



Consolidated Police and Firemen's Pension Fund of New Jersey

**Actuarial Valuation Report
as of July 1, 2021**

Produced by Cheiron

April 2022

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LETTER OF TRANSMITTAL

April 13, 2022

Board of Trustees
Consolidated Police and Firemen's Pension Fund of New Jersey
State of New Jersey
Department of the Treasury
Division of Pension and Benefits, CN 295
Trenton, New Jersey 08625-0295

Dear Board Members:

At your request, we have performed the July 1, 2021 Actuarial Valuation of the Consolidated Police and Firemen's Pension Fund of New Jersey (CPFPPF or Fund).

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, 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.

The results of this report are only applicable to the Fund's contribution for Fiscal Year Ending 2023. Future results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law.

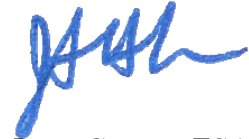
The actuarial assumptions are based on the draft 2019 Experience Study dated October 23, 2019 and approved by the Division of Pensions and Benefits (DPB). The assumptions reflect our understanding of the likely future experience of the Fund and each of the assumptions represents a best estimate of future experience.

This report has 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, as defined by 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 actuarial valuation report was prepared exclusively for the Consolidated Police and Firemen's Pension Fund of New Jersey for the purposes described herein and for 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.

Sincerely,

Cheiron



Janet Cranna, FSA, FCA, MAAA, EA
Principal Consulting Actuary



Anu Patel, FSA, MAAA, EA
Principal Consulting Actuary



Jonathan B. Chipko, FSA, MAAA, EA
Consulting Actuary

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
JULY 1, 2021 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

The primary purpose of the actuarial valuation and this report is to disclose the following as of the valuation date:

- The financial condition of the Consolidated Police and Firemen's Pension Fund of New Jersey,
- Past trends and risks to the Fund's financial condition, and
- The State's Pension Contribution for Fiscal Year Ending (FYE) 2023.

In this Section we present a summary of the principal valuation results. This includes the basis upon which the July 1, 2021 valuation was completed and an examination of the current financial condition of the Fund. In addition, we present a review of the key historical trends.

This report does not include information required under GASB Statement No. 67 which was provided in a separate report.

Results shown in this report for years prior to July 1, 2018 are based on the prior actuary's valuation reports.

Valuation Basis

The July 1, 2021 valuation results are based on the same actuarial methods and assumptions as used in the July 1, 2020 valuation, with the exception of the treatment of assets and liabilities associated with cost-of-living (or pension) adjustments. The assumptions are based on the draft 2019 Experience Study dated October 23, 2019 and approved by the Division of Pensions and Benefits. The assumptions reflect our understanding of the likely future experience of the Fund and each of the assumptions represents a best estimate of future experience.

Beginning with the July 1, 2021 valuation, the results include assets and liabilities associated with cost-of-living adjustments. The cost-of-living adjustments were previously separately funded on a pay-as-you-go basis through the Pension Adjustment Fund, which was established pursuant to Chapter 143, P.L. 1958. In FYE 2021, a portion of the Pension Adjustment Fund assets related to CPFPPF was transferred into the CPFPPF and cost-of-living adjustments were paid directly from the CPFPPF, instead of through annual contributions from the Pension Adjustment Fund. Any ongoing contributions required to fund the cost-of-living adjustments are included with the Statutory Contribution.

This report was prepared using census data and financial information as of the valuation date, July 1, 2021. Events following that date are not, and should not be, reflected in this report. Whereas there remains a lot of uncertainty, we continue to monitor developments regarding the COVID-19 pandemic and the impact it may have on the Fund. Actual experience, both demographic and economic, will be reflected in subsequent valuations as experience emerges.

The valuation reflects a plan closed to new entrants since 1944 and at this time only covers retirees. All risks and assumptions are a reflection of the nature of a wasting trust to meet the obligation to these remaining retired participants.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
JULY 1, 2021 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

Key Results

Table I-1 below summarizes the key results of the valuation with respect to the Fund's membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior year.

Table I-1				
Consolidated Police and Firemen's Pension Fund				
Summary of Key Valuation Results				
Valuation Date	July 1, 2021	July 1, 2020		
Fiscal Year Ending (FYE)	2023	2022	% Change	
Member Data				
Actives	0	0	N/A	
Deferred Vested Members	0	0	N/A	
Retirees and Beneficiaries	33	43	-23.3%	
Total Members	<u>33</u>	<u>43</u>	-23.3%	
Annual Retirement Allowances in Pay ¹	\$ 624,143	\$ 323,589	92.9%	
Assets and Liabilities				
Actuarial Liability ¹	\$ 2,845,637	\$ 1,369,932	107.7%	
Actuarial Value of Assets (AVA) ^{1,2}	2,260,738	1,295,217	74.5%	
Unfunded Actuarial Liability/(Surplus)	<u>\$ 584,899</u>	<u>\$ 74,715</u>	682.8%	
Funded Ratio	79.4%	94.5%	-15.1%	
Contribution Amounts				
Total Statutory Contribution for FYE	\$ 596,597	\$ 76,209	682.8%	

¹ July 1, 2020 values do not include assets, liabilities and allowances associated with cost-of-living adjustments.

² Includes discounted State appropriations receivable; Actuarial Value of Assets is equal to Market Value of Assets.

The key results of the July 1, 2021 actuarial valuation are as follows:

- The Statutory Contribution increased from \$76 thousand in FYE 2022 to \$597 thousand for FYE 2023.
- The funded ratio, the ratio of the actuarial value of assets over liabilities, decreased from 94.5% as of July 1, 2020 to 79.4% as of July 1, 2021.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION I – BOARD SUMMARY

- The unfunded actuarial liability increased from \$75 thousand as of July 1, 2020 to \$585 thousand as of July 1, 2021.
- The valuation method for the cost-of-living adjustments was changed on July 1, 2021. Previously, cost-of-living adjustments were separately funded on a pay-as-you-go basis through the Pension Adjustment Fund. As of July 1, 2021, the assets and liabilities associated with cost-of-living adjustments are included in the valuation. The net impact was a loss of \$0.7 million, with a liability increase of \$1.8 million offset by a transfer of \$1.1 million from the Pension Adjustment Fund.
- There was a total actuarial experience gain of \$81 thousand, consisting of an asset loss of \$40 thousand and a liability gain of \$121 thousand.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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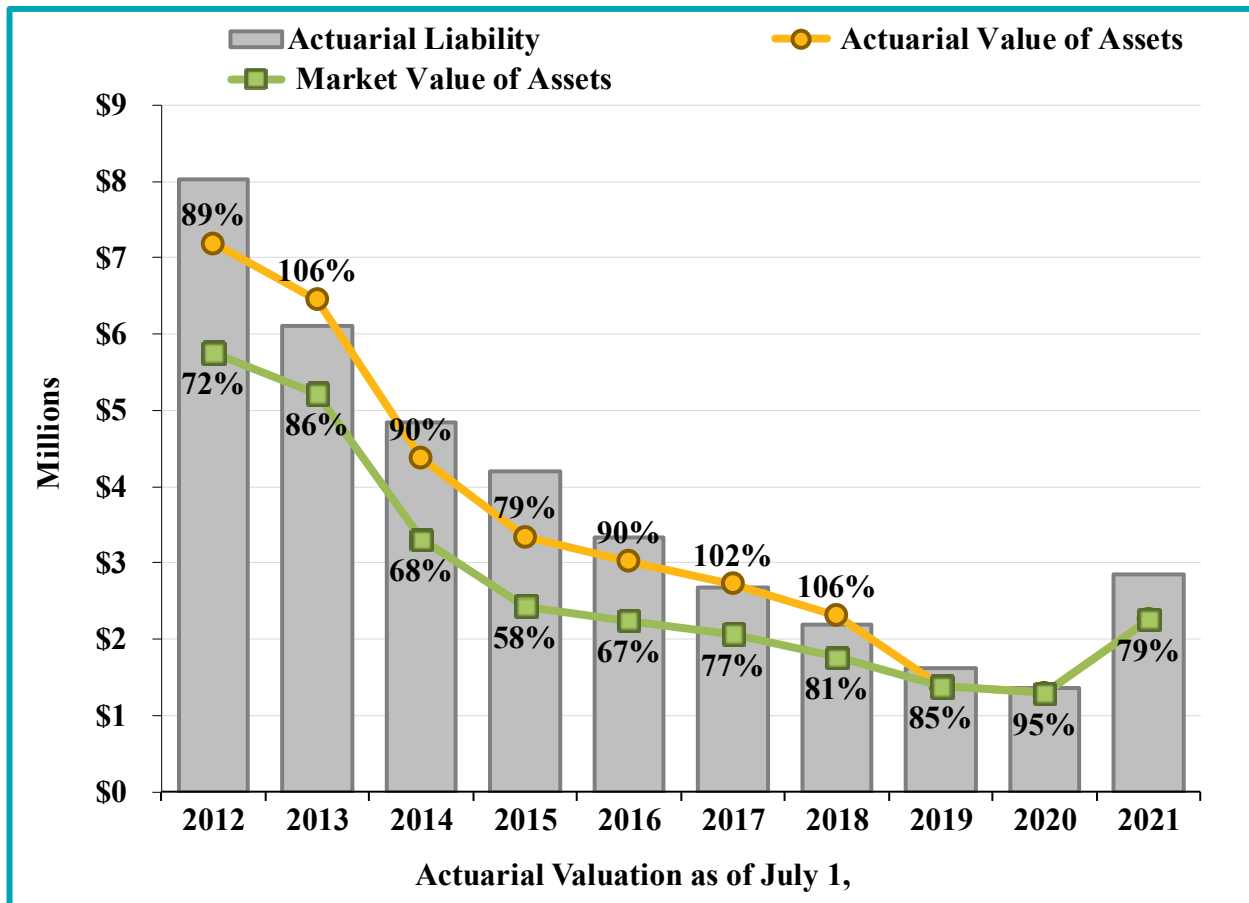
SECTION I – BOARD SUMMARY

Recent Trends

It is important to take a step back from these latest results and view them in the context of the Fund's recent history. Below, we present a series of graphs which display key factors in the valuations of the last 10 years. Additionally, in Appendix D we provide the numerical values of the historical unfunded actuarial liability, funded ratio, and contribution amounts.

Assets and Liabilities

The gray bars represent the Actuarial Liability (AL). The green line is the Market Value of Assets (MVA) and the gold line is the Actuarial Value of Assets (AVA). The Fund's funded ratio (ratio of assets to liabilities) is shown next to the lines. Effective with the July 1, 2019 valuation, the AVA was set equal to the MVA. The assets and liabilities have been decreasing every year prior to 2021. This is to be expected since the Fund only has retirees and beneficiaries. The increase in both assets and liabilities in 2021 is due to the method change of reflecting the assets and liabilities associated with the cost-of-living adjustments in the valuation. This method change also caused the funded ratio to decrease.



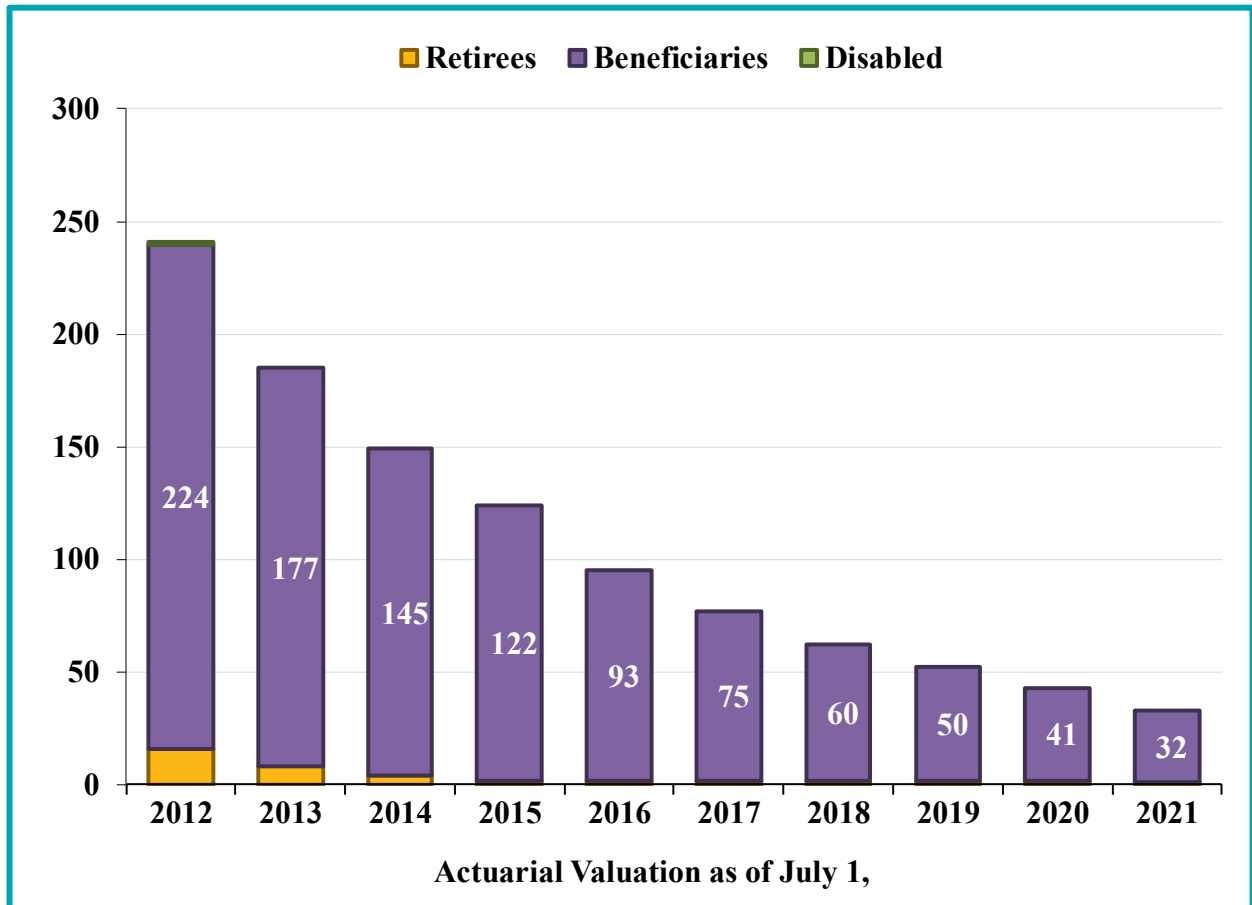
The information above is based on the final actuarial valuation reports for the given years. The amounts do not reflect differences between the discounted State appropriations receivable and the actual State contribution amounts that became known after the issuance of the reports.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION I – BOARD SUMMARY

Membership Trends

The graph below shows the membership counts of the Fund for the last ten valuations. The numbers that are shown in the middle of the bars represent the number of beneficiaries. In 2021 there were 32 beneficiaries and 1 retiree.



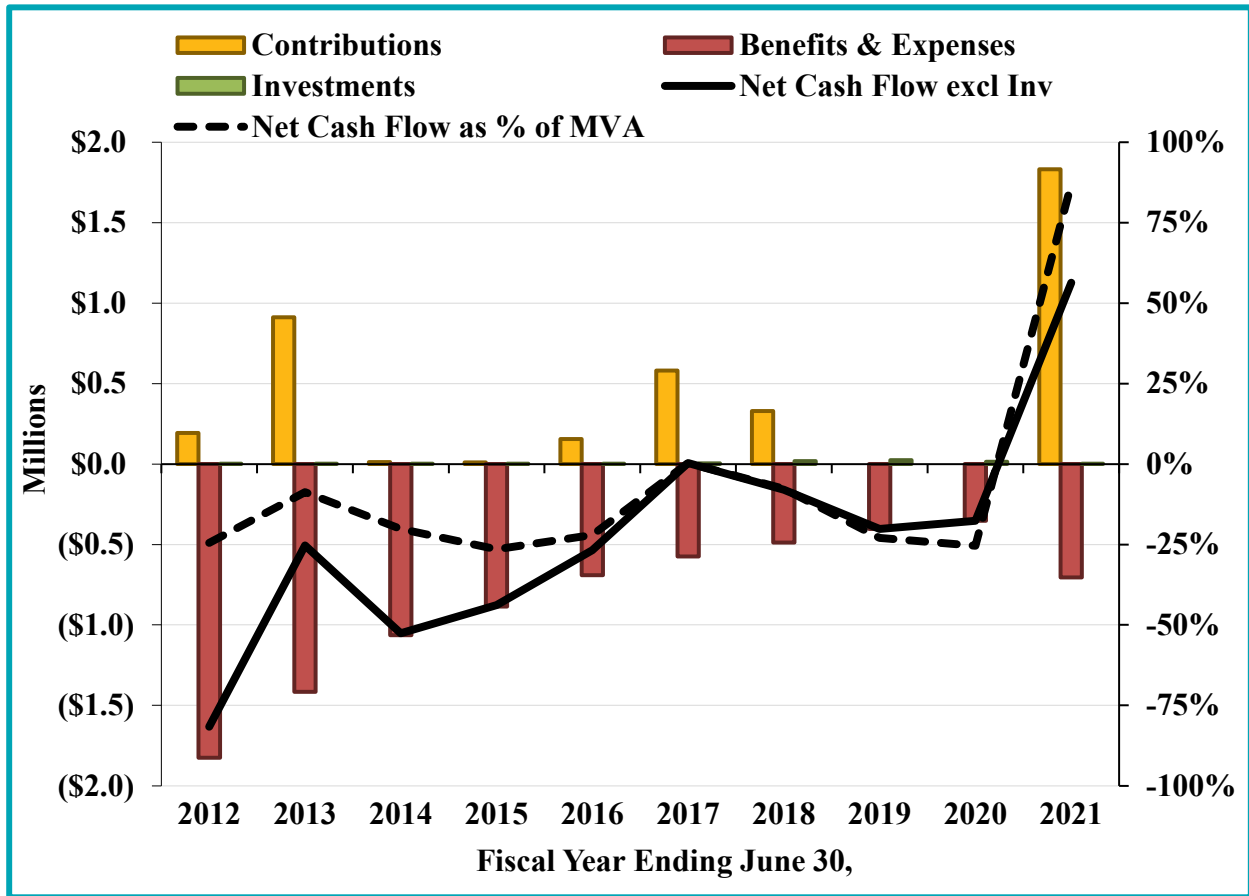
**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION I – BOARD SUMMARY

Cash Flows

The following graph shows the Fund net cash flow (contributions less benefit payments and expenses) at the end of each valuation year. The net cash flow excluding investments has been negative every year except for 2021. This is an expected result of a wasting trust dedicated to pay out benefits the remaining retirees. The black dotted line shows the net cash flow as a percent of the market value of assets and goes with the axis on the right. A major implication of a negative cash flow is that the difference each year must be paid out of the principal assets, meaning there will be less to invest during periods of favorable investment experience. Given the conservative nature of the asset allocation, this is not the typical risk.

As expected, the benefits and expenses have decreased during this period as the membership declines. The fluctuation in the net cash flow is a result of the varying contributions. Currently the unfunded actuarial liability is amortized over one year resulting in cost volatility. In FYE 2021, the Pension Adjustment Fund was transferred into CPFPPF and cost-of-living adjustments were paid directly out of the CPFPPF, instead of through annual contributions from the Pension Adjustment Fund. This resulted in a large positive net cash flow for the year. We expect the previous negative net cash flow trend to return next year.



**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may be significantly different. This section of the report is intended to identify the primary risks (if any) to the plan, provide some background information about those risks, and provide an assessment of those risks.

Identification of Risks

The fundamental risk to a pension fund is that the contributions needed to pay the benefits become unaffordable. Due to the size of the Fund relative to the State, we do not believe there is a material risk that the benefits become unaffordable.

CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION III – ASSETS

The Fund uses the market value of assets for funding. The market value represents the value of the assets if they were liquidated on the valuation date.

On the following pages, we present detailed information on the Fund's assets:

- Disclosure of assets at June 30, 2020 and June 30, 2021,
- Statement of cash flows during the year, and
- Disclosure of investment performance for the year.

Disclosure

The market value of assets represents a “snap-shot” value as of the last day of the fiscal year that provides the principal basis for measuring financial performance from one year to the next. Table III-1 on the following page presents the market value as of June 30, 2020 and June 30, 2021. Table III-2 presents the Fund's net cash flows from June 30, 2020 to June 30, 2021. Table III-3 shows the historical asset returns for the Fund for the past ten years.

In FYE 2021, a portion of the Pension Adjustment Fund assets related to POPF were transferred into the CPFPPF.

For this Fund, the actuarial value of assets is equal to the market value of assets.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION III – ASSETS

Table III-1				
Statement of Assets at Market Value				
	June 30, 2021		June 30, 2020	
Assets				
Cash	\$	50,990	\$	19,133
Cash Management Fund		2,038,584		958,559
Accrued Interest on Investments		3		49
Administrative Expenses Receivable		6,734		6,283
Employers' Contributions Receivable - Pension Adjustment		153,049		39,851
Other Accounts Receivable		8,352		113,772
Total Assets	\$	2,257,712	\$	1,137,647
Liabilities				
Pension Payroll Payable	\$	(25,647)	\$	(29,831)
Pension Adjustment Payroll Payable		(42,267)		(45,614)
Withholdings Payable		(1,798)		(3,750)
Administrative Expense Payable		(2,535)		(3,449)
Other Accounts Payable		0		(2,276)
Total Liabilities	\$	(72,247)	\$	(84,920)
Preliminary Market Value of Assets¹	\$	2,185,465	\$	1,052,727
Discounted State Appropriations Receivable		75,273		242,490
Market Value of Assets¹	\$	2,260,738	\$	1,295,217

¹ June 30, 2020 value does not include assets associated with cost-of-living adjustments

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION III – ASSETS

Fund Cash Flows from June 30, 2020 to June 30, 2021

Table III-2	
Changes in Market Values for FYE June 30, 2021	
Additions	
Contributions	
State Appropriations	\$ 248,000
Pension Adjustment	441,879
Transfer from Pension Adjustment Fund	1,141,922
Administrative Revenue - Local	3,308
Net Investment Income	2,648
Total Additions	<u>\$ 1,837,757</u>
Deductions	
Retirement Allowances	\$ 266,641
Benefit Expense - Pension Adjustment	435,758
Miscellaneous Expense	169
Administrative Expense	2,451
Total Deductions	<u>\$ 705,019</u>
Net Increase/(Decrease)	\$ 1,132,738
Preliminary Market Value of Assets Beginning of Year	\$ 1,052,727
Preliminary Market Value of Assets End of Year	\$ 2,185,465
Discounted State Appropriations Receivable	75,273
Market Value of Assets End of Year	<u>\$ 2,260,738</u>
Approximate Return	0.16%

Actuarial Value of Assets

For this Fund, the actuarial value of assets equals the market value of assets.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION III – ASSETS

Investment Performance

The market value of assets rate of return was 0.16% for the year ending June 30, 2021. This is compared to an assumed return of 2.00% for the same period. Table III-3 shows the historical asset returns and the investment return assumption for the last ten years.

The prior actuary did not calculate a market value return prior to 2017.

Table III-3 Annual Rates of Return			
Year Ended June 30	Investment Return Assumption	Market Value	Actuarial Value
2012	2.00%		-2.89%
2013	2.00%		-3.24%
2014	2.00%		-3.25%
2015	2.00%		-3.81%
2016	2.00%		-4.36%
2017	2.00%	0.34%	-4.35%
2018	2.00%	0.97%	-3.64%
2019	2.00%	1.57%	N/A
2020	2.00%	1.16%	N/A
2021	2.00%	0.16%	N/A
5-Year Compound Average		0.84%	N/A

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION IV – LIABILITIES

In this section, we present detailed information on the liabilities of the Fund, including:

- Disclosure of the liabilities at July 1, 2020 and July 1, 2021, and
- The development of the actuarial gain and loss.

Disclosure

The actuarial liability is used for determining employer contributions. For CPFPPF, the funding method employed is the Projected Unit Credit (PUC) Actuarial Cost Method. Under this funding method, the actuarial liability is calculated as the actuarial present value of the projected benefits allocated to periods prior to the valuation year.

This liability is determined for funding purposes and is not appropriate for measuring the cost of settling plan liabilities by purchasing annuities or paying lump sums.

Cost-of-living adjustments are granted to retired members and their eligible survivors in accordance with the Pension Adjustment Act. The additional liability due to the pension adjustment was previously paid by the Pension Adjustment Fund, which was established pursuant to Chapter 143, P.L. 1958. Chapter 78, P.L. 2011 suspended further cost-of-living adjustments for current and future retirees and beneficiaries until reactivated as permitted by law. In FYE 2021, the Pension Adjustment Fund was transferred into the CPFPPF and cost-of-living adjustments were paid directly from the CPFPPF, instead of through annual contributions from the Pension Adjustment Fund. As a result, beginning the July 1, 2021 valuation, the actuarial liability has been updated to reflect the present value of the cost-of-living adjustments based on the census data provided by the DPB.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION IV – LIABILITIES

Table IV-1 shows the actuarial liability, funded ratio, and unfunded actuarial liability as of July 1, 2021, and July 1, 2020 for the Fund.

Table IV-1 Actuarial Liabilities		
	July 1, 2021	July 1, 2020
Actuarial Liability¹		
Actives	\$ 0	\$ 0
Deferred Vested	0	0
Retirees	160,003	141,699
Disabled	0	0
Beneficiaries	2,685,634	1,228,233
Total	\$ 2,845,637	\$ 1,369,932
Actuarial Value of Assets ¹	\$ 2,260,738	\$ 1,295,217
Unfunded Actuarial Liability/(Surplus)	\$ 584,899	\$ 74,715
Funded Ratio	79.4%	94.5%

¹ July 1, 2020 values do not include assets and liabilities associated with cost-of-living adjustments

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION IV – LIABILITIES

Table IV-2 presents the change in the actuarial liability, actuarial assets, and unfunded actuarial liability during the plan year. In general, the unfunded actuarial liability (UAL) of any retirement system is expected to change at each subsequent valuation for a variety of reasons. In each valuation, we report on those elements of change in the UAL which are of particular significance, potentially affecting the long-term financial outlook of the Fund.

Table IV-2				
Development of 2021 Experience (Gain)/Loss				
	Actuarial Liability	Actuarial Value of Assets	Unfunded Actuarial Liability	
1. Value as of July 1, 2020	\$ 1,369,932	\$ (1,295,217)	\$	74,715
2. Additions				
a.) Normal Cost	\$ 0	\$ 0	\$	0
b.) Statutory State Contributions	0	(76,209)		(76,209)
c.) Exp. Member Contributions	0	0		0
3. Decreases				
a.) Benefit Payments	\$ (266,641)	\$ 266,641	\$	0
b.) Exp. Admin. Expenses	0	0		0
4. Expected Interest	\$ 24,745	\$ (23,251)	\$	1,494
5. Expected Value as of July 1, 2021: (1+2+3+4)	\$ 1,128,036	\$ (1,128,036)	\$	0
6. Impact of:				
a.) Appropriation Adjustment	\$ 0	\$ (2,513)	\$	(2,513)
b.) Contribution Timing	0	936		936
c.) Actual Member Contributions	0	0		0
d.) Change in Methods/Assumptions ¹	1,838,606	(1,170,942)		667,664
e.) Change in Benefits	0	0		0
7. Expected Value after Changes: (5+6)	\$ 2,966,642	\$ (2,300,555)	\$	666,087
8. Actual Value as of July 1, 2021	\$ 2,845,637	\$ (2,260,738)	\$	584,899
9. Actuarial (Gain)/Loss: (8-7)	\$ (121,005)	\$ 39,817	\$	(81,188)

¹ In determining the Actuarial (Gain)/Loss, we have assumed that the transfer of assets from the Pension Adjustment Fund was made at the beginning of the year

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION IV – LIABILITIES

Table IV-3 shows the components of the actuarial (gain)/loss for the Fund as of July 1, 2021 and July 1, 2020.

Table IV-3 Actuarial (Gain)/Loss Analysis				
Components	July 1, 2021		July 1, 2020	
Actuarial Value of Assets				
Investment Return	\$	40,512	\$	10,163
Administrative Expenses		(695)		298
Total	\$	39,817	\$	10,461
Actuarial Liability				
Inactive Demographic Experience	\$	(121,005)	\$	61,238
Actuarial (Gain)/Loss	\$	(81,188)	\$	71,699

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION V - CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funded status of the Plan. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

Under the current funding policy, the State funding requirement contains two components: the employer normal cost and an amortization of the unfunded actuarial liability. Since CPFPPF does not have any active members, there is no normal cost component. The funding methodology prescribed by NJ State Statute does not include a cost component for administrative expenses, and therefore administrative expenses are implicitly covered by the investment rate of return assumption.

For CPFPPF, the funding method employed is the Projected Unit Credit (PUC) Actuarial Cost Method. Under this funding method, the actuarial liability is calculated as the actuarial present value of the projected benefits allocated to periods prior to the valuation year. The unfunded actuarial liability is the actuarial liability on the valuation date less the actuarial value of assets.

The unfunded actuarial liability as of June 30, 1990 was amortized over a closed period of nine years. We have assumed that any future unfunded actuarial liability will be amortized over one year as all members are inactive and receiving benefits.

Table V-1 shows the development of the Statutory Pension Contribution for the current and prior year.

Table V-1 Development of Statutory Pension Contribution				
Valuation Date Fiscal Year Ending	July 1, 2021 2023		July 1, 2020 2022	
1. Actuarial Liability ¹	\$	2,845,637	\$	1,369,932
2. Actuarial Value of Assets ¹		<u>2,260,738</u>		<u>1,295,217</u>
3. Unfunded Actuarial Liability: (1-2)	\$	584,899	\$	74,715
4. Amortization Period (years)		1		1
5. Total Statutory Pension Contribution as of Beginning of Fiscal Year: (3 x 1.02)	\$	596,597	\$	76,209

¹ July 1, 2020 values do not include assets and liabilities associated with cost-of-living adjustments

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
JULY 1, 2021 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP INFORMATION

The data for this valuation was provided by the New Jersey Division of Pensions and Benefits as of July 1, 2021. Cheiron did not audit any of the data. However, we did perform an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23. The following is a list of data charts contained in this section:

- A-1 and A-2: Inactive Member Data by Age and Status
- A-3: Reconciliation of Plan Membership

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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APPENDIX A – MEMBERSHIP INFORMATION

Table A-1 Counts by Age and Status of Inactive Members As of July 1, 2021			
Attained Age	Status		Total
	Retiree	Beneficiary	
Under 45	0	0	0
45-49	0	0	0
50-54	0	0	0
55-59	0	0	0
60-64	0	0	0
65-69	0	1	1
70-74	0	2	2
75-79	0	2	2
80-84	0	3	3
85 & Over	1	24	25
Total	1	32	33

Table A-2 Annual Retirement Allowances by Age and Status of Inactive Members As of July 1, 2021			
Attained Age	Status		Total
	Retiree	Beneficiary	
Under 45	\$ 0	\$ 0	\$ 0
45-49	0	0	0
50-54	0	0	0
55-59	0	0	0
60-64	0	0	0
65-69	0	7,678	7,678
70-74	0	21,202	21,202
75-79	0	10,342	10,342
80-84	0	45,855	45,855
85 & Over	51,639	487,427	539,067
Total	\$ 51,639	\$ 572,504	\$ 624,143

CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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APPENDIX A – MEMBERSHIP INFORMATION

	Retired	Beneficiaries	Total
1. July 1, 2020	2	41	43
2. Reductions			
a. Died without beneficiary	(1)	(9)	(10)
3. Changes in Status			
a. Died with beneficiary			0
4. July 1, 2021	1	32	33

CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
JULY 1, 2021 ACTUARIAL VALUATION

APPENDIX B – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

- 1. Investment Rate of Return** 2.00% compounded annually.
- 2. Administrative Expenses** No explicit assumption is made for administrative expenses for funding purposes per the funding methodology prescribed by NJ State Statute.
- 3. Mortality**

Healthy retirees: The Pub-2010 Public Safety Healthy Retiree mortality table [*PubS-2010 Healthy Retiree*] as published by the Society of Actuaries (SOA), unadjusted, and with future improvement from the base year of 2010 on a generational basis using the SOA's Scale MP-2018.

Beneficiaries: The Pub-2010 General Healthy Retiree mortality table [*PubG-2010 Healthy Retiree*] as published by the SOA, unadjusted, and with future improvement from the base year of 2010 on a generational basis using the SOA's Scale MP-2018.
- 4. Family Composition Assumptions**

For those participants with listed beneficiaries, the beneficiary allowance was assumed to be the greater of twice the amount contained in the record or the minimum of \$4,500/yr. (The information contained in the record has not been updated for the change from 25% to 50% payment to the survivor.)

For those participants without listed beneficiaries, 65% were assumed to be married and the beneficiary amount was assumed to be the minimum benefit payable (\$4,500/yr.).

Males are assumed to be four years older than females.

No assumption was made for children.
- 5. Rationale for Assumptions** The assumptions are based on the draft 2019 Experience Study dated October 23, 2019 and approved by the Division of Pensions and Benefits.
- 6. Changes in Actuarial Assumptions since Last Valuation** None.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
JULY 1, 2021 ACTUARIAL VALUATION**

APPENDIX B – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

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

1. Actuarial Cost Method

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

The actuarial liability is calculated as the actuarial present value of the projected benefits allocated to periods prior to the valuation year. The unfunded actuarial liability is the actuarial liability on the valuation date less the actuarial value of assets.

The unfunded actuarial liability as of June 30, 1990 was amortized over a closed period of nine years. Without additional guidance, we assumed that if there is an unfunded actuarial liability in the future it will be amortized over one year.

Beginning with the July 1, 2021 valuation, liabilities associated with cost-of-living adjustments are included in the valuation based on the amounts provided in the census data by the DPB. Previously, the cost-of-living adjustments were separately funded on a pay-as-you-go basis through the Pension Adjustment Fund and the associated liabilities were excluded from the valuation.

2. Asset Valuation Method

The actuarial value of assets is equal to the market value of assets.

In FYE 2021, the Pension Adjustment Fund was transferred into the CPFPPF and cost-of-living adjustments are now paid directly from the CPFPPF.

3. State Contribution Payable Dates

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

4. Valuation Software

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

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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APPENDIX B – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

5. Changes in Actuarial Methods Since Last Valuation

Effective with the July 1, 2021 valuation, assets and liabilities associated with cost-of-living adjustments are included in the valuation. Previously, the cost-of-living adjustments were separately funded on a pay-as-you-go basis through the Pension Adjustment Fund and the associated assets and liabilities were excluded from the valuation.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

This summary of Plan provisions provides an overview of the major provisions of the CPFPP used in the actuarial valuation. It is not intended to replace the more precise language of the NJ State Statutes, Title 43, Chapter 16, 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. This valuation is prepared based on the plan provisions in effect as of July 1, 2021 and does not reflect the impact of any changes in the benefits that may have been approved after the valuation date.

1. Eligibility of Membership

Member of a municipal police department, a municipal paid or part-paid fire department, a county police department, or a paid or part-paid fire department of a fire district located in a township who has contributed to this pension fund and who is not covered by the Police and Firemen's Retirement System, which became effective on July 1, 1944.

2. Active Member

Any member who is a policeman, fireman, detective, lineman, driver of police van, fire alarm operator, or inspector of combustibles, and who is subject to call for active service as such.

3. Employee Member

Any member who is not subject to active service or duty.

4. Plan Year

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

5. Service Credit

Service rendered while a member as described above.

6. Compensation

Base salary, not including individual salary adjustments which are granted primarily in anticipation of retirement or additional remuneration for performing temporary duties beyond the regular workday. (Effective June 30, 1996, Chapter 113, P.L. 1997 provided that the amount of compensation used for employer and member contributions and benefits under the program cannot exceed the compensation limitation of Section 401(a)(17) of the Internal Revenue Code.)

7. Final Compensation

Compensation received during the last 12 months of service preceding retirement or other termination of service.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

8. Average Salary

Salary averaged over the last three years prior to retirement or other termination of service.

9. Contributions

Each active member contributes 7% of his salary to the pension fund.

10. Benefits

a) Service Retirements:

Mandatory retirement at age 65 with 25 years of service (a municipality may retain the Chief of Police until age 70). Voluntary retirement after 25 years of service for an active member and after age 60 with 25 years of experience for an employee member. Benefit is life annuity equal to 60% of final compensation, plus 1% of final compensation for years of service in excess of 25.

b) Death Benefits

(1) While on Duty

Immediate life annuity equal to 70% of average salary payable to the spouse. If there is no spouse, or if the spouse dies or remarries, 20% of final compensation will be payable to one surviving child, 35% to two surviving children, or 50% to three surviving children. If is no surviving spouse or child, 25% of the member's average salary will be payable to one dependent parent or 40% to two dependent parents. The minimum spousal benefit is \$4,500 per annum.

(2) While not on duty after retirement

Life annuity equal to 50% of the member's average salary payable to the spouse, plus 15% to one surviving child or 25% to two or more surviving children. If there is no surviving spouse or if the surviving spouse dies or remarries, 20% of the member's average salary to one child, 35% to two surviving children, or 50% to three or more surviving children. If is no surviving spouse or child, 25% of the member's average salary will be payable to one dependent parent or 40% to two dependent parents. The minimum spousal benefit is \$4,500 per annum.

c) Ordinary Disability Retirement

Totally and permanently incapacitated from service for any cause other than as a direct result of a traumatic event occurring during the performance of a duty. Benefit is an immediate life annuity equal to ½ of average salary.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

d) Accidental Disability Retirement

Totally and permanently incapacitated as a direct result of a traumatic event occurring while performing regular or assigned duties. Benefit is an immediate life annuity equal to $\frac{2}{3}$ of average salary.

e) Cost-of-Living Adjustments

Cost-of-living increases are granted to retired members and their eligible survivors in accordance with the Pension Adjustment Act. The additional liability due to the pension adjustment was previously paid by the Pension Adjustment Fund, which was established pursuant to Chapter 143, P.L. 1958. Chapter 78, P.L. 2011 suspended the cost-of-living adjustments for current and future retirees and beneficiaries until reactivated as permitted by law. In FYE 2021, the Pension Adjustment Fund was transferred into the CPFPPF and cost-of-living adjustments were paid directly from the CPFPPF, instead of through annual contributions from the Pension Adjustment Fund.

11. Changes in Plan Provisions Since Last Valuation

The benefits associated with cost-of-living increases will be paid directly from the CPFPPF, instead of through annual contributions from the Pension Adjustment Fund. The actuarial accrued liability as of July 1, 2021 has been increased to reflect the value of the cost-of-living adjustments.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS

Table D-1 Historical Summary of Assets and Liabilities¹						
Valuation Date July 1,	Market Value of Assets	Actuarial Value of Assets	Actuarial Liability	Funded Ratio		
				Market Value	Actuarial Value	
2021	\$ 2,260,738	\$ 2,260,738	\$ 2,845,637	79.45%	79.45%	
2020	1,295,217	1,295,217	1,369,932	94.55%	94.55%	
2019	1,387,550	1,387,550	1,628,242	85.22%	85.22%	
2018	1,763,463	2,313,665	2,186,581	80.65%	105.81%	
2017	2,065,094	2,721,368	2,674,728	77.21%	101.74%	
2016	2,241,861	3,017,928	3,336,743	67.19%	90.45%	
2015	2,427,950	3,340,908	4,208,241	57.70%	79.39%	
2014	3,303,631	4,366,457	4,848,499	68.14%	90.06%	
2013	5,217,857	6,445,847	6,102,292	85.51%	105.63%	
2012	5,755,743	7,179,322	8,026,421	71.71%	89.45%	

¹ Values prior to July 1, 2021 valuation do not include assets and liabilities associated with cost-of-living adjustments

Table D-2 Historical Summary of State Appropriations¹					
Fiscal Year Ending June 30,	Actuarially Determined Contribution	Actual Pension Contributions	Contribution Deficiency (Excess)	Percentage of Contribution Covered	
2022 ²	\$ 76,209	\$ 76,209	\$ 0	100.00%	
2021	245,506	248,000	(2,494)	101.02%	
2020	0	0	0	100.00%	
2019	0	0	0	100.00%	
2018	325,191	325,000	191	99.94%	
2017	884,680	575,000	309,680	65.00%	
2016	491,683	148,000	343,683	30.10%	
2015	0	0	0	100.00%	
2014	864,041	0	864,041	0.00%	
2013	896,883	897,000	(117)	100.01%	

¹ State Appropriations do not include Pension Adjustment

² Reflects the State's planned appropriation of 100% of the Statutory contribution

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS

The information above is based on the final actuarial valuation reports for the given years. The amounts do not reflect differences between the discounted State appropriations receivable and the actual State contribution amounts that became known after the issuance of the reports.

In accordance with the Government Finance Officers Association (GFOA) and their recommended checklist for Annual Comprehensive Financial Reports, we prepared the following schedules for the Fund. The GFOA checklist uses the term Actuarial Accrued Liability, which is the same as the Actuarial Liability used elsewhere in this report.

Table D-3 Schedule Retirees and Beneficiaries Added to and Removed from Rolls¹									
Valuation Date July 1,	Added to Rolls		Removed from Rolls		Rolls at End of Year		Average	% Increase/ (Decrease) in	
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance	Annual Allowance	Average Annual	Allowance
2021	0	\$ 0	10	\$ 79,329	33	\$ 624,143	\$ 18,913	151.34%	
2020	0	0	9	63,449	43	323,589	7,525	1.10%	
2019	0	0	10	57,040	52	387,038	7,443	3.91%	
2018	0	0	15	96,452	62	444,078	7,163	2.04%	
2017	0	0	18	117,408	77	540,530	7,020	1.36%	
2016	0	0	29	164,935	95	657,938	6,926	4.37%	
2015	0	0	25	210,952	124	822,873	6,636	(4.35%)	
2014	0	0	36	268,424	149	1,033,825	6,938	(1.43%)	
2013	0	0	56	414,903	185	1,302,249	7,039	(1.21%)	
2012	3	46,595	72	478,997	241	1,717,152	7,125	2.75%	

¹Annual allowances do not include cost-of-living adjustments prior to July 1, 2021 valuation

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS

**Table D-4
Schedule of Funding Progress**

Valuation Date July 1,	Actuarial Value of Assets ¹ (a)	Actuarial Accrued Liability ² (b)	(Surplus)/Unfunded		Funded Ratio (a) / (b)	Covered Payroll (d)	(Surplus)/Unfunded Actuarial Accrued Liability as % of Covered Payroll (c) / (d)
			Actuarial Accrued Liability (c) = (b) - (a)				
2021	\$ 2,260,738	\$ 2,845,637	\$ 584,899	79.45%	\$ 0	N/A	
2020	1,295,217	1,369,932	74,715	94.55%	0	N/A	
2019	1,387,550	1,628,242	240,692	85.22%	0	N/A	
2018	2,313,665	2,186,581	(127,084)	105.81%	0	N/A	
2017	2,721,368	2,674,728	(46,640)	101.74%	0	N/A	
2016	3,017,928	3,336,743	318,815	90.45%	0	N/A	
2015	3,340,908	4,208,241	867,333	79.39%	0	N/A	
2014	4,366,457	4,848,499	482,042	90.06%	0	N/A	
2013	6,445,847	6,102,292	(343,555)	105.63%	0	N/A	
2012	7,179,322	8,026,421	847,099	89.45%	0	N/A	

¹Includes receivable amounts. Values from valuations prior to July 1, 2021 do not include assets associated with cost-of-living adjustments

²Values from valuations prior to July 1, 2021 do not include liabilities associated with cost-of-living adjustments

**Table D-5
Schedule of Funded Liabilities by Type (Solvency Test)**

Valuation Date July 1,	Actuarial Accrued Liability for				Actuarial Value of Assets ²	Portion of Actuarial Accrued Liabilities Covered by Actuarial Value of Assets		
	Contributing & Non-Contributing Active Member Contributions (1)	Retirees, Beneficiaries & Deferred Vested ¹ (2)	Contributing & Non-Contributing Active Member Benefits Financed by Employer (3)			(1)	(2)	(3)
2021	\$ 0	\$ 2,845,637	\$ 0	\$ 2,260,738	N/A	79.45%	N/A	
2020	0	1,369,932	0	1,295,217	N/A	94.55%	N/A	
2019	0	1,628,242	0	1,387,550	N/A	85.22%	N/A	
2018	0	2,186,581	0	2,313,665	N/A	100.00%	N/A	
2017	0	2,674,728	0	2,721,368	N/A	100.00%	N/A	
2016	0	3,336,743	0	3,017,928	N/A	90.45%	N/A	
2015	0	4,208,241	0	3,340,908	N/A	79.39%	N/A	
2014	0	4,848,499	0	4,366,457	N/A	90.06%	N/A	
2013	0	6,102,292	0	6,445,847	N/A	100.00%	N/A	
2012	0	8,026,421	0	7,179,322	N/A	89.45%	N/A	

¹Values from valuations prior to July 1, 2021 do not include liabilities associated with cost-of-living adjustments

²Includes receivable amounts. Values from valuations prior to July 1, 2021 do not include assets associated with cost-of-living adjustments

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS

**Table D-6
Analysis of Financial Experience
Change in Unfunded Actuarial Accrued Liability**

Valuation Date July 1,	Actuarial Value Of Assets Investment (Gain)/Loss	Actuarial Accrued Liability (Gain)/Loss	Assumption & Method Changes	Plan Changes	Contributions¹	Change in Unfunded Actuarial Accrued Liability
2021	\$ 40,512	\$ (121,005)	\$ 667,664	\$ 0	\$ (76,987)	\$ 510,184
2020	10,163	61,238	0	0	(237,378)	(165,977)
2019	113,583	(31,761)	289,436	0	(3,482)	367,776
2018	137,551	(63,930)	10,670	0	(164,735)	(80,444)
2017	164,069	(154,174)	0	0	(375,350)	(365,455)
2016	194,017	(264,949)	0	0	(477,586)	(548,518)
2015	228,240	(201,179)	348,589	0	9,641	385,291
2014	265,707	(314,561)	0	0	874,451	825,597
2013	306,998	(650,553)	0	0	(847,099)	(1,190,654)
2012	355,895	(515,459)	1,006,663	0	(879,297)	(32,198)

¹Change due to contributions (greater)/less than normal cost plus interest on the Unfunded Actuarial Accrued Liability.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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APPENDIX E – GLOSSARY OF TERMS

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disability, and retirement; changes in compensation; inflation; rates of investment earnings, and asset appreciation or depreciation; and other relevant items.

2. Actuarial Cost Method

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a Normal Cost and an Actuarial Liability.

3. Actuarial Gain/(Loss)

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

4. Actuarial Liability

The portion of the Actuarial Present Value of Projected Benefits which will not be paid by future Normal Costs. It represents the value of the past Normal Costs with interest to the valuation date.

5. Actuarial Present Value (Present Value)

The value as of a given date of a future amount or series of payments. The Actuarial Present Value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made. As a simple example: assume you owe \$100 to a friend one year from now. Also, assume there is a 1% probability of your friend dying over the next year, in which case you won't be obligated to pay him. If the assumed investment return is 10%, the actuarial present value is:

$$\frac{\text{Amount}}{\text{Payment}} \times \frac{\text{Probability of}}{(1 - .01)} \times \frac{1}{(1 + \text{Investment Return})} = \$90$$

6. Actuarial Valuation

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

APPENDIX E – GLOSSARY OF TERMS

7. Actuarial Value of Assets

The value of cash, investments and other property belonging to a pension plan as used by the actuary for the purpose of an Actuarial Valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values. This way long-term costs are not distorted by short-term fluctuations in the market.

8. Actuarially Equivalent

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

9. Amortization Payment

The portion of the pension plan contribution which is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Funded Ratio

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities.

11. Investment Return Assumption

The assumed interest rate used for projecting dollar related values in the future.

12. Mortality Table

A set of percentages which estimate the probability of death at a particular point in time. Typically, the rates are annual and based on age and sex.

13. Normal Cost

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

14. Projected Benefits

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

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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APPENDIX E – GLOSSARY OF TERMS

15. Projected Unit Credit Cost Method

A method under which the Actuarial Liability is calculated as the Actuarial Present Value of the Projected Benefits allocated to periods prior to the valuation year.

16. Unfunded Actuarial Liability

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