, the assumed rates of termination, retirement, mortality, disability, salary increases, and inflation were updated. To see a detailed comparison of the changes refer to the Experience Study. The assumed discount rate used to measure the Total Pension Liability was also changed as of the measurement date. We are not aware of any other significant events between the valuation date and the measurement date so the update procedures only included the addition of service cost and interest cost offset by actual benefit payments, and an adjustment to reflect the change in assumptions. Additional information about the TPL can be found in the GASB 67 report. This report contains the GASB 68 collective employer reporting amounts. The individual employer reporting amounts can be found in the GASB 67-68 Employer Schedules provided separately in Excel format.

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SECTION I – BOARD SUMMARY

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

Table I-1 Summary of Collective Results		
Measurement Date	6/30/2019	6/30/2018
<u>State</u>		
Net Pension Liability	\$ 4,201,687,763	\$ 4,329,304,276
Deferred Outflows	(109,007,687)	(222,847,685)
Deferred Inflows	<u>687,039,876</u>	<u>571,047,669</u>
Net Impact on Statement of Net Position	\$ 4,779,719,952	\$ 4,677,504,260
Total Pension Expense	\$ 298,385,556	\$ 344,631,284
Pension Expense (% of Payroll)	62.17%	71.37%
<u>Local Employers</u>		
Net Pension Liability	\$ 14,170,193,618	\$ 15,369,699,278
Deferred Outflows	(522,637,261)	(1,299,176,853)
Deferred Inflows	<u>4,198,449,249</u>	<u>3,597,955,451</u>
Net Impact on Statement of Net Position	\$ 17,846,005,606	\$ 17,668,477,876
Total Pension Expense	\$ 1,325,963,796	\$ 1,270,762,351
Pension Expense (% of Payroll)	39.11%	38.27%
<u>Total</u>		
Net Pension Liability	\$ 18,371,881,381	\$ 19,699,003,554
Deferred Outflows	(631,644,948)	(1,522,024,538)
Deferred Inflows	<u>4,885,489,125</u>	<u>4,169,003,120</u>
Net Impact on Statement of Net Position	\$ 22,625,725,558	\$ 22,345,982,136
Total Pension Expense	\$ 1,624,349,352	\$ 1,615,393,635
Pension Expense (% of Payroll)	41.97%	42.47%

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SECTION II – CERTIFICATION

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

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

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

For purposes of this report, the projection of the Plan's contributions and projected benefit payments as of June 30, 2019 was based on the recommended demographic assumptions of the July 1, 2013 – June 30, 2018 Experience Study, approved by the Board of Trustees on January 13, 2020. The calculation of the Total Pension Liability as of June 30, 2019 was based on the same demographic assumptions except for the mortality assumption, which was based on the SOA's MP-2019 mortality improvement scale upon direction from the DPB. While we do not find the use of the SOA's Scale MP-2019 unreasonable, it does not reflect the analysis of actual mortality experience from our Experience Study which was the basis for our recommended mortality assumptions, including the mortality improvement scale.

Based on the State Treasurer's recommendation the following investment return assumptions are used to determine the actuarially determined contributions:

- Effective with the July 1, 2017 valuation: 7.50% per annum,
- Effective with the July 1, 2019 valuation: 7.30% per annum,
- Effective with the July 1, 2021 valuation: 7.00% per annum,

In accordance with Paragraph 40 of GASB Statement No. 67, the projection of the Plan's fiduciary net position is based on a long-term expected rate of return of 7.00% per annum.

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SECTION II – CERTIFICATION

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

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



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Principal Consulting Actuary



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Principal Consulting Actuary

**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
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SECTION III – DETERMINATION OF DISCOUNT RATE

The discount rate used to measure the Total Pension Liability was 6.51% as of June 30, 2018 and 6.85% as of June 30, 2019. As discussed with the Division of Pensions and Benefits, the projection of cash flows used to determine the discount rate as of June 30, 2019 assumed:

- In accordance with Paragraph 40 of GASB Statement No. 67, the projection of the Plan's fiduciary net position is based on a long-term expected rate of return of 7.00% per annum.
- In accordance with Paragraph 37 of GASB Statement No. 67, the projection of the Plan's contributions and projected benefit payments are based on the same assumptions used to determine the expected contributions for the System. The demographic assumptions are based on the recommendations of the July 1, 2013 – June 30, 2018 Experience Study as approved by the Board of Trustees on January 13, 2020.

Based on the State Treasurer' recommendation the following investment return assumptions are used to determine the actuarially determined contributions:

- Effective with the July 1, 2017 valuation: 7.50% per annum,
- Effective with the July 1, 2019 valuation: 7.30% per annum,
- Effective with the July 1, 2021 valuation: 7.00% per annum.
- It is assumed that the Local employers will contribute 100% of their actuarially determined contribution and 100% of their Non-Contributory Group Insurance Premium Fund (NCGIPF) contribution while the State will contribute 70% of its actuarially determined contribution and 100% of its NCGIPF contribution for all years of the projection. The 70% contribution rate is the total State contribution rate expected to be paid in fiscal year ending June 30, 2020 with respect to the actuarially determined contribution for the fiscal year ending June 30, 2020 for all State administered retirement systems.
- Consistent with Chapter 83, P.L. 2016, it is assumed that the State will make pension contributions in equal amounts at the end of each quarter.
- Annual administrative expenses are assumed to be 0.27% of expected pension benefit payments.
- In accordance with Chapter 98, P. L. 2017, PFRS receives 1.2% of the proceeds of the Lottery Enterprise for a period of 30 years. Revenues received from lottery proceeds are assumed to be contributed to the System on a monthly basis.
- It is assumed that Local employers' contributions are expected to be received on April 1st, 21 months after the associated valuation date.

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SECTION III – DETERMINATION OF DISCOUNT RATE

The Fiduciary Net Position (FNP) includes Local employers' contributions receivable as reported in the financial statements provided to us by the Division of Pensions and Benefits. In determining the discount rate in Appendix D, the FNP at the beginning of each year does not reflect receivable contributions as those amounts are not available at the beginning of the year to pay benefits. The receivable contributions for the current year and prior year are shown below:

- For FYE June 30, 2018, the FNP includes receivable contributions of \$1,089,730,202 (\$940,592,142 for appropriations, \$37,157,368 for NCGIPF, \$102,125,815 for Chapter 19 and \$9,867,107 for ERI, offset by \$12,230 for NCGIPF adjustment).
- For FYE June 30, 2019, the FNP includes receivable contributions of \$1,105,874,849 (\$963,648,042 for appropriations, \$46,564,731 for NCGIPF, \$86,902,860 for Chapter 19 and \$8,759,216 for ERI).

Based on these assumptions, the pension Plan's fiduciary net position was projected to be available to make all projected future benefit payments of current Plan members through fiscal year 2076. Municipal bond rates of 3.87% as of June 30, 2018 and 3.50% as of June 30, 2019 were used in the development of the blended GASB discount rate after the Plan's fiduciary net position was no longer sufficient to make future benefit payments. As selected by the State Treasurer, the rates are based on the Bond Buyer GO 20-Bond Municipal Bond Index. Based on the long-term rate of return of 7.00% and the municipal bond rate of 3.87% as of June 30, 2018 and the long-term rate of return of 7.00% and the municipal bond rate of 3.50% as of June 30, 2019, the blended GASB discount rates are 6.51% as of June 30, 2018 and **6.85%** as of June 30, 2019. The assumed discount rates have been determined in accordance with the method prescribed by GASB Statement No. 67.

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SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

We understand the State and Local employers have elected to use the 2019 measurement date for its 2020 reporting date. As a result, the schedules in this section will be used by the State and Local employers for their 2020 reporting.

The impact of experience gains or losses and assumption changes on the TPL are recognized in expense over the average expected remaining service life of all active and inactive members of the System. As of the measurement date, this recognition period was 5.92 years.

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

Table IV-1A		
Schedule of Collective Deferred Inflows and Outflows of Resources		
State		
	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ 0	\$ 98,872,245
Changes in assumptions	55,641,871	588,167,631
Net differences between projected and actual earnings on pension plan investments	53,365,816	0
Total	<u>\$ 109,007,687</u>	<u>\$ 687,039,876</u>
Amounts reported as deferred outflows and deferred inflows of resources will be recognized in pension expense as follows:		
Measurement year ended June 30:		
2020	\$ (111,941,217)	
2021	(189,254,365)	
2022	(145,684,303)	
2023	(81,758,032)	
2024	(49,394,272)	
Thereafter	\$ 0	

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SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

Table IV-1B		
Schedule of Collective Deferred Inflows and Outflows of Resources		
Local Employers		
	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ 103,302,923	\$ 77,479,860
Changes in assumptions	419,334,338	3,955,150,913
Net differences between projected and actual earnings on pension plan investments	0	165,818,476
Total	<u>\$ 522,637,261</u>	<u>\$ 4,198,449,249</u>
<p>Amounts reported as deferred outflows and deferred inflows of resources will be recognized in pension expense as follows:</p>		
Measurement year ended June 30:		
2020	\$ (641,575,169)	
2021	(1,346,768,315)	
2022	(953,794,149)	
2023	(470,155,647)	
2024	(263,518,708)	
Thereafter	\$ 0	

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SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

Table IV-1C		
Schedule of Collective Deferred Inflows and Outflows of Resources		
Total		
	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ 103,302,923	\$ 176,352,105
Changes in assumptions	474,976,209	4,543,318,544
Net differences between projected and actual earnings on pension plan investments	53,365,816	165,818,476
Total	<u>\$ 631,644,948</u>	<u>\$ 4,885,489,125</u>
<p>Amounts reported as deferred outflows and deferred inflows of resources will be recognized in pension expense as follows:</p>		
<p>Measurement year ended June 30:</p>		
2020	\$ (753,516,386)	
2021	(1,536,022,680)	
2022	(1,099,478,452)	
2023	(551,913,679)	
2024	(312,912,980)	
Thereafter	\$ 0	

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SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

Table IV-2A

Detailed Schedule of Collective Deferred Inflows and Outflows of Resources
State

Recognition of differences between expected and actual experience

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year						
			2019	2020	2021	2022	2023	2024	Thereafter
2019	5.92	\$ (70,860,849)	\$ (11,969,738)	\$ (11,969,738)	\$ (11,969,738)	\$ (11,969,738)	\$ (11,969,738)	\$ (11,012,159)	\$ 0
2018	4.73	(19,977,980)	(4,223,675)	(4,223,675)	(4,223,675)	(4,223,675)	(3,083,280)	0	0
2017	3.59	(20,941,449)	(5,833,272)	(5,833,272)	(5,833,272)	(3,441,633)	0	0	0
2016	2.58	(8,670,655)	(3,360,718)	(3,360,718)	(1,949,219)	0	0	0	0
2015	1.53	(10,994,968)	(7,186,253)	(3,808,715)	0	0	0	0	0
Total		\$ (131,445,901)	\$ (32,573,656)	\$ (29,196,118)	\$ (23,975,904)	\$ (19,635,046)	\$ (15,053,018)	\$ (11,012,159)	\$ 0

Recognition of changes in assumptions

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year						
			2019	2020	2021	2022	2023	2024	Thereafter
2019	5.92	\$ (246,980,568)	\$ (41,719,691)	\$ (41,719,691)	\$ (41,719,691)	\$ (41,719,691)	\$ (41,719,691)	\$ (38,382,113)	\$ 0
2018	4.73	(217,982,744)	(46,085,147)	(46,085,147)	(46,085,147)	(46,085,147)	(33,642,156)	0	0
2017	3.59	(292,479,873)	(81,470,716)	(81,470,716)	(81,470,716)	(48,067,725)	0	0	0
2016	2.58	13,985,699	5,420,814	5,420,814	3,144,071	0	0	0	0
2015	1.53	129,044,711	84,342,947	44,701,764	0	0	0	0	0
2014	1.17	16,347,115	13,971,893	2,375,222	0	0	0	0	0
Total		\$ (598,065,660)	\$ (65,539,900)	\$ (116,777,754)	\$ (166,131,483)	\$ (135,872,563)	\$ (75,361,847)	\$ (38,382,113)	\$ 0

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

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year						
			2019	2020	2021	2022	2023	2024	Thereafter
2019	5.00	\$ 43,284,165	\$ 8,656,833	\$ 8,656,833	\$ 8,656,833	\$ 8,656,833	\$ 8,656,833	\$ 0	\$ 0
2018	4.00	4,665,889	1,166,472	1,166,472	1,166,472	1,166,473	0	0	0
2017	3.00	(26,910,849)	(8,970,283)	(8,970,283)	(8,970,283)	0	0	0	0
2016	2.00	66,359,264	33,179,631	33,179,633	0	0	0	0	0
2015	1.00	19,355,856	19,355,856	0	0	0	0	0	0
Total		\$ 106,754,325	\$ 53,388,509	\$ 34,032,655	\$ 853,022	\$ 9,823,306	\$ 8,656,833	\$ 0	\$ 0

Grand Total		\$ (622,757,236)	\$ (44,725,047)	\$ (111,941,217)	\$ (189,254,365)	\$ (145,684,303)	\$ (81,758,032)	\$ (49,394,272)	\$ 0
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* As of the beginning of the measurement year

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SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

**Table IV-2B
Detailed Schedule of Collective Deferred Inflows and Outflows of Resources
Local Employers**

Recognition of differences between expected and actual experience

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year							
			2019	2020	2021	2022	2023	2024	Thereafter	
2019	5.92	\$ (67,495,455)	\$ (11,401,259)	\$ (11,401,259)	\$ (11,401,259)	\$ (11,401,259)	\$ (11,401,259)	\$ (10,489,160)	\$ 0	0
2018	4.73	59,333,634	12,544,109	12,544,109	12,544,109	12,544,109	9,157,198	0	0	0
2017	3.59	78,333,243	21,819,845	21,819,845	21,819,845	12,873,708	0	0	0	0
2016	2.58	(7,473,599)	(2,896,743)	(2,896,743)	(1,680,113)	0	0	0	0	0
2015	1.53	(48,523,538)	(31,714,730)	(16,808,808)	0	0	0	0	0	0
Total		\$ 14,174,285	\$ (11,648,778)	\$ 3,257,144	\$ 21,282,582	\$ 14,016,558	\$ (2,244,061)	\$ (10,489,160)	\$ 0	0

Recognition of changes in assumptions

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year							
			2019	2020	2021	2022	2023	2024	Thereafter	
2019	5.92	\$ (1,628,190,128)	\$ (275,032,116)	\$ (275,032,116)	\$ (275,032,116)	\$ (275,032,116)	\$ (275,032,116)	\$ (253,029,548)	\$ 0	0
2018	4.73	(1,490,452,745)	(315,106,288)	(315,106,288)	(315,106,288)	(315,106,288)	(230,027,593)	0	0	0
2017	3.59	(1,977,475,186)	(550,828,742)	(550,828,742)	(550,828,742)	(324,988,960)	0	0	0	0
2016	2.58	144,642,103	56,062,831	56,062,831	32,516,441	0	0	0	0	0
2015	1.53	909,992,532	594,766,360	315,226,172	0	0	0	0	0	0
2014	1.17	106,875,341	91,346,447	15,528,894	0	0	0	0	0	0
Total		\$ (3,934,608,083)	\$ (398,791,508)	\$ (754,149,249)	\$ (1,108,450,705)	\$ (915,127,364)	\$ (505,059,709)	\$ (253,029,548)	\$ 0	0

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

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year							
			2019	2020	2021	2022	2023	2024	Thereafter	
2019	5.00	\$ 185,740,615	\$ 37,148,123	\$ 37,148,123	\$ 37,148,123	\$ 37,148,123	\$ 37,148,123	\$ 0	\$ 0	0
2018	4.00	(359,325,858)	(89,831,464)	(89,831,464)	(89,831,464)	(89,831,466)	0	0	0	0
2017	3.00	(620,750,557)	(206,916,853)	(206,916,853)	(206,916,851)	0	0	0	0	0
2016	2.00	737,834,258	368,917,128	368,917,130	0	0	0	0	0	0
2015	1.00	168,211,774	168,211,774	0	0	0	0	0	0	0
Total		\$ 111,710,232	\$ 277,528,708	\$ 109,316,936	\$ (259,600,192)	\$ (52,683,343)	\$ 37,148,123	\$ 0	\$ 0	0

Grand Total		\$ (3,808,723,566)	\$ (132,911,578)	\$ (641,575,169)	\$ (1,346,768,315)	\$ (953,794,149)	\$ (470,155,647)	\$ (263,518,708)	\$ 0	0
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* As of the beginning of the measurement year

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SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

**Table IV-2C
Detailed Schedule of Collective Deferred Inflows and Outflows of Resources
Total**

Recognition of differences between expected and actual experience

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year						
			2019	2020	2021	2022	2023	2024	Thereafter
2019	5.92	\$ (138,356,304)	\$ (23,370,997)	\$ (23,370,997)	\$ (23,370,997)	\$ (23,370,997)	\$ (23,370,997)	\$ (21,501,319)	\$ 0
2018	4.73	39,355,654	8,320,434	8,320,434	8,320,434	8,320,434	6,073,918	0	0
2017	3.59	57,391,794	15,986,573	15,986,573	15,986,573	9,432,075	0	0	0
2016	2.58	(16,144,254)	(6,257,461)	(6,257,461)	(3,629,332)	0	0	0	0
2015	1.53	(59,518,506)	(38,900,983)	(20,617,523)	0	0	0	0	0
Total		\$ (117,271,616)	\$ (44,222,434)	\$ (25,938,974)	\$ (2,693,322)	\$ (5,618,488)	\$ (17,297,079)	\$ (21,501,319)	\$ 0

Recognition of changes in assumptions

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year						
			2019	2020	2021	2022	2023	2024	Thereafter
2019	5.92	\$ (1,875,170,696)	\$ (316,751,807)	\$ (316,751,807)	\$ (316,751,807)	\$ (316,751,807)	\$ (316,751,807)	\$ (291,411,661)	\$ 0
2018	4.73	(1,708,435,489)	(361,191,435)	(361,191,435)	(361,191,435)	(361,191,435)	(263,669,749)	0	0
2017	3.59	(2,269,955,059)	(632,299,458)	(632,299,458)	(632,299,458)	(373,056,685)	0	0	0
2016	2.58	158,627,802	61,483,645	61,483,645	35,660,512	0	0	0	0
2015	1.53	1,039,037,243	679,109,307	359,927,936	0	0	0	0	0
2014	1.17	123,222,456	105,318,340	17,904,116	0	0	0	0	0
Total		\$ (4,532,673,743)	\$ (464,331,408)	\$ (870,927,003)	\$ (1,274,582,188)	\$ (1,050,999,927)	\$ (580,421,556)	\$ (291,411,661)	\$ 0

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

From Measurement Year Ending	Remaining Recognition Period	Remaining Deferred (Inflows) and Outflows*	Recognition Year						
			2019	2020	2021	2022	2023	2024	Thereafter
2019	5.00	\$ 229,024,780	\$ 45,804,956	\$ 45,804,956	\$ 45,804,956	\$ 45,804,956	\$ 45,804,956	\$ 0	\$ 0
2018	4.00	(354,659,969)	(88,664,992)	(88,664,992)	(88,664,992)	(88,664,993)	0	0	0
2017	3.00	(647,661,406)	(215,887,136)	(215,887,136)	(215,887,134)	0	0	0	0
2016	2.00	804,193,522	402,096,759	402,096,763	0	0	0	0	0
2015	1.00	187,567,630	187,567,630	0	0	0	0	0	0
Total		\$ 218,464,557	\$ 330,917,217	\$ 143,349,591	\$ (258,747,170)	\$ (42,860,037)	\$ 45,804,956	\$ 0	\$ 0

Grand Total		\$ (4,431,480,802)	\$ (177,636,625)	\$ (753,516,386)	\$ (1,536,022,680)	\$ (1,099,478,452)	\$ (551,913,679)	\$ (312,912,980)	\$ 0
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* As of the beginning of the measurement year

**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
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SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

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

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

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

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

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

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

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SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

Table IV-3A		
Calculation of Collective Pension Expense		
State		
Measurement Year Ending	2019	2018
Change in Net Pension Liability	\$ (127,616,513)	\$ (66,438,865)
Change in Deferred Outflows	113,839,998	120,687,542
Change in Deferred Inflows	115,992,207	140,109,765
Employer Contributions*	196,424,948	149,969,781
Other - NCGIPF adjustment	<u>0</u>	<u>0</u>
Subtotal	\$ 298,640,640	\$ 344,328,223
Employer Contribution - delayed enrollments**	26,634	7,921
Employer Contribution - delayed appropriations**	10,520	2,902
Employer Contribution - retroactive**	(292,238)	292,238
Employer Contribution - additional**	<u>0</u>	<u>0</u>
Total Pension Expense	\$ 298,385,556	\$ 344,631,284
Total Pension Expense as % of Payroll	62.17%	71.37%
Operating Expenses		
Service cost	\$ 117,814,841	\$ 129,608,653
Employee contributions	(52,202,489)	(49,052,970)
Administrative expenses	<u>1,568,716</u>	<u>673,553</u>
Total	\$ 67,181,068	\$ 81,229,236
Financing Expenses		
Interest cost	\$ 377,062,504	\$ 364,075,387
Expected return on assets	<u>(101,132,969)</u>	<u>(102,398,317)</u>
Total	\$ 275,929,535	\$ 261,677,070
Changes		
Benefit changes	\$ 0	\$ 0
Transfers between State and Local Employers	0	23,364,856
Recognition of assumption changes	(65,539,900)	(23,820,209)
Recognition of liability gains and losses	(32,573,656)	(20,603,918)
Recognition of investment gains and losses	<u>53,388,509</u>	<u>22,784,249</u>
Total	\$ (44,725,047)	\$ 1,724,978
Total Pension Expense	\$ 298,385,556	\$ 344,631,284

* Includes appropriations and lottery revenue

** Pension expense related to specific liabilities of individual employers

**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
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SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

Table IV-3B Calculation of Collective Pension Expense Local Employers		
Measurement Year Ending	2019	2018
Change in Net Pension Liability	\$ (1,199,505,660)	\$ (1,797,560,920)
Change in Deferred Outflows	776,539,592	999,256,345
Change in Deferred Inflows	600,493,798	979,042,913
Employer Contributions*	1,140,312,596	1,086,504,333
Other - NCGIPF adjustment	<u>0</u>	<u>(12,230)</u>
Subtotal	\$ 1,317,840,326	\$ 1,267,230,441
Employer Contribution - delayed enrollments**	69,969	83,012
Employer Contribution - delayed appropriations**	412,370	447,342
Employer Contribution - retroactive**	6,793,415	2,828,002
Employer Contribution - additional**	<u>847,716</u>	<u>173,554</u>
Total Pension Expense	\$ 1,325,963,796	\$ 1,270,762,351
Total Pension Expense as % of Payroll	39.11%	38.27%
Operating Expenses		
Service cost	\$ 840,578,094	\$ 901,126,971
Employee contributions	(358,740,753)	(346,551,913)
Administrative expenses	<u>5,630,502</u>	<u>3,832,132</u>
Total	\$ 487,467,843	\$ 558,407,190
Financing Expenses		
Interest cost	\$ 2,648,438,175	\$ 2,534,017,319
Expected return on assets	<u>(1,677,030,644)</u>	<u>(1,593,757,948)</u>
Total	\$ 971,407,531	\$ 940,259,371
Changes		
Benefit changes	\$ 0	\$ 0
Transfers between State and Local Employers	0	(23,364,856)
Recognition of assumption changes	(398,791,508)	(123,759,392)
Recognition of liability gains and losses	(11,648,778)	(247,519)
Recognition of investment gains and losses	<u>277,528,708</u>	<u>(80,532,443)</u>
Total	\$ (132,911,578)	\$ (227,904,210)
Total Pension Expense	\$ 1,325,963,796	\$ 1,270,762,351

* Includes appropriations and State contributions made on behalf of Local employers

** Pension expense related to specific liabilities of individual employers

**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
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SECTION IV – COLLECTIVE EMPLOYER REPORTING AMOUNTS

Table IV-3C Calculation of Collective Pension Expense Total		
Measurement Year Ending	2019	2018
Change in Net Pension Liability	\$ (1,327,122,173)	\$ (1,863,999,785)
Change in Deferred Outflows	890,379,590	1,119,943,887
Change in Deferred Inflows	716,486,005	1,119,152,678
Employer Contributions*	1,336,737,544	1,236,474,114
Other - NCGIPF adjustment	<u>0</u>	<u>(12,230)</u>
Subtotal	\$ 1,616,480,966	\$ 1,611,558,664
Employer Contribution - delayed enrollments**	96,603	90,933
Employer Contribution - delayed appropriations**	422,890	450,244
Employer Contribution - retroactive**	6,501,177	3,120,240
Employer Contribution - additional**	<u>847,716</u>	<u>173,554</u>
Total Pension Expense	\$ 1,624,349,352	\$ 1,615,393,635
Total Pension Expense as % of Payroll	41.97%	42.47%
Operating Expenses		
Service cost	\$ 958,392,935	\$ 1,030,735,624
Employee contributions	(410,943,242)	(395,604,883)
Administrative expenses	<u>7,199,218</u>	<u>4,505,685</u>
Total	\$ 554,648,911	\$ 639,636,426
Financing Expenses		
Interest cost	\$ 3,025,500,679	\$ 2,898,092,706
Expected return on assets	<u>(1,778,163,613)</u>	<u>(1,696,156,265)</u>
Total	\$ 1,247,337,066	\$ 1,201,936,441
Changes		
Benefit changes	\$ 0	\$ 0
Transfers between State and Local Employers	0	0
Recognition of assumption changes	(464,331,408)	(147,579,601)
Recognition of liability gains and losses	(44,222,434)	(20,851,437)
Recognition of investment gains and losses	<u>330,917,217</u>	<u>(57,748,194)</u>
Total	\$ (177,636,625)	\$ (226,179,232)
Total Pension Expense	\$ 1,624,349,352	\$ 1,615,393,635

* Includes State and Local employer appropriations, lottery revenue and State contributions made on behalf of Local employers

** Pension expense related to specific liabilities of individual employers

**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
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APPENDIX A – MEMBERSHIP INFORMATION

	Plan Membership			
	July 1, 2018			July 1, 2017
	State	Local Employers	Total	Total
Contributing Actives	6,807	34,013	40,820	40,140
Non-Contributing Actives	362	1,113	1,475	1,377
Terminated Vested	6	36	42	39
Inactive Receiving Benefits	6,673	37,894	44,567	43,755
Total	13,848	73,056	86,904	85,311
Annual Compensation for Contributing Actives	\$ 479,941,514	\$ 3,390,777,193	\$ 3,870,718,707	\$ 3,803,348,329
Annual Retirement Allowances for Those Receiving Benefits	\$ 313,277,156	\$ 2,177,011,512	\$ 2,490,288,668	\$ 2,402,766,603

* QDRO recipients are excluded from the counts

The July 1, 2017 membership information shown in the table above is based on Cheiron's processed data and may not match the prior actuary's report.

**POLICE AND FIREMEN’S RETIREMENT SYSTEM OF NEW JERSEY
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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

- | | |
|--|---|
| 1. Investment Rate of Return for determining Actuarially Determined Contributions | <ul style="list-style-type: none"> • July 1, 2018 valuation: 7.50% per annum, compounded annually. • July 1, 2019 valuation: 7.30% per annum, compounded annually. • July 1, 2020 valuation: 7.30% per annum, compounded annually. • July 1, 2021 and later valuations: 7.00% per annum, compounded annually. |
| 2. Long-Term Expected Rate of Return | 7.00% per annum, compounded annually. |
| 3. GASB 67 Effective Discount Rate | <ul style="list-style-type: none"> • June 30, 2018: 6.51% per annum, compounded annually. • June 30, 2019: 6.85% per annum, compounded annually. |
| 4. Price Inflation | 2.75% per annum, compounded annually. |
| 5. Wage Inflation | 3.25% per annum, compounded annually. |
| 6. Cost-of-Living Adjustments (COLAs) | No future COLAs are assumed. Previously granted COLAs are included in the data. |
| 7. Salary Increases | Salaries increase rates are as follows: |

Service	Rates
0	15.25%
1	15.25
2	12.75
3	10.75
4	10.25
5	9.25
6	8.25
7	7.25
8	5.75
9	5.25
10	4.75
11	4.25
12	3.75
13+	3.25

Salary increases are assumed to occur on July 1.

**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

- 8. 401(a)(17) Pay Limit** \$275,000 in 2018 increasing 2.75% per annum, compounded annually.

- 9. Social Security Wage Base** \$128,400 in 2018 increasing 3.25% per annum, compounded annually.

- 10. Termination** Termination rates are as follows:

Service	Rates
0	2.00%
1	2.00
2	1.90
3	1.80
4	1.70
5	1.60
6	1.50
7	1.40
8	1.00
9	0.80
10	0.80
11	0.50
12	0.45
13	0.40
14	0.35
15	0.30
16	0.25
17	0.20
18	0.15
19	0.10
20	0.00

No termination is assumed after attainment of retirement eligibility.

All members are assumed to elect a refund of contributions.

**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

11. Disability

Disability rates are as follows:

Age	Ordinary Disability	Accidental Disability
20	0.030%	0.020%
21	0.030	0.020
22	0.030	0.025
23	0.045	0.025
24	0.045	0.030
25	0.045	0.030
26	0.045	0.035
27	0.045	0.035
28	0.065	0.040
29	0.085	0.070
30	0.105	0.100
31	0.125	0.130
32	0.145	0.160
33	0.165	0.190
34	0.185	0.220
35	0.205	0.250
36	0.225	0.280
37	0.255	0.310
38	0.285	0.340
39	0.315	0.370
40	0.345	0.400
41	0.375	0.400
42	0.375	0.400
43	0.380	0.400
44	0.360	0.400
45	0.340	0.380
46	0.320	0.360
47	0.300	0.340
48	0.280	0.320
49	0.260	0.300
50	0.240	0.280
51	0.220	0.260
52	0.200	0.240
53	0.200	0.220
54	0.200	0.200
55	0.200	0.180
56	0.200	0.160
57	0.300	0.160
58	0.400	0.160
59+	0.500	0.160

Both ordinary and accidental disability rates apply at all ages until the mandatory retirement age of 65.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

No ordinary disability is assumed prior to attainment of ordinary disability retirement eligibility at four years of service.

No members are assumed to receive the involuntary disability retirement benefit.

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

12. Mortality

Pre-Retirement: The Pub-2010 Safety Employee mortality table [*PubS-2010 Employee*] as published by the Society of Actuaries with a 105.6% adjustment for males and 102.5% adjustment for females, and with future improvement from the base year of 2010 on a generational basis. For purposes of calculating projected cash flows used to determine the GASB discount rate, mortality improvement is based on SOA's Scale MP-2018. Upon direction from the DPB, for purposes of calculating the Total Pension Liability, mortality improvement is based on SOA's Scale MP-2019.

5% of the deaths are assumed to be accidental.

Healthy Retirees (Healthy Annuitants): The Pub-2010 Safety Retiree Below-Median Income Weighted mortality table [*PubS-2010(B) Healthy Retiree*] as published by the Society of Actuaries with a 96.7% adjustment for males and 96.0% adjustment for females, and with future improvement from the base year of 2010 on a generational basis. For purposes of calculating projected cash flows used to determine the GASB discount rate, mortality improvement is based on SOA's Scale MP-2018. Upon direction from the DPB, for purposes of calculating the Total Pension Liability, mortality improvement is based on SOA's Scale MP-2019.

Beneficiaries (Contingent Annuitants): The Pub-2010 General Retiree Below-Median Income Weighted mortality table [*PubG-2010(B) Healthy Retiree*] as published by the Society of Actuaries unadjusted, and with future improvement from the base year of 2010 on a generational basis. For purposes of calculating projected cash flows used to determine the GASB discount rate, mortality improvement is based on SOA's Scale MP-2018. Upon direction from the DPB, for purposes of calculating the Total Pension Liability, mortality improvement is based on SOA's Scale MP-2019.

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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Disabled Mortality (Disabled Annuitants): The Pub-2010 Safety Disabled Retiree mortality table [*PubS-2010 Disabled Retiree*] as published by the Society of Actuaries with a 152.0% adjustment for males and 109.3% adjustment for females, and with future improvement from the base year of 2010 on a generational basis. For purposes of calculating projected cash flows used to determine the GASB discount rate, mortality improvement is based on SOA's Scale MP-2018. Upon direction from the DPB, for purposes of calculating the Total Pension Liability, mortality improvement is based on SOA's Scale MP-2019.

13. Retirement

For those with less than 25 years of service:

Age	Rates
40-49	2.00%
50-57	3.00
58	3.50
59	4.25
60	5.00
61	8.00
62	10.00
63	12.00
64	14.00

For those with 25 years of service:

Age	Rates
48 or younger	45.00%
49-54	50.00
55-59	55.00
60	60.00
61	65.00
62	70.00
63	75.00
64	90.00

For those with 26 or more years of service:

Age	Rates
53 or younger	22.00%
54-59	24.00
60	26.00
61	28.00
62-63	30.00
64	40.00

Mandatory retirement at age 65.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

14. Family Composition Assumptions

For members not currently in receipt, 90% of members are assumed married to spouses of the opposite sex. Males are assumed to be three years older than females.

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

No additional dependent children or parents are assumed.

For current dependents receiving a pre-retirement accidental death benefit, those under age 24 are assumed to receive a benefit until age 24 while those over age 24 are assumed to receive a benefit for the remainder of their lifetime.

For current dependents receiving a benefit other than a pre-retirement accidental death benefit, those under age 19 are assumed to receive a benefit until age 19 while those over age 19 are assumed to receive a benefit for the remainder of their lifetime.

15. Non-Contributory Group Insurance Form of Payment

All benefits are assumed to be paid as lump sums.

16. Data

Information provided by the prior actuary was relied upon for the purposes of setting the status of and valuing non-contributing active records.

For current beneficiaries with missing data, reasonable assumptions were made based on the information available in prior years. Inactive members receiving benefits according to the 2017 data but omitted from the 2018 data are assumed to have died without a beneficiary.

17. Rationale for Assumptions

The demographic assumptions used in this report reflect the results of the July 1, 2013 – June 30, 2018 Experience Study, approved by the Board of Trustees on January 13, 2020. The investment return assumption was recommended by the State Treasurer. The MP-2019 mortality improvement scale was used to calculate the Total Pension Liability upon direction from the DPB.

18. Changes in Assumptions Since Last Valuation

The assumed rates of termination, retirement, mortality, disability, salary increases, and inflation were updated based on the July 1, 2013 – June 30, 2018 Experience Study.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

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

1. Actuarial Cost Method

The actuarial cost method for funding calculations is the Projected Unit Credit Cost Method.

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

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

- Beginning with the July 1, 2010 actuarial valuation, the accrued liability contribution shall be computed so that if the contribution is paid annually in level dollars, it will amortize the unfunded accrued liability over an open 30 year period.
- Beginning with the July 1, 2018 actuarial valuation, the accrued liability contribution shall be computed so that if the contribution is paid annually in level dollars, it will amortize the unfunded accrued liability over a closed 30 year period (i.e., for each subsequent actuarial valuation the amortization period shall decrease by one year).
- Beginning with the July 1, 2028 actuarial valuation, when the remaining amortization period reaches 20 years, any increase or decrease in the unfunded accrued liability as a result of actuarial losses or gains for subsequent valuation years shall serve to increase or decrease, respectively, the amortization period for the unfunded accrued liability, unless an increase in the amortization period will cause it to exceed 20 years. If an increase in the amortization period as a result of actuarial losses for a valuation year would exceed 20 years, the accrued liability contribution shall be computed for the valuation year using a 20 year amortization period.

Certain portions of the normal cost and unfunded actuarial liabilities attributable to Local employers are payable by the State and/or over different periods in accordance with the NJ State Statutes.

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

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

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

2. Asset Valuation Method

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

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

3. Contributions

Chapter 83, P.L. 2016 requires the State to make pension contributions on a quarterly basis: at least 25% by September 30, at least 50% by December 31, at least 75% by March 31, and at least 100% by June 30. As such, contributions are assumed to be made on a quarterly basis.

Local employers' contributions are expected to be paid on April 1st, 21 months after the associated valuation date.

Chapter 98, P.L. 2017, the Lottery Enterprise Contribution Act, allows the PFRS to receive 1.20% of the proceeds of the Lottery Enterprise, based upon their members' past or present employment in schools and institutions in the State for a term of 30 years. Revenues from Chapter 98, P.L. 2017, the Lottery Enterprise Contribution Act are assumed to be contributed to the trust on a monthly basis. The State's pension contribution is reduced by the product of the allocable percentage for the PFRS, the adjustment percentage, and the special asset value.

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

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

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Early Retirement Incentive Programs

The following legislation provides additional retirement benefits to certain employees of Local employers: Chapter 59, P.L. 1999, Chapter 126, P.L. 2000 and Chapter 130, P.L. 2003. The cost of the enhanced pension benefits will be funded by employer contributions to the retirement system and paid by the employer that elected to participate over amortization periods elected by the employer to the extent permitted by NJ Statute.

Chapter 59, P.L. 1999 authorizes municipalities, counties and other local units of government that enter into agreements to provide governmental services on a joint or consolidated basis, municipalities that join together to establish a new consolidated municipality, or school districts that have merged with one or more other school districts due solely to a municipal consolidation, to offer incentive programs for retirement or termination of employment for employees affected by the consolidation agreements. "County ERI Section 44" of Chapter 126, P.L. 2000 permitted local units to offer early retirement or termination incentives to certain employees of county governing bodies. Chapter 130, P.L. 2003 extended an Early Retirement Incentive Program similar to that offered by the State under Chapter 23, P.L. 2002 to members of Local employer locations. Appendix E lists all applicable locations and summarizes the contribution requirements under Chapter 59, Chapter 126 and Chapter 130.

Chapter 109, P.L.1979

Chapter 109, P.L. 1979 increased special retirement benefits for members who retire with 25 years of service from 50% to 60% of average final compensation. Under the provisions of this chapter, the State is liable for the increase in the normal contribution to fund the benefits provided by this act. As required by Chapter 109, additional State contributions of 1.1% of covered salary are required to provide for this additional benefit.

Chapter 204, P.L. 1989

Chapter 204 allowed employees who were previously excluded on the basis of their titles from PFRS membership to enter the System. Employers of such employees are required to contribute any additional contribution necessary to fund any unfunded actuarial liability arising from Chapter 204. The valuation reflects the additional actuarial liability for three State locations and fifteen Municipality and Local Group locations with certain employees participating in the System under the provisions of this legislation. Section IV lists all applicable locations and the required contributions.

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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Chapter 511, P.L. 1991

Chapter 511 increased the benefit payable to the surviving spouse of a retiree from 35% to 50% of the retiree's average final compensation. This law also raised the minimum annual spouse's benefit from \$1,600 to \$4,500 for benefits granted prior to January 14, 1992. Chapter 511 required that the normal cost and actuarial liability contribution attributable to this chapter be separately determined. As a result of Chapter 115, P.L. 1997, the actuarial liability contribution attributable to Chapter 511 was eliminated at that time. However, because of the reductions (and anticipated reductions) in the required State contributions for fiscal years 2004 through 2019 due to the various Appropriation Acts and Chapter 1, P.L. 2010, the remaining required contributions that have not been made have been set up as an unfunded actuarial liability attributable to Chapter 511.

Chapter 247, P.L. 1993 and Chapter 201, P.L. 2001

Chapter 247 requires the State to pay the difference between the PFRS normal cost rate and the PERS normal cost rate for certain members who transferred into PFRS as of January 1, 1992 or later. In addition, the law requires the State to pay the "System" unfunded actuarial liability contribution for Municipalities and Local Groups that transferred into PFRS on and after January 1, 1992 without past service.

Chapter 201, P.L. 2001 made changes to Chapter 247, P.L. 1993 with respect to the benefits payable to members who transferred from PERS to PFRS as a result of the Chapter 247 legislation. The resulting increase in the unfunded actuarial liabilities due to the increased benefits was fully funded by the recognition of additional market value surplus in the determination of the actuarial value of assets in the July 1, 1999 valuation. However, because of the reductions (and anticipated reductions) in the required State contributions for fiscal years 2004 through 2019 due to the various Appropriation Acts and Chapter 1, P.L. 2010, the remaining required contributions which were not paid have been added to the Chapter 247 unfunded actuarial liability and will be included in future State contributions.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Chapter 428, P.L. 1999

Chapter 428, P.L. 1999 made the following changes to the benefit provisions:

- Changed the compensation basis for benefits from 3-year average compensation to final compensation.
- Added a service retirement benefit of 50% of final compensation for members as of the date of enactment who retire with 20 years of service and for all other members at age 55 with 20 years of service.
- Added an additional service retirement benefit of 3% of final compensation per year of service in excess of 20 years for those who retire with less than 25 years of service.
- Reduced the service requirement for ordinary disability retirement from 5 years to 4 years.
- Added the special involuntary disability benefit.
- Changed the preretirement death benefit from a refund of contributions to a spousal annuity equal to 50% of final compensation.

Chapter 8, P.L. 2000 required that, if valuation assets are insufficient to fund the normal cost and actuarial liability costs attributable to Chapter 428, P.L. 1999, the contribution required to fund these costs for the State and other employers shall be paid by the State. For the current valuation, valuation assets were not sufficient to fund the costs attributable to Chapter 428. In addition, because of the reductions (and anticipated reductions) in the required State contributions for fiscal years 2004 through 2019 due to the various Appropriation Acts and Chapter 1, P.L. 2010, the remaining required contributions which were not paid have been added to the Chapter 428 unfunded actuarial liability and will be included in future State contributions.

Chapter 86, P.L. 2001 amended the active death benefits provided to a beneficiary of a member who died in active duty on or after January 1, 1998 and before January 18, 2000. The law required an eligible beneficiary to apply for the increased benefits within 90 days of enactment and return the member's aggregate contributions to the System. The State is liable for all costs to the System attributable to this law, and these costs have been included in the Chapter 428 actuarial liability contributions.

Chapter 318, P.L. 2001 amended the active death benefits provided to a beneficiary of a member with 10 or more years of service who died in active service on or after June 1, 1995 and before January 1, 1998 and whose beneficiary had, on May 1, 2001, an appeal of a denial of a benefit related to death in the line of duty pending before the Board of Trustees. The law requires that the appeal be withdrawn or denied and that an eligible beneficiary apply for the increased benefits and return the member's aggregate contributions received. The State is liable for all costs to the System attributable to this law and these costs are also included in the Chapter 428 actuarial liability contributions.

**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Chapter 19, P.L. 2009

Chapter 19 provided that the State Treasurer will reduce for Local employers the normal and actuarial liability contributions to 50% of the amount certified for fiscal year 2009. The remaining 50% of the contribution (unfunded actuarial liability) will be paid by the Local employers in level annual payments over a period of 15 years with the first payment due in the fiscal year ending June 30, 2012. The unfunded liability will be adjusted by the rate of return on the actuarial value of assets. The legislation also provided that a Local employer may pay 100% of the contribution for the fiscal year 2009. Such an employer will be credited with the full payment and any such amounts will not be included in their unfunded actuarial liability. In addition, certain Local employers who were eligible to defer 50% of their fiscal year 2009 pension contributions but instead paid 100% of the fiscal year 2009 pension contributions were permitted to defer 50% of their 2010 fiscal year pension contributions. The unfunded actuarial liability will be paid by these Local employers over a period of 15 years with the first payment due in the fiscal year ending June 30, 2012. The unfunded actuarial liability will be adjusted by the rate of return on the actuarial value of assets.

4. Changes in Actuarial Methods Since the Last Valuation

None.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

This summary of Plan provisions provides an overview of the major provisions of the PFRS used in the actuarial valuation. It is not intended to replace the more precise language of the NJ State Statutes, Title 43, Chapter 16A, and if there is any difference between the description of the plan herein and the actual language in the NJ State Statutes, the NJ State Statutes will govern.

1. Eligibility of Membership

Eligibility is restricted to eligible police officers and firefighters in an eligible job title of classification who also meet the age, medical and training criteria for membership. The maximum enrollment age is 35.

- a) Tier 1 Member: Any member hired on or before May 21, 2010.
- b) Tier 2 Member: Any member hired after May 21, 2010 and on or before June 28, 2011.
- c) Tier 3 Member: Any member hired after June 28, 2011.

2. Plan Year

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

3. Creditable Service

A year of service is credited for each year an employee is a Member of the Retirement System plus service, if any, covered by a prior service liability.

4. Compensation

Base salary upon which contributions by a Member to the Annuity Savings Fund were based in the last year of service. Chapter 113, P.L. 1997 provides that Compensation cannot exceed the compensation limitation of Section 401(a)(17) of the Internal Revenue Code. Chapter 1, P.L. 2010 provides that for members hired on or after May 22, 2010, Compensation cannot exceed the annual maximum wage contribution base for Social Security, pursuant to the Federal Insurance Contribution Act.

5. Final Compensation

Annual compensation received by the Member in the last 12 months of Creditable Service preceding his retirement. Chapter 1, P.L. 2010 provides that for members hired on or after May 22, 2010, Final Compensation means the average annual compensation for the three fiscal years of membership providing the largest benefit.

6. Aggregate Contributions

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

APPENDIX C – SUMMARY OF PLAN PROVISIONS

7. Member Contributions

Each Member contributes 10% of base salary.

8. Benefits

a) Service and Special Retirement

Mandatory retirement at age 65, except a Member hired prior to January 1, 1987 may remain a Member until attaining the earlier of age 68 or 25 years of Creditable Service. Voluntary retirement prior to age 65.

- (1) Service Retirement: For a Member enrolled as of January 18, 2000, age 55 or 20 years of Creditable Service. For a Member enrolled after January 18, 2000, age 55.

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

- a. 2% of Final Compensation for each year of Creditable Service up to 30 years plus 1% of Final Compensation for each year of Creditable Service over 30 years.
- b. 50% of Final Compensation for Members with 20 or more years of Creditable Service.
- c. 50% of Final Compensation plus 3% of Final Compensation for each year of Creditable Service in excess of 20 years for Members as of January 18, 2000 who would have 20 years of Creditable Service but not 25 years at age 65.

- (2) Special Retirement: 25 years of Creditable Service.

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

- a. For Members enrolled on or before June 28, 2011, 65% of Final Compensation plus 1% of Final Compensation for each year of Creditable Service in excess of 25 years with a maximum of 70% of Final Compensation, except for those members with 30 or more years of Creditable Service on June 30, 1979.
- b. For Members hired after June 28, 2011, 60% of Final Compensation plus 1% of Final Compensation for each year of Creditable Service in excess of 25 years with a maximum of 65% of Final Compensation.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

b) Deferred Retirement

Termination of service prior to age 55 with 10 years of Creditable Service.

Benefit is either a refund of Aggregate Contributions, or a deferred life annuity commencing at age 55 comprised of a member annuity plus an employer pension which together will provide a total allowance of 2% of Final Compensation for each year of Creditable Service up to 30 plus 1% of Final Compensation for each year of Creditable Service over 30 years.

For Members who die during the deferral period, the benefit is a return of Aggregate Contributions.

c) Non-Vested Termination

Termination of service prior to age 55 and less than 10 years of service credit.

Benefit is a return of Aggregate Contributions.

d) Death Benefits

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

- a. Lump sum payment equal to 350% of Compensation, also known as the non-contributory group life insurance benefit, plus
- b. Spousal life annuity of 50% of Final Compensation payable until spouse's death or remarriage. If there is no surviving spouse or upon death or remarriage, a total of 20% (35%, 50%) of Final Compensation payable to one (two, three or more) dependent child(ren). If there is no surviving spouse or dependent child(ren), 25% (40%) of Final Compensation to one (two) dependent parent(s). If there is no surviving spouse, dependent child(ren) or parent(s), the benefit is a refund of Aggregate Contributions.

(2) Accidental Death Before Retirement: Death of an active Member resulting during performance of duties. Benefit is equal to:

- a. Lump sum payment equal to 350% of Compensation, also known as the non-contributory group life insurance benefit, plus
- b. Spousal life annuity of 70% of Compensation payable until spouse's death or remarriage. If there is no surviving spouse or upon death or remarriage, 70% of Compensation payable to dependent children in equal shares. If there is no surviving spouse or dependent child(ren), 25% (40%) of Compensation to one (two) dependent parent(s). If there is no surviving spouse, dependent child(ren) or parent(s), the benefit is a refund of Aggregate Contributions.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

(3) Death After Retirement: Death of a retired Member. Benefit is equal to:

- a. Lump sum payment equal to 50% of Compensation for a Member retired under service, special or deferred retirement. For a Member receiving a disability benefit, lump sum payment of 350% of Compensation if death occurs prior to age 55 and 50% of final compensation if death occurs after age 55. This benefit is also known as the non-contributory group life insurance benefit, plus
- b. For Members who retired on or after January 1, 1968, spouse life annuity of 50% of Final Compensation plus 15% (25%) of Final Compensation for one (two or more) dependent child(ren). The minimum benefit is \$4,500 per year. If there is no surviving spouse or upon death or remarriage, a total of 20% (35%, 50%) of Final Compensation payable to one (two, three or more) dependent child(ren). Previously granted COLAs also apply.

e) Disability Retirement

(1) Ordinary Disability Retirement: Four years of Creditable Service and totally and permanently incapacitated from the performance of usual or available duties.

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

- a) 40% of Final Compensation, or
- b) 1.5% of Final Compensation for each year of Creditable Service.

(2) Involuntary Ordinary Disability Retirement: Ordinary Disability Retirement applied for by the employer.

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

- a) For Members with 20 years of Creditable Service but less than 25 years, 50% of Final Compensation plus 3% of Final Compensation for each year of Creditable Service in excess of 20 years, to a maximum of 65% of Final Compensation.
- b) For all other members, the Ordinary Disability benefit.

(3) Accidental Disability Retirement: Totally and permanently disabled as a direct result of a traumatic event occurring during and as a result of regular or assigned duties and such member is mentally or physically incapacitated for the performance of his usual duties.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total allowance of 2/3 of annual rate of compensation at the time of the traumatic event or retirement, whichever is greater.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

- (4) Special Disability Retirement: Under age 55 with 5 years of Creditable Service and received a heart transplant.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total allowance of 50% of Final Compensation.

9. Forms of Payment

No optional forms of payment are available.

10. Cost-of-Living Adjustments

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

11. Changes in Plan Provisions Since Last Valuation

None.

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APPENDIX D – DETERMINATION OF DISCOUNT RATE

Table 1 - Projection of the Pension Plan's Fiduciary Net Position
(In Thousands)
Projections Commence June 30, 2019

Year	Projected Beginning Fiduciary Net Position	Projected Member Contributions	Projected State Contributions	Projected State-paid Local Contributions	Projected Local Employer Contributions	Projected Lottery Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings	Projected Ending Fiduciary Net Position
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j) = (a) + (b) + (c) + (d) + (e) + (f) - (g) - (h) + (i)
1	\$ 26,686,546	\$ 372,016	\$ 213,857	\$ 159,085	\$ 1,038,351	\$ 12,859	\$ 2,713,230	\$ 7,419	\$ 1,815,092	\$ 27,577,156
2	27,577,156	364,734	230,528	154,940	1,132,770	13,037	2,833,377	7,733	1,874,983	28,507,039
3	28,507,039	357,963	240,818	154,994	1,144,988	13,190	2,943,295	8,024	1,936,533	29,404,206
4	29,404,206	350,811	274,222	156,970	1,284,895	13,343	3,049,984	8,316	1,998,718	30,424,865
5	30,424,865	342,165	282,845	160,397	1,297,005	13,505	3,159,613	8,620	2,066,610	31,419,159
6	31,419,159	332,821	290,960	163,838	1,306,706	13,670	3,267,521	8,917	2,132,638	32,383,353
7	32,383,353	321,786	299,654	167,298	1,315,158	13,836	3,379,903	9,228	2,196,341	33,308,296
8	33,308,296	309,333	308,115	171,071	1,295,074	14,005	3,494,706	9,549	2,256,680	34,158,318
9	34,158,318	296,389	316,159	175,242	1,297,977	14,165	3,606,565	9,865	2,312,249	34,954,068
10	34,954,068	282,814	324,060	179,377	1,301,045	14,275	3,716,080	10,173	2,364,075	35,693,461
11	35,693,461	269,125	332,449	183,490	1,302,963	14,419	3,820,503	10,465	2,412,122	36,377,062
12	36,377,062	254,014	334,343	184,035	1,292,828	14,565	3,928,377	10,764	2,455,630	36,973,335
13	36,973,335	237,534	336,115	184,431	1,279,402	14,712	4,038,808	11,067	2,492,826	37,468,480
14	37,468,480	221,334	337,753	184,411	1,262,591	14,860	4,141,691	11,351	2,523,141	37,859,528
15	37,859,528	205,355	339,069	184,372	1,244,698	15,011	4,237,051	11,618	2,546,409	38,145,773
16	38,145,773	190,740	339,915	184,280	1,228,201	15,162	4,317,529	11,842	2,562,912	38,337,612
17	38,337,612	178,780	341,014	184,197	1,213,962	15,315	4,375,103	12,001	2,573,734	38,457,511
18	38,457,511	167,726	343,144	184,295	1,204,414	15,470	4,420,646	12,130	2,580,078	38,519,862
19	38,519,862	155,205	344,946	184,612	1,197,642	15,626	4,467,717	12,266	2,582,334	38,520,243
20	38,520,243	140,454	345,991	184,817	1,189,045	15,784	4,520,932	12,416	2,579,910	38,442,898
21	38,442,898	123,717	346,977	184,756	1,175,665	15,943	4,578,820	12,575	2,571,726	38,270,287
22	38,270,287	105,588	347,756	184,356	1,157,629	16,104	4,638,060	12,739	2,556,685	37,987,607
23	37,987,607	85,668	348,067	183,789	1,136,083	16,267	4,701,057	12,919	2,533,672	37,577,175
24	37,577,175	63,901	347,100	183,014	1,110,869	16,431	4,767,871	13,118	2,501,419	37,018,920
25	37,018,920	45,863	344,197	182,093	1,082,146	16,597	4,805,316	13,236	2,459,846	36,331,111
26	36,331,111	34,746	341,700	181,181	1,059,155	16,764	4,797,809	13,224	2,411,103	35,564,727
27	35,564,727	26,685	341,071	181,095	1,046,826	16,933	4,768,068	13,148	2,357,983	34,754,103
28	34,754,103	20,294	341,236	181,350	1,038,812	17,104	4,724,291	13,032	2,302,412	33,917,989
29	33,917,989	15,270	341,698	181,774	1,033,080	0	4,668,431	12,881	2,244,976	33,053,475
30	33,053,475	11,348	343,522	182,333	1,029,092	0	4,602,298	12,702	2,186,602	32,191,373
31	32,191,373	8,344	345,535	183,003	1,026,465	0	4,527,208	12,498	2,128,768	31,343,782
32	31,343,782	6,014	347,710	183,766	1,024,874	0	4,444,873	12,272	2,072,248	30,521,248
33	30,521,248	4,258	350,007	184,602	1,023,952	0	4,356,057	12,029	2,017,741	29,733,722
34	29,733,722	2,931	352,387	185,497	1,023,552	0	4,261,764	11,770	1,965,901	28,990,457
35	28,990,457	1,959	354,812	186,443	1,023,467	0	4,162,550	11,498	1,917,350	28,300,439
36	28,300,439	1,260	357,282	180,185	1,016,940	0	4,059,003	11,213	1,863,859	27,149,749
37	27,149,749	758	359,778	175,424	1,012,074	0	3,951,675	10,918	1,780,306	25,631,496
38	25,631,496	432	362,281	175,784	1,007,733	0	3,840,803	10,612	1,677,570	24,103,881
39	24,103,881	223	364,790	176,428	1,006,550	0	3,726,884	10,299	1,574,622	22,589,310
40	22,589,310	107	367,296	177,101	1,006,279	0	3,610,226	9,978	1,472,701	21,092,591
41	21,092,591	42	369,798	177,787	1,005,940	0	3,491,275	9,650	1,372,109	19,617,342
42	19,617,342	13	372,290	178,482	1,005,443	0	3,370,342	9,317	1,273,087	18,166,998
43	18,166,998	4	374,769	179,184	1,004,769	0	3,247,748	8,979	1,175,862	16,744,860
44	16,744,860	1	377,235	179,890	1,003,900	0	3,123,846	8,638	1,080,654	15,354,055
45	15,354,055	0	379,685	180,600	1,002,827	0	2,998,957	8,294	987,669	13,997,585
46	13,997,585	0	382,123	181,312	1,011,555	0	2,873,399	7,948	897,107	12,678,335
47	12,678,335	0	384,547	182,027	1,001,104	0	2,747,500	7,601	809,158	11,399,072
48	11,399,072	0	386,963	182,745	98,493	0	2,621,575	7,254	724,007	10,162,450
49	10,162,450	0	389,370	183,465	96,736	0	2,495,931	6,908	641,827	8,971,008
50	8,971,008	0	391,769	184,188	94,846	0	2,370,859	6,563	562,788	7,827,177
51	7,827,177	0	394,160	184,913	92,823	0	2,246,637	6,221	487,050	6,733,266
52	6,733,266	0	396,546	185,641	90,665	0	2,123,544	5,882	414,765	5,691,458
53	5,691,458	0	398,927	186,371	88,368	0	2,001,855	5,546	346,076	4,703,798
54	4,703,798	0	401,304	187,104	85,931	0	1,881,847	5,216	281,117	3,772,191
55	3,772,191	0	403,680	187,839	83,358	0	1,763,785	4,890	220,012	2,898,404
56	2,898,404	0	406,053	188,578	80,648	0	1,647,932	4,571	162,875	2,084,054
57	2,084,054	0	408,424	189,318	77,812	0	1,534,530	4,259	109,813	1,330,633
58	1,330,633	0	410,793	190,062	74,852	0	1,423,822	3,953	60,920	639,484
59	0	0	0	0	0	0	1,316,036	3,656	0	0
60	0	0	0	0	0	0	1,211,391	3,368	0	0

**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
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APPENDIX D – DETERMINATION OF DISCOUNT RATE

Table 1 - Projection of the Pension Plan's Fiduciary Net Position
(In Thousands)
Projections Commence June 30, 2019

Year	Projected Beginning Fiduciary Net Position	Projected Member Contributions	Projected State Contributions	Projected State-paid Local Contributions	Projected Local Employer Contributions	Projected Lottery Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings	Projected Ending Fiduciary Net Position (j) = (a) + (b) + (c) + (d) + (e) + (f) - (g) - (h) + (i)
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	
61	0	0	0	0	0	0	1,110,103	3,088	0	0
62	0	0	0	0	0	0	1,012,392	2,818	0	0
63	0	0	0	0	0	0	918,488	2,559	0	0
64	0	0	0	0	0	0	828,620	2,311	0	0
65	0	0	0	0	0	0	743,034	2,074	0	0
66	0	0	0	0	0	0	661,962	1,850	0	0
67	0	0	0	0	0	0	585,636	1,639	0	0
68	0	0	0	0	0	0	514,252	1,441	0	0
69	0	0	0	0	0	0	447,964	1,257	0	0
70	0	0	0	0	0	0	386,877	1,087	0	0
71	0	0	0	0	0	0	331,034	932	0	0
72	0	0	0	0	0	0	280,431	790	0	0
73	0	0	0	0	0	0	235,001	664	0	0
74	0	0	0	0	0	0	194,632	551	0	0
75	0	0	0	0	0	0	159,166	451	0	0
76	0	0	0	0	0	0	128,397	365	0	0
77	0	0	0	0	0	0	102,067	291	0	0
78	0	0	0	0	0	0	79,877	228	0	0
79	0	0	0	0	0	0	61,479	176	0	0
80	0	0	0	0	0	0	46,494	133	0	0
81	0	0	0	0	0	0	34,518	99	0	0
82	0	0	0	0	0	0	25,139	73	0	0
83	0	0	0	0	0	0	17,949	52	0	0
84	0	0	0	0	0	0	12,561	36	0	0
85	0	0	0	0	0	0	8,617	25	0	0
86	0	0	0	0	0	0	5,800	17	0	0
87	0	0	0	0	0	0	3,839	11	0	0
88	0	0	0	0	0	0	2,509	7	0	0
89	0	0	0	0	0	0	1,629	5	0	0
90	0	0	0	0	0	0	1,061	3	0	0
91	0	0	0	0	0	0	702	2	0	0
92	0	0	0	0	0	0	477	1	0	0
93	0	0	0	0	0	0	338	1	0	0
94	0	0	0	0	0	0	250	1	0	0
95	0	0	0	0	0	0	192	1	0	0
96	0	0	0	0	0	0	152	0	0	0
97	0	0	0	0	0	0	122	0	0	0
98	0	0	0	0	0	0	98	0	0	0
99	0	0	0	0	0	0	79	0	0	0
100	0	0	0	0	0	0	63	0	0	0
101	0	0	0	0	0	0	49	0	0	0
102	0	0	0	0	0	0	38	0	0	0
103	0	0	0	0	0	0	29	0	0	0
104	0	0	0	0	0	0	21	0	0	0
105	0	0	0	0	0	0	15	0	0	0
106	0	0	0	0	0	0	10	0	0	0
107	0	0	0	0	0	0	7	0	0	0
108	0	0	0	0	0	0	5	0	0	0
109	0	0	0	0	0	0	3	0	0	0
110	0	0	0	0	0	0	2	0	0	0
111	0	0	0	0	0	0	1	0	0	0
112	0	0	0	0	0	0	1	0	0	0
113	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0

**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
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APPENDIX D – DETERMINATION OF DISCOUNT RATE

Table 2 - Actuarial Present Values of Projected Benefit Payments

(In Thousands)

Projections Commence June 30, 2019

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

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

Year	Projected Beginning Fiduciary Net Position*	Projected Benefit Payments for current Plan participants**	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments	Present Value of "Funded" Benefit Payments	Present Value of "Unfunded" Benefit Payments	Present Value of Benefit Payments Using the Single Discount Rate
(a)	(b)	(c)	(d) = (c) if (b) >= (c)	(e) = (c) - (d)	(f) = (d) / (1+7.00%) ^[(a) - .5]	(g) = (e) / (1+3.50%) ^[(a) - .5]	(h) = (c) / (1+6.85%) ^[(a) - .5]
1	\$ 26,686,546	\$ 2,713,230	\$ 2,713,230	\$ 0	\$ 2,622,979	\$ 0	\$ 2,624,837
2	27,577,156	2,833,377	2,833,377	0	2,559,933	0	2,565,377
3	28,507,039	2,943,295	2,943,295	0	2,485,275	0	2,494,089
4	29,404,206	3,049,984	3,049,984	0	2,406,880	0	2,418,839
5	30,424,865	3,159,613	3,159,613	0	2,330,273	0	2,345,170
6	31,419,159	3,267,521	3,267,521	0	2,252,204	0	2,269,814
7	32,383,353	3,379,903	3,379,903	0	2,177,257	0	2,197,391
8	33,308,296	3,494,706	3,494,706	0	2,103,935	0	2,126,400
9	34,158,318	3,606,565	3,606,565	0	2,029,232	0	2,053,806
10	34,954,068	3,716,080	3,716,080	0	1,954,066	0	1,980,532
11	35,693,461	3,820,503	3,820,503	0	1,877,547	0	1,905,674
12	36,377,062	3,928,377	3,928,377	0	1,804,263	0	1,833,887
13	36,973,335	4,038,808	4,038,808	0	1,733,628	0	1,764,590
14	37,468,480	4,141,691	4,141,691	0	1,661,486	0	1,693,556
15	37,859,528	4,237,051	4,237,051	0	1,588,543	0	1,621,499
16	38,145,773	4,317,529	4,317,529	0	1,512,818	0	1,546,392
17	38,337,612	4,375,103	4,375,103	0	1,432,702	0	1,466,573
18	38,457,511	4,420,646	4,420,646	0	1,352,912	0	1,386,860
19	38,519,862	4,467,717	4,467,717	0	1,277,867	0	1,311,788
20	38,520,243	4,520,932	4,520,932	0	1,208,493	0	1,242,331
21	38,442,898	4,578,820	4,578,820	0	1,143,895	0	1,177,590
22	38,270,287	4,638,060	4,638,060	0	1,082,892	0	1,116,370
23	37,987,607	4,701,057	4,701,057	0	1,025,795	0	1,059,006
24	37,577,175	4,767,871	4,767,871	0	972,312	0	1,005,214
25	37,018,920	4,805,316	4,805,316	0	915,840	0	948,173
26	36,331,111	4,797,809	4,797,809	0	854,588	0	886,012
27	35,564,727	4,768,068	4,768,068	0	793,729	0	824,082
28	34,754,103	4,724,291	4,724,291	0	734,992	0	764,180
29	33,917,989	4,668,431	4,668,431	0	678,787	0	706,743
30	33,053,475	4,602,298	4,602,298	0	625,393	0	652,073
31	32,191,373	4,527,208	4,527,208	0	574,944	0	600,321
32	31,343,782	4,444,873	4,444,873	0	527,558	0	551,624
33	30,521,248	4,356,057	4,356,057	0	483,193	0	505,952
34	29,733,722	4,261,764	4,261,764	0	441,807	0	463,272
35	28,990,457	4,162,550	4,162,550	0	403,292	0	423,484
36	28,300,439	4,059,003	4,059,003	0	367,532	0	386,481
37	27,149,749	3,951,675	3,951,675	0	334,405	0	352,145
38	25,631,496	3,840,803	3,840,803	0	303,760	0	320,327
39	24,103,881	3,726,884	3,726,884	0	275,468	0	290,903
40	22,589,310	3,610,226	3,610,226	0	249,388	0	263,735
41	21,092,591	3,491,275	3,491,275	0	225,393	0	238,698
42	19,617,342	3,370,342	3,370,342	0	203,351	0	215,660
43	18,166,998	3,247,748	3,247,748	0	183,135	0	194,496
44	16,744,860	3,123,846	3,123,846	0	164,625	0	175,085
45	15,354,055	2,998,957	2,998,957	0	147,704	0	157,312
46	13,997,585	2,873,399	2,873,399	0	132,262	0	141,064
47	12,678,335	2,747,500	2,747,500	0	118,193	0	126,238
48	11,399,072	2,621,575	2,621,575	0	105,398	0	112,732
49	10,162,450	2,495,931	2,495,931	0	93,782	0	100,450
50	8,971,008	2,370,859	2,370,859	0	83,255	0	89,300
51	7,827,177	2,246,637	2,246,637	0	73,731	0	79,197
52	6,733,266	2,123,544	2,123,544	0	65,132	0	70,060
53	5,691,458	2,001,855	2,001,855	0	57,383	0	61,812
54	4,703,798	1,881,847	1,881,847	0	50,414	0	54,382
55	3,772,191	1,763,785	1,763,785	0	44,160	0	47,703
56	2,898,404	1,647,932	1,647,932	0	38,560	0	41,713
57	2,084,054	1,534,530	1,534,530	0	33,558	0	36,353
58	1,330,633	1,423,822	1,330,633	93,190	27,195	12,891	31,568
59	0	1,316,036	0	1,316,036	0	175,897	27,308
60	0	1,211,391	0	1,211,391	0	156,435	23,526

**POLICE AND FIREMEN'S RETIREMENT SYSTEM OF NEW JERSEY
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APPENDIX D – DETERMINATION OF DISCOUNT RATE

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

Projections Commence June 30, 2019

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

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

Year	Projected Beginning Fiduciary Net Position*	Projected Benefit Payments for current Plan participants**	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments	Present Value of "Funded" Benefit Payments	Present Value of "Unfunded" Benefit Payments	Present Value of Benefit Payments Using the Single Discount Rate
(a)	(b)	(c)	(d) = (c) if (b) >= (c)	(e) = (c) - (d)	(f) = (d) / (1+7.00%) ^[(a) - .5]	(g) = (e) / (1+3.50%) ^[(a) - .5]	(h) = (c) / (1+6.85%) ^[(a) - .5]
61	0	1,110,103	0	1,110,103	0	138,507	20,177
62	0	1,012,392	0	1,012,392	0	122,044	17,221
63	0	918,488	0	918,488	0	106,980	14,623
64	0	828,620	0	828,620	0	93,249	12,346
65	0	743,034	0	743,034	0	80,790	10,362
66	0	661,962	0	661,962	0	69,541	8,639
67	0	585,636	0	585,636	0	59,442	7,153
68	0	514,252	0	514,252	0	50,432	5,879
69	0	447,964	0	447,964	0	42,445	4,793
70	0	386,877	0	386,877	0	35,418	3,874
71	0	331,034	0	331,034	0	29,280	3,102
72	0	280,431	0	280,431	0	23,966	2,460
73	0	235,001	0	235,001	0	19,404	1,929
74	0	194,632	0	194,632	0	15,527	1,495
75	0	159,166	0	159,166	0	12,269	1,144
76	0	128,397	0	128,397	0	9,562	864
77	0	102,067	0	102,067	0	7,344	643
78	0	79,877	0	79,877	0	5,553	471
79	0	61,479	0	61,479	0	4,130	339
80	0	46,494	0	46,494	0	3,017	240
81	0	34,518	0	34,518	0	2,164	167
82	0	25,139	0	25,139	0	1,523	114
83	0	17,949	0	17,949	0	1,051	76
84	0	12,561	0	12,561	0	710	50
85	0	8,617	0	8,617	0	471	32
86	0	5,800	0	5,800	0	306	20
87	0	3,839	0	3,839	0	196	12
88	0	2,509	0	2,509	0	124	8
89	0	1,629	0	1,629	0	78	5
90	0	1,061	0	1,061	0	49	3
91	0	702	0	702	0	31	2
92	0	477	0	477	0	21	1
93	0	338	0	338	0	14	1
94	0	250	0	250	0	10	1
95	0	192	0	192	0	7	0
96	0	152	0	152	0	6	0
97	0	122	0	122	0	4	0
98	0	98	0	98	0	3	0
99	0	79	0	79	0	3	0
100	0	63	0	63	0	2	0
101	0	49	0	49	0	2	0
102	0	38	0	38	0	1	0
103	0	29	0	29	0	1	0
104	0	21	0	21	0	1	0
105	0	15	0	15	0	0	0
106	0	10	0	10	0	0	0
107	0	7	0	7	0	0	0
108	0	5	0	5	0	0	0
109	0	3	0	3	0	0	0
110	0	2	0	2	0	0	0
111	0	1	0	1	0	0	0
112	0	1	0	1	0	0	0
113	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0
					\$ 53,009,094	\$ 1,280,901	\$ 54,289,995

APPENDIX E – GLOSSARY OF TERMS

1. Actuarially Determined Contribution

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

2. Actuarial Valuation Date

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

3. Deferred Inflow of Resources

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

4. Deferred Outflow of Resources

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

5. Entry Age Actuarial Cost Method

The actuarial cost method required for GASB 68 calculations. Under this method, the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this actuarial present value allocated to a valuation year is called the Service Cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future service costs is called the Total Pension Liability.

6. Measurement Date

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

APPENDIX E – GLOSSARY OF TERMS

7. Net Pension Liability

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

8. Plan Fiduciary Net Position

The fair or market value of assets.

9. Reporting Date

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

10. Service Cost

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

11. Total Pension Liability

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