



# **Consolidated Police and Firemen's Pension Fund of New Jersey**

## **Actuarial Valuation Report as of July 1, 2019**

**Produced by Cheiron**

**April 2020**

## TABLE OF CONTENTS

<i>Section</i>		<i>Page</i>
Letter of Transmittal .....		i
Section I	Board Summary .....	1
Section II	Identification and Assessment of Risk.....	7
Section III	Assets .....	8
Section IV	Liabilities .....	13
Section V	Contributions.....	17
 <i>Appendices</i>		
Appendix A	Membership Information.....	18
Appendix B	Summary of Actuarial Assumptions and Methods.....	21
Appendix C	Summary of Plan Provisions .....	24
Appendix D	Historical Data and Required CAFR Exhibits .....	27
Appendix E	Glossary of Terms.....	30

***LETTER OF TRANSMITTAL***

April 23, 2020

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, 2019 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 2021. 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 and methods are based on the draft 2019 Experience Study dated October 23, 2019 and approved by the Division of Pensions and Benefits (DPB). The mortality assumption was updated to more closely reflect future expectations for the Fund. 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. The asset method was changed to be equal to the market value of assets.

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 Chipko, FSA, MAAA, EA  
Consulting Actuary

cc: Kenneth Kent, FSA, FCA, MAAA, EA

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 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) 2021.

In this Section we present a summary of the principal valuation results. This includes the basis upon which the July 1, 2019 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, 2019 valuation results are based on the same actuarial methods as used in the July 1, 2018 valuation, with the exception of the Asset Valuation Method. Effective with this valuation, the actuarial value of assets equals the market value of assets.

The June 30, 2019 valuation results are also based on the recommended assumptions shown in the draft 2019 Experience Study dated October 23, 2019 and approved by the DPB.

The valuation excludes assets and liabilities associated with Cost-of-Living Adjustments. The Cost-of-Living Adjustments are separately funded on a pay-as-you-go basis through the Pension Adjustment Fund, which was established pursuant to Chapter 143, P.L. 1958.

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, 2019 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.

<b>Table I-1</b>				
<b>Consolidated Police and Firemen's Pension Fund</b>				
<b>Summary of Key Valuation Results</b>				
<b>Valuation Date</b>	<b>July 1, 2019</b>	<b>July 1, 2018</b>	<b>%</b>	
<b>Fiscal Year Ending (FYE)</b>	<b>2021</b>	<b>2020</b>	<b>Change</b>	
<b><u>Member Data</u></b>				
Actives	0	0	N/A	
Deferred Vested Members	0	0	N/A	
Retirees and Beneficiaries	52	62	-16.1%	
Total Members	52	62	-16.1%	
Annual Basic Retirement Allowances	\$ 387,038	\$ 444,078	-12.8%	
<b><u>Assets and Liabilities</u></b>				
Actuarial Liability	\$ 1,628,242	\$ 2,186,581	-25.5%	
Actuarial Value of Assets (AVA) <sup>1</sup>	1,387,550	2,313,665	-40.0%	
Unfunded Actuarial Liability/(Surplus)	\$ 240,692	\$ (127,084)	-289.4%	
Funded Ratio (AVA)	85.2%	105.8%	-20.6%	
Market Value of Assets (MVA) <sup>1</sup>	\$ 1,387,550	\$ 1,763,463	-21.3%	
Unfunded Actuarial Liability/(Surplus)	\$ 240,692	\$ 423,118	-43.1%	
Funded Ratio (MVA)	85.2%	80.6%	4.6%	
<b><u>Contribution Amounts</u></b>				
Total Statutory Contribution for FYE	\$ 245,506	\$ 0	N/A	

<sup>1</sup> Includes discounted State appropriations receivable

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**SECTION I – BOARD SUMMARY**

The key results of the July 1, 2019 actuarial valuation are as follows:

- The Statutory contribution increased from zero in FYE 2020 to \$246 thousand for the FYE 2021.
- The funded ratio, the ratio of actuarial asset value over liabilities, decreased from 105.8% as of July 1, 2018 to 85.2% as of July 1, 2019. The funded ratio decreased primarily due to the change in the asset valuation method from a smoothed asset value to the market value. On a market value basis, the funded ratio increased from 80.6% to 85.2%.
- The surplus of \$127 thousand as of July 1, 2018 became an unfunded liability of \$241 thousand as of July 1, 2019 on an actuarial value of assets basis.
- The actuarial value of assets was changed to equal the market value of assets as of July 1, 2019, which decreased the surplus by \$454 thousand.
- There was a total actuarial experience loss of \$81 thousand, consisting of an asset loss of \$113 thousand offset by a liability gain of \$32 thousand.
- The updated mortality assumption decreased the actuarial liability by \$165 thousand.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

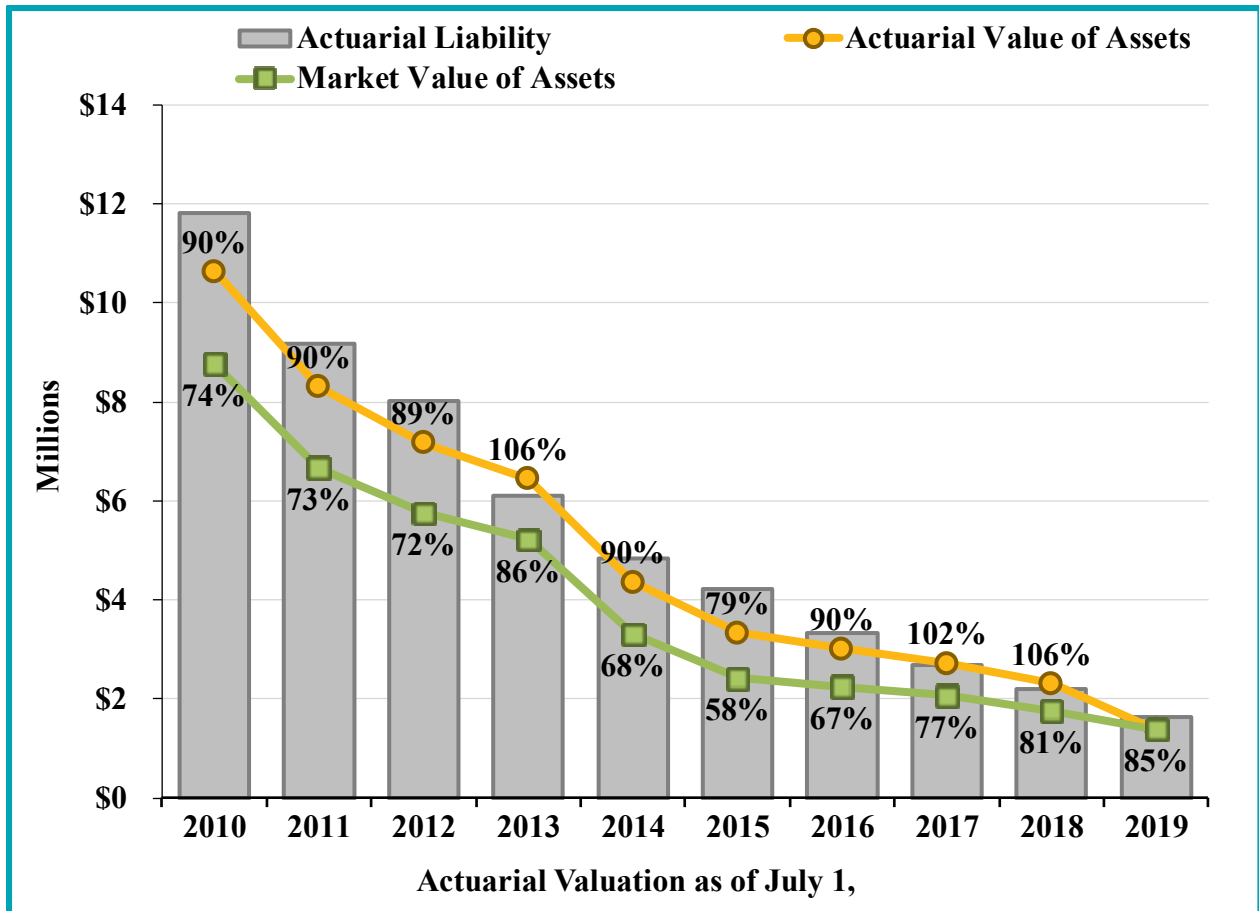
**SECTION I – BOARD SUMMARY**

**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 charts 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 Plan's funded ratio (ratio of assets to liabilities) is shown next to the lines. The assets and liabilities have been decreasing over the period. This is to be expected since the Fund only has retirees and beneficiaries. Effective with the July 1, 2019 valuation, the AVA is set equal to the MVA.



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.

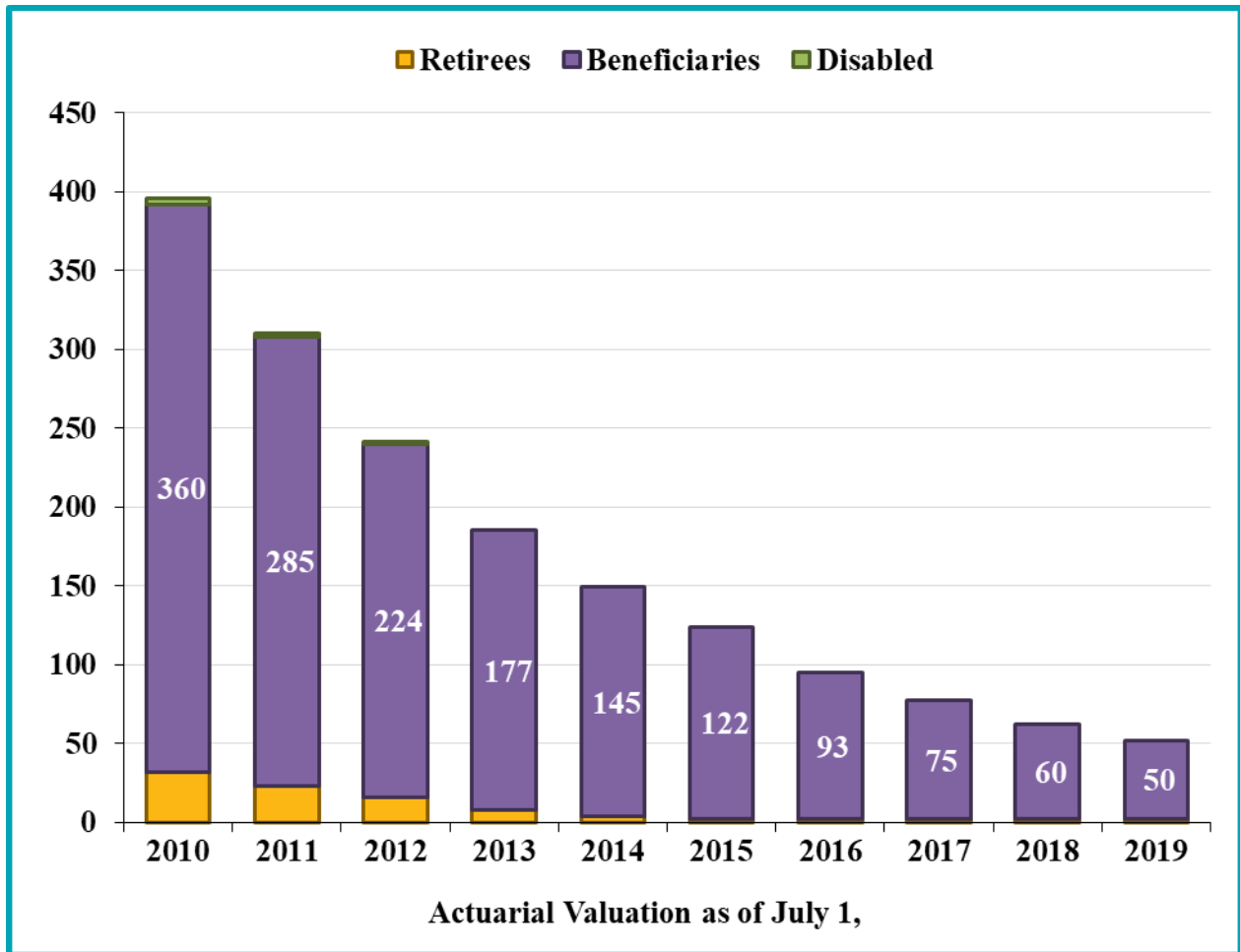


CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION

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 2019 there were 2 retirees and 50 beneficiaries.



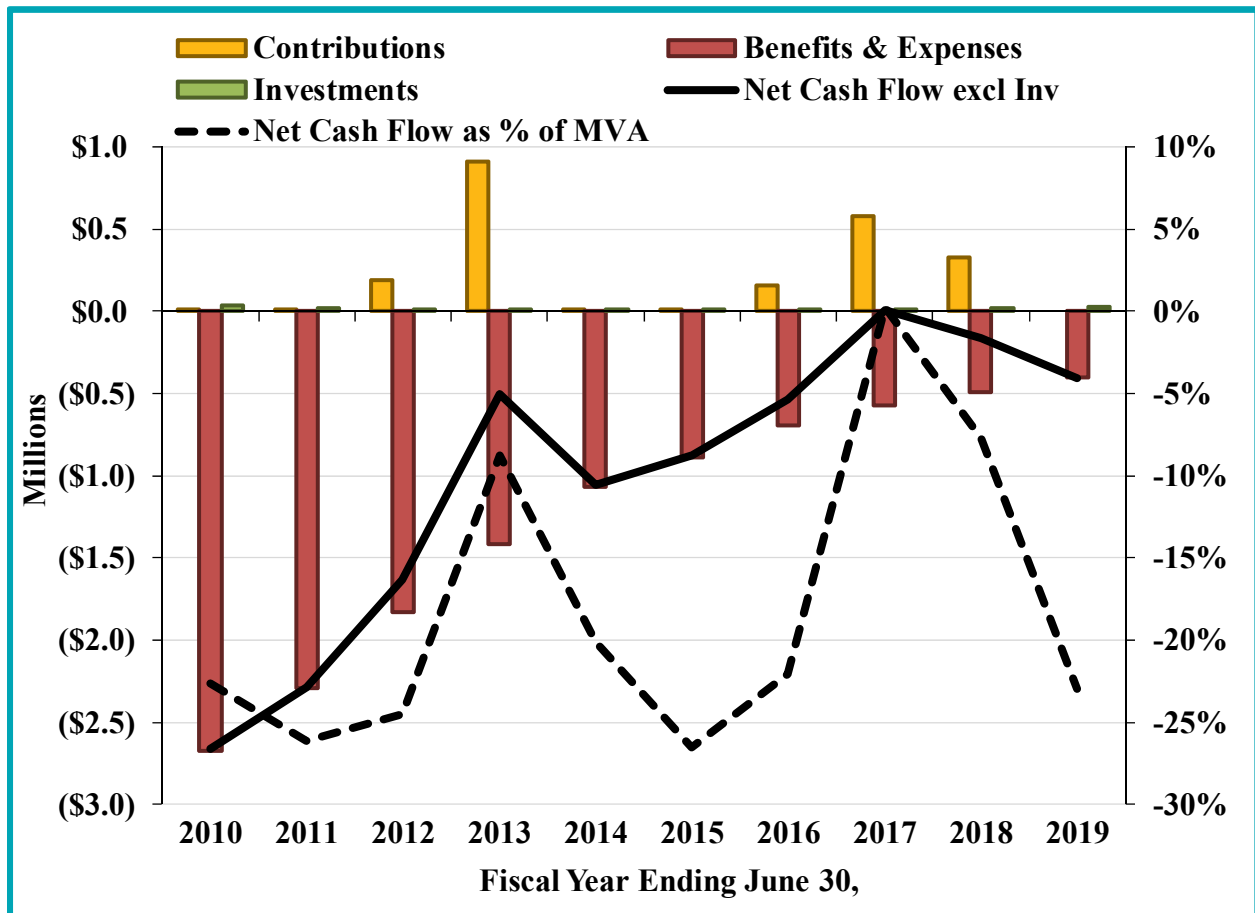
**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**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. For the entire period shown, the net cash flow excluding investments has been negative. This is an expected result of a wasting trust dedicated to pay out 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.



**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**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 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  
JULY 1, 2019 ACTUARIAL VALUATION**

**SECTION III – ASSETS**

Historically, the Fund used and disclosed two different asset measurements for funding, which were presented in this section of the report: market value and actuarial value of assets. The market value represents the value of the assets if they were liquidated on the valuation date. Prior to July 1, 2019, the actuarial value of assets was a value that recognized 20% of the difference between the market value of assets and the expected actuarial value of assets each year. This method smoothed annual investment returns to reduce investment volatility and was used in determining contribution levels. Because the Fund assets consist solely of cash equivalents with little volatility, effective with the July 1, 2019 valuation, the actuarial value of assets was changed to equal the market value of assets.

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

- Disclosure of assets at June 30, 2018 and June 30, 2019,
- Statement of cash flows during the year,
- Development of the actuarial value of assets, 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, 2018 and June 30, 2019. Table III-2 presents the Fund's net cash flows from June 30, 2018 to June 30, 2019. Table III-3 presents the development of the Actuarial Value of Assets as of July 1, 2019. Table III-4 shows the historical asset returns for the Fund for the past ten years.

Effective July 1, 2019, the actuarial value of assets is equal to the market value of assets.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**SECTION III – ASSETS**

**Table III-1  
Statement of Assets at Market Value**

	June 30, 2019	June 30, 2018
<b>Assets</b>		
Cash	\$ 10,992	\$ 134,113
Cash Management Fund	1,287,986	1,552,981
Accrued Interest on Investments	71	55
Administrative Expenses Receivable	7,452	5,142
Employers' Contributions Receivable - Pension Adjustment	49,816	60,025
Other Accounts Receivable	124,675	140,616
<b>Total Assets</b>	<b>\$ 1,480,992</b>	<b>\$ 1,892,932</b>
<b>Liabilities</b>		
Pension Payroll Payable	\$ (34,141)	\$ (41,641)
Pension Adjustment Payroll Payable	(54,838)	(79,306)
Withholdings Payable	(4,463)	(7,046)
Administrative Expense Payable	0	(362)
Other Accounts Payable	0	(1,114)
<b>Total Liabilities</b>	<b>\$ (93,442)</b>	<b>\$ (129,469)</b>
<b>Preliminary Market Value of Assets</b>	<b>\$ 1,387,550</b>	<b>\$ 1,763,463</b>
Discounted State Appropriations Receivable	0	0
<b>Market Value of Assets</b>	<b>\$ 1,387,550</b>	<b>\$ 1,763,463</b>

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**SECTION III – ASSETS**

**Fund Cash Flows from June 30, 2018 to June 30, 2019**

<b>Table III-2</b>	
<b>Changes in Market Values for FYE June 30, 2019</b>	
<b>Additions</b>	
Contributions	
State Appropriations	\$ 0
Pension Adjustment	631,757
Administrative Revenue - Local	3,944
Net Investment Income	24,574
Total Additions	<u>\$ 660,275</u>
<b>Deductions</b>	
Retirement Allowances	\$ 401,418
Benefit Expense - Pension Adjustment	631,757
Miscellaneous Expense	0
Administrative Expense	3,013
Total Deductions	<u>\$ 1,036,188</u>
<b>Net Increase/(Decrease)</b>	<b>\$ (375,913)</b>
Preliminary Market Value of Assets Beginning of Year	\$ 1,763,463
<b>Preliminary Market Value of Assets End of Year</b>	<b>\$ 1,387,550</b>
Discounted State Appropriations Receivable	0
<b>Market Value of Assets End of Year</b>	<b>\$ 1,387,550</b>
<b>Approximate Return</b>	<b>1.57%</b>

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**SECTION III – ASSETS**

**Actuarial Value of Assets**

To determine on-going funding requirements, most pension systems utilize an actuarial value of assets that differs from the market value of assets. The actuarial value of assets represents an asset value based on averaging or smoothing year-to-year market value returns for purposes of reducing contribution volatility. Each year, 20% of the difference between the market value of assets and the expected actuarial value of assets is added to the expected actuarial value of assets. Because the Fund assets consist solely of cash equivalents with little volatility, effective with the July 1, 2019 valuation, the actuarial value of assets was set equal to the market value of assets. The table below shows the preliminary actuarial value of assets and the impact of setting the MVA to AVA.

<b>Table III-3 Development of Actuarial Value of Assets for July 1, 2019</b>		
1. Preliminary Actuarial Value of Assets as of 7/1/2018 <sup>1</sup>	\$	2,313,665
2. Net Cash Flow excluding Investment Income	\$	(400,487)
3. Expected Investment Income <sup>2</sup>	\$	42,288
4. Expected Actuarial Value of Assets as of 7/1/2019: (1+2+3)	\$	1,955,466
5. Preliminary Market Value as of 6/30/2019	\$	1,387,550
6. 20% of Difference from MVA = (5-4) x 0.2	\$	(113,583)
7. Preliminary Actuarial Value of Assets as of 7/1/2019: (4+6)	\$	1,841,883
8. Final Actuarial Value of Assets as of 7/1/2019	\$	1,387,550
9. Change in Asset Valuation Method: (8-7) <sup>3</sup>	\$	(454,333)

<sup>1</sup> Excludes discounted State appropriations receivable

<sup>2</sup> Refer to Appendix B, Actuarial Methods, for details on the assumed timing of contributions

<sup>3</sup> The Asset Valuation Method was reset as of July 1, 2019

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**SECTION III – ASSETS**

**Investment Performance**

The market value of assets rate of return was 1.57% for the year ending June 30, 2019. This is compared to an assumed return of 2.00% for the same period. Table III-4 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.

<b>Table III-4 Annual Rates of Return</b>			
<b>Year Ended June 30</b>	<b>Investment Return Assumption</b>	<b>Market Value</b>	<b>Actuarial Value</b>
2010	2.00%		-1.84%
2011	2.00%		-2.31%
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



**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**SECTION IV – LIABILITIES**

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

- Disclosure of the liabilities at July 1, 2018 and July 1, 2019, 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 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 is paid by the Pension Adjustment Fund, which was established pursuant to Chapter 143, P.L. 1958. Chapter 78, P.L. 2011 suspended cost-of-living increases for current and future retirees and beneficiaries until reactivated as permitted by law. Because any cost-of-living increases are paid by the Pension Adjustment Fund, they are not included in the actuarial liability.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**SECTION IV – LIABILITIES**

Table IV-1 shows the actuarial liability, funded ratio, and unfunded actuarial liability as of July 1, 2019, and July 1, 2018 for the Fund.

<b>Table IV-1 Actuarial Liabilities</b>		
	<b>July 1, 2019</b>	<b>July 1, 2018</b>
<b>Actuarial Liability</b>		
Actives	\$ 0	\$ 0
Deferred Vested	0	0
Retirees	150,190	169,209
Disabled	0	0
Beneficiaries	1,478,052	2,017,372
<b>Total</b>	<b>\$ 1,628,242</b>	<b>\$ 2,186,581</b>
Actuarial Value of Assets	\$ 1,387,550	\$ 2,313,665
Unfunded Actuarial Liability/(Surplus)	\$ 240,692	\$ (127,084)
Funded Ratio	85.2%	105.8%

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**SECTION IV – LIABILITIES**

Table IV-2 presents the change in the actuarial liabilities, 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.

<b>Table IV-2</b>			
<b>Development of 2018 Experience (Gain)/Loss</b>			
	<b>Actuarial Liability</b>	<b>Actuarial Value of Assets</b>	<b>Unfunded Actuarial Liability</b>
1. Value as of July 1, 2018	\$ 2,186,581	\$ (2,313,665)	\$ (127,084)
2. Additions			
a.) Normal Cost	\$ 0	\$ 0	\$ 0
b.) Statutory State Contributions	0	0	0
c.) Exp. Member Contributions	0	0	0
3. Decreases			
a.) Benefit Payments	\$ (401,418)	\$ 401,418	\$ 0
b.) Exp. Admin. Expenses	0	0	0
4. Expected Interest	\$ 39,737	\$ (42,279)	\$ (2,542)
5. Expected Value as of July 1, 2019: (1+2+3+4)	\$ 1,824,900	\$ (1,954,526)	\$ (129,626)
6. Impact of:			
a.) Appropriation Adjustment	\$ 0	\$ 0	\$ 0
b.) Contribution Timing	0	0	0
c.) Actual Member Contributions	0	0	0
d.) Change in Methods/Assumptions	(164,897)	454,333	289,436
e.) Change in Benefits	0	0	0
7. Expected Value after Changes: (5+6)	\$ 1,660,003	\$ (1,500,193)	\$ 159,810
8. Actual Value as of July 1, 2019	\$ 1,628,242	\$ (1,387,550)	\$ 240,692
9. Actuarial (Gain)/Loss: (8-7)	\$ (31,761)	\$ 112,643	\$ 80,882

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**SECTION IV – LIABILITIES**

Table IV-3 shows the components of the Actuarial (gain)/loss for the Fund as of July 1, 2019.

<b>Table IV-3 Actuarial (Gain)/Loss Analysis</b>				
<b>Components</b>	<b>July 1, 2019</b>		<b>July 1, 2018</b>	
<b>Actuarial Value of Assets</b>				
Investment Return	\$	113,583	\$	137,551
Administrative Expenses		(940)		(185)
<b>Total</b>	<b>\$</b>	<b>112,643</b>	<b>\$</b>	<b>137,366</b>
<b>Actuarial Liability</b>				
Inactive Demographic Experience	\$	(31,761)	\$	(63,930)
<b>Actuarial (Gain)/Loss</b>	<b>\$</b>	<b>80,882</b>	<b>\$</b>	<b>73,436</b>

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**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.

<b>Table V-1 Development of Statutory Pension Contribution</b>		
<b>Valuation Date Fiscal Year Ending</b>	<b>July 1, 2019 2021</b>	<b>July 1, 2018 2020</b>
1. Actuarial Liability	\$ 1,628,242	\$ 2,186,581
2. Actuarial Value of Assets	1,387,550	2,313,665
3. Unfunded Actuarial Liability: (1-2)	\$ 240,692	\$ (127,084)
4. Amortization Period (years)	1	1
5. Total Statutory Pension Contribution as of Beginning of Fiscal Year	\$ 245,506	\$ 0

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 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, 2019. 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  
JULY 1, 2019 ACTUARIAL VALUATION**

**APPENDIX A – MEMBERSHIP INFORMATION**

<b>Table A-1 Counts by Age and Status of Inactive Members As of July 1, 2019</b>			
<b>Attained Age</b>	<b>Status</b>		<b>Total</b>
	<b>Retiree</b>	<b>Beneficiary</b>	
Under 45	0	0	0
45-49	0	0	0
50-54	0	0	0
55-59	0	0	0
60-64	0	1	1
65-69	0	0	0
70-74	0	3	3
75-79	0	3	3
80-84	0	4	4
85 & Over	2	39	41
<b>Total</b>	<b>2</b>	<b>50</b>	<b>52</b>

<b>Table A-2 Annual Basic Retirement Allowances by Age and Status of Inactive Members As of July 1, 2019</b>			
<b>Attained Age</b>	<b>Status</b>		<b>Total</b>
	<b>Retiree</b>	<b>Beneficiary</b>	
Under 45	\$ 0	\$ 0	\$ 0
45-49	0	0	0
50-54	0	0	0
55-59	0	0	0
60-64	0	3,575	3,575
65-69	0	0	0
70-74	0	7,970	7,970
75-79	0	6,241	6,241
80-84	0	10,745	10,745
85 & Over	43,143	315,364	358,507
<b>Total</b>	<b>\$ 43,143</b>	<b>\$ 343,895</b>	<b>\$ 387,038</b>

CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION

APPENDIX A – MEMBERSHIP INFORMATION

	Retired	Beneficiaries	Total
1. July 1, 2018	2	60	62
2. Reductions			
a. Died without beneficiary		(10)	(10)
3. Changes in Status			
a. Died with beneficiary			0
4. July 1, 2019	2	50	52



CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 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.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**APPENDIX B – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS**

**6. Changes in Actuarial  
Assumptions since Last  
Valuation**

The mortality assumptions were updated to use the Pub-2010 mortality tables and Scale MP-2018. For a detailed description of each of the assumptions before and after the changes reflected in this valuation, please reference the Experience Study.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 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.

**2. Asset Valuation Method**

Assets are valued at book value, which is equivalent to market value.

**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. Changes in Actuarial Methods Since Last Valuation**

The Asset Valuation Method was changed from a smoothed value to market value.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**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, 2019 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.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**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  
JULY 1, 2019 ACTUARIAL VALUATION**

**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 is 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.

**11. Changes in Plan Provisions Since Last Valuation**

No changes.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**APPENDIX D – HISTORICAL DATA AND REQUIRED CAFR EXHIBITS**

<b>Table D-1 Historical Summary of Assets and Liabilities</b>						
<b>Valuation Date July 1,</b>	<b>Market Value of Assets</b>	<b>Actuarial Value of Assets</b>	<b>Actuarial Liability</b>	<b>Funded Ratio</b>		
				<b>Market Value</b>	<b>Actuarial Value</b>	
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%	
2011	6,665,469	8,300,684	9,179,981	72.61%	90.42%	
2010	8,760,735	10,632,228	11,824,904	74.09%	89.91%	

<b>Table D-2 Historical Summary of State Appropriations</b>				
<b>Fiscal Year Ending June 30,</b>	<b>Actuarially Determined Contribution</b>	<b>Actual Pension Contributions</b>	<b>Contribution Deficiency (Excess)</b>	<b>Percentage of Contribution Covered</b>
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%
2012	1,216,530	174,000	1,042,530	14.30%
2011	147,067	0	147,067	0.00%

Actual pension contributions are based on the State's anticipated appropriation percent of the Statutory Contribution for each year.

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  
JULY 1, 2019 ACTUARIAL VALUATION**

**APPENDIX D – HISTORICAL DATA AND REQUIRED CAFR EXHIBITS**

In accordance with the Government Finance Officers Association (GFOA) and their recommended checklist for Comprehensive Annual Financial Reports (CAFRs), 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 Rolls**

Valuation Date July 1,	Added to Rolls		Removed from Rolls		Rolls at End of Year		Average Annual Allowance	% Increase/ (Decrease) in Average Annual Allowance
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance		
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%
2011	1	6,861	87	572,894	310	2,149,554	6,934	1.11%
2010	0	0	50	356,230	396	2,715,587	6,858	(0.42%)

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

Valuation Date July 1,	Actuarial Value of Assets <sup>1</sup> (a)	Actuarial Accrued Liability (b)	(Surplus)/Unfunded Actuarial		Funded Ratio (a) / (b)	Covered Payroll (d)	(Surplus)/Unfunded Actuarial Accrued Liability as % of Covered Payroll (c) / (d)
			Accrued Liability (c) = (b) - (a)	Actuarial			
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
2011	8,300,684	9,179,981	879,297		90.42%	0	N/A
2010	10,632,228	11,824,904	1,192,676		89.91%	0	N/A

<sup>1</sup>Includes receivable amounts.



**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY  
JULY 1, 2019 ACTUARIAL VALUATION**

**APPENDIX D – HISTORICAL DATA AND REQUIRED CAFR EXHIBITS**

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

Valuation Date	Actuarial Accrued Liability for				Actuarial Value of Assets <sup>1</sup>	Portion of Actuarial Accrued Liabilities Covered by Actuarial Value of Assets		
	Contributing & Non-Contributing Active Member Contributions (1)	Retirees, Beneficiaries & Deferred Vested (2)	Contributing & Non-Contributing Active Member Benefits Financed by Employer (3)			(1)	(2)	(3)
July 1, 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	
2011	0	9,179,981	0	8,300,684	N/A	90.42%	N/A	
2010	0	11,824,904	0	10,632,228	N/A	89.91%	N/A	

<sup>1</sup>Includes receivable amounts.

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

Valuation Date	Actuarial Value Of Assets Investment (Gain)/Loss	Actuarial Accrued Liability (Gain)/Loss	Assumption & Method Changes	Plan Changes	Contributions <sup>1</sup>	Change in Unfunded Actuarial Accrued Liability
July 1, 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)
2011	408,804	(572,247)	0	0	(149,936)	(313,379)
2010	467,873	206,204	0	0	374,416	1,048,493

<sup>1</sup>Change 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  
JULY 1, 2019 ACTUARIAL VALUATION**

**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:

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

**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  
JULY 1, 2019 ACTUARIAL VALUATION**

**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.