

Consolidated Police and Firemen's Pension Fund of New Jersey

Actuarial Valuation Report as of July 1, 2018

Produced by Cheiron

April 2019

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LETTER OF TRANSMITTAL

April 24, 2019

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, NJ 08625-0295

Dear Board Members:

At your request, we have performed the July 1, 2018 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 2020. 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 the same as those used by the prior actuary. Cheiron has reviewed the assumptions. While we consider these assumptions to be generally reasonable, we have not yet performed our own actuarial experience study.

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
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Jonathan Chipko, FSA, FCA, MAAA, EA
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**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
JULY 1, 2018 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) 2020.

In this Section we present a summary of the principal valuation results. This includes the basis upon which the July 1, 2018 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, 2018 valuation results are based on the same actuarial methods and assumptions as used in the July 1, 2017 valuation produced by the prior actuary. Cheiron has reviewed the assumptions. While we consider these assumptions to be generally reasonable, we have not yet performed our own actuarial experience study.

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, 2018 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

Key Results

Following is Table I-1 which 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, 2018	July 1, 2017	%	
Fiscal Year Ending (FYE)	2020	2019	Change	
<u>Member Data</u>				
Actives	0	0	N/A	
Deferred Vested Members	0	0	N/A	
Retirees and Beneficiaries	62	77	-19.5%	
Total Members	62	77	-19.5%	
Annual Retirement Allowances	\$ 444,078	\$ 540,530	-17.8%	
<u>Assets and Liabilities</u>				
Actuarial Liability	\$ 2,186,581	\$ 2,674,728	-18.3%	
Actuarial Value of Assets (AVA) ¹	2,313,665	2,721,368	-15.0%	
Unfunded Actuarial Liability/(Surplus)	\$ (127,084)	\$ (46,640)	172.5%	
Funded Ratio (AVA)	105.8%	101.7%	4.1%	
Market Value of Assets (MVA) ¹	\$ 1,763,463	\$ 2,065,094	-14.6%	
Unfunded Actuarial Liability/(Surplus)	\$ 423,118	\$ 609,634	-30.6%	
Funded Ratio (MVA)	80.6%	77.2%	3.4%	
<u>Contribution Amounts</u>				
State Contribution	\$ 0	\$ 0	N/A	

¹ Includes discounted State appropriations receivable

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
JULY 1, 2018 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

The key results of the July 1, 2018 actuarial valuation are as follows:

- There is no contribution due for the fiscal year ending 2020.
- The surplus increased from \$47 thousand as of July 1, 2017 to \$127 thousand as of July 1, 2018 on an actuarial value of assets basis.
- On a market value basis, there is a net unfunded actuarial liability. The unfunded actuarial liability decreased from \$610 thousand as of July 1, 2017 to \$423 thousand as of July 1, 2018 on a market value of assets basis.
- The funded ratio, the ratio of actuarial asset value over liabilities, increased from 101.7% as of July 1, 2017 to 105.8% as of July 1, 2018.
- During the year, there was a total actuarial experience loss of \$73 thousand, consisting of an asset loss of \$137 thousand offset by a liability gain of \$64 thousand.

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
JULY 1, 2018 ACTUARIAL VALUATION**

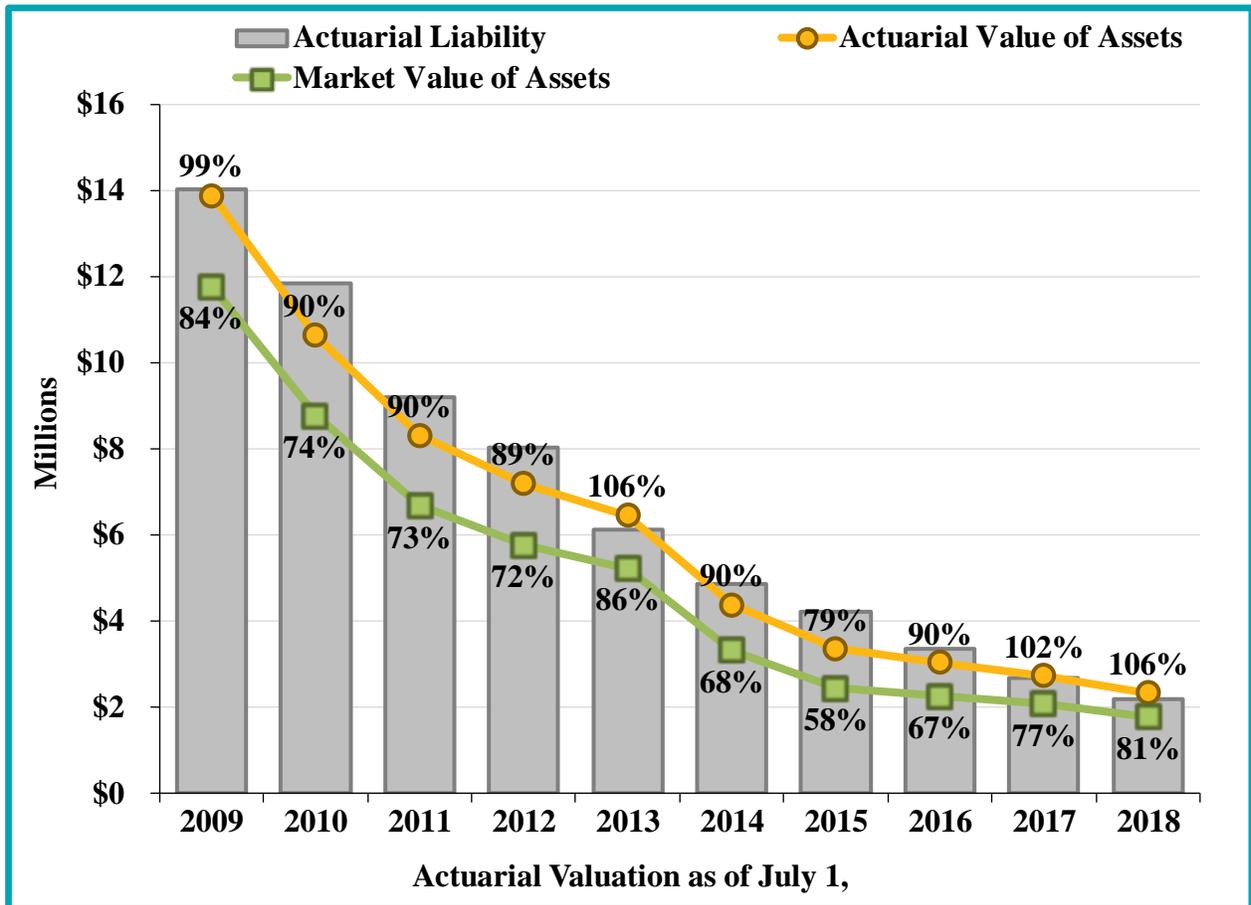
SECTION I – BOARD SUMMARY

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 grey 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.



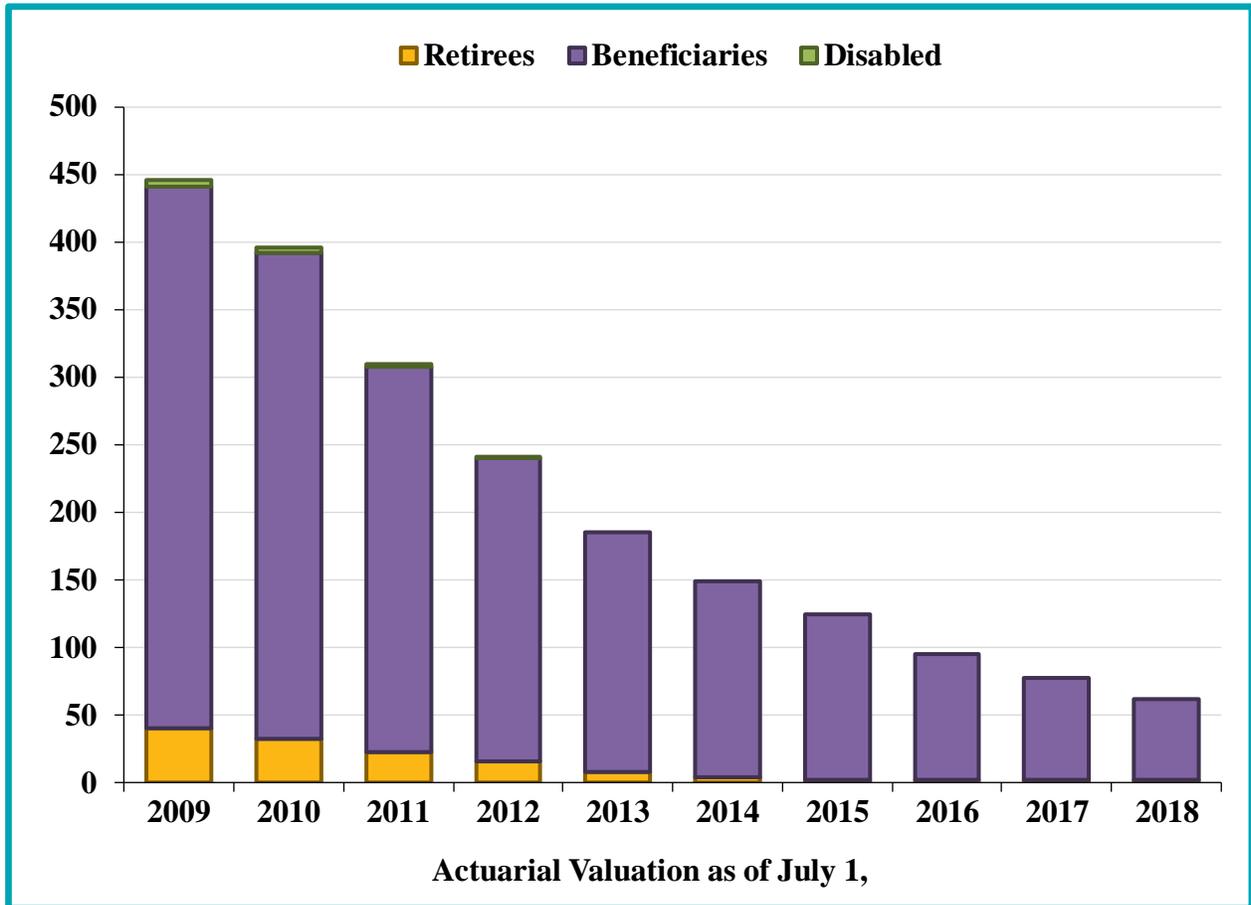
The information above is based on the final actuarial valuation reports for the given years. The amounts do not reflect differences between the discounted State appropriations receivable and the actual State contribution amounts that became known after the issuance of the reports.

CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
JULY 1, 2018 ACTUARIAL VALUATION

SECTION I – BOARD SUMMARY

Membership Trends

The graph below shows the membership counts of the Fund for the last ten valuations.

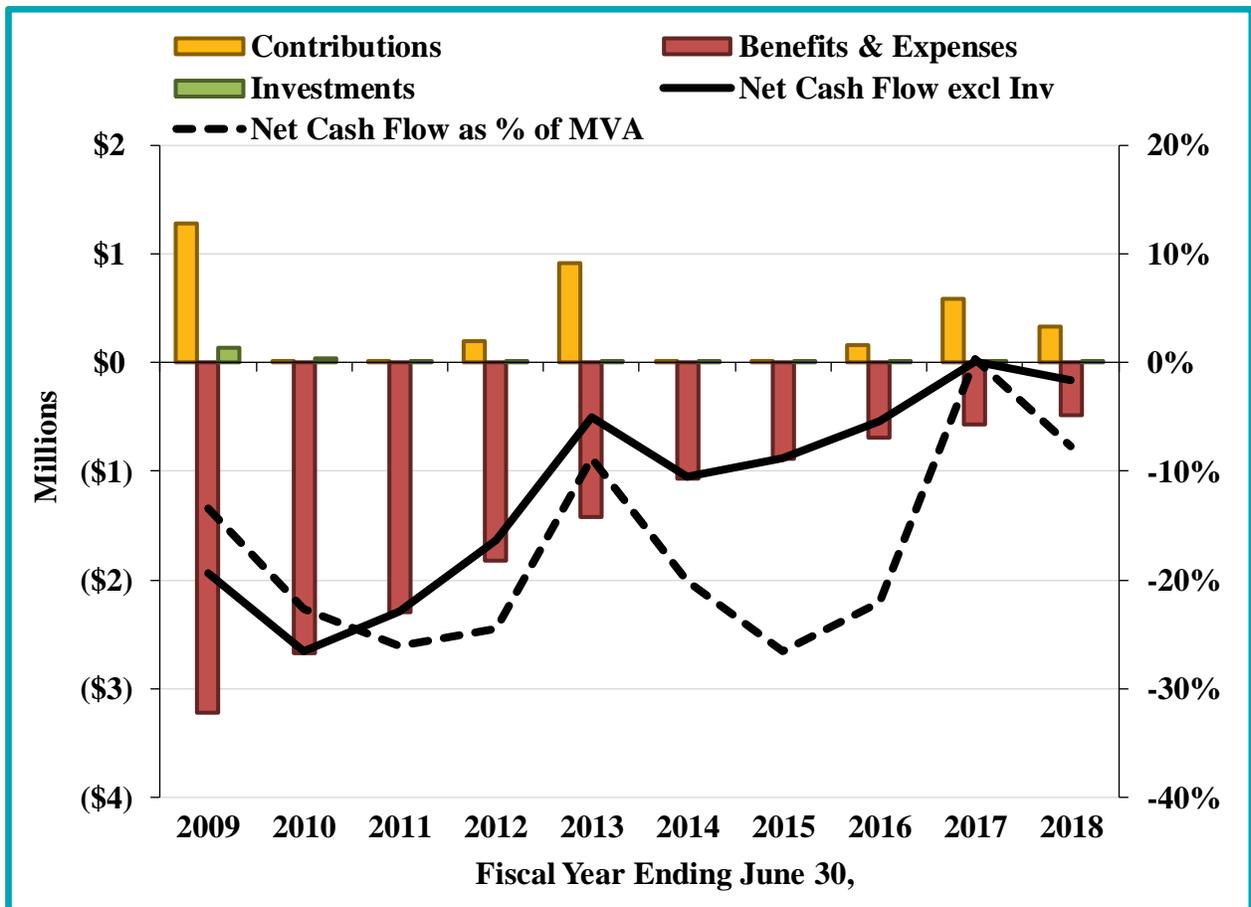


**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
JULY 1, 2018 ACTUARIAL VALUATION**

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 significant surplus of assets over liabilities, this is not the typical risk.



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

The Fund uses and discloses two different asset measurements for funding, which are 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. The actuarial value of assets is a value that smooths annual investment returns to reduce annual investment volatility and is used in determining contribution levels. In compliance with New Jersey Statute, the method used to calculate the actuarial value of assets recognizes 20% of the difference between the market value of assets and the expected actuarial value of assets each year.

Actuarial Standards of Practice (ASOP) No. 44 states that the asset valuation method should produce an actuarial value of assets that falls within a reasonable range of market value, recognizes the difference between the market value and actuarial value of assets within a reasonably short period of time, and is likely to produce actuarial value of assets that are sometimes greater than and sometimes less than the corresponding market values. The asset method required under N. J. Statute does not meet the requirements of ASOP No. 44 since this method has produced actuarial value of assets which have consistently been greater than the market value of assets and recognizes investment losses slowly over time. Additionally, the method may produce an actuarial value of assets that falls outside of a reasonable range of the market value. At July 1, 2018, the actuarial value of assets is 131% of the market value of assets.

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

- Disclosure of assets at June 30, 2017 and June 30, 2018,
- 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. Market values, however, can fluctuate widely with corresponding swings in the value of the investments. Because these fluctuations would cause volatility in employer contributions, an actuarial value of assets is developed. Table II-1 on the following page presents the market value as of June 30, 2017 and June 30, 2018. Table II-2 presents the Fund's net cash flows from June 30, 2017 to June 30, 2018. Table II-3 presents the development of the Actuarial Value of Assets as of July 1, 2018.

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

Table II-1				
Statement of Assets at Market Value				
	June 30, 2018		June 30, 2017	
Assets				
Cash	\$	134,113	\$	177,544
Cash Management Fund		1,552,981		1,638,567
Accrued Interest on Investments		55		26
Administrative Expenses Receivable		5,142		4,854
Employers' Contributions Receivable - Pension Adjustment		60,025		72,370
Other Accounts Receivable		140,616		160,528
Total Assets	\$	1,892,932	\$	2,053,889
Liabilities				
Pension Payroll Payable	\$	(41,641)	\$	(45,467)
Pension Adjustment Payroll Payable		(79,306)		(91,651)
Withholdings Payable		(7,046)		(8,130)
Administrative Expense Payable		(362)		(1,482)
Other Accounts Payable		(1,114)		(2,663)
Total Liabilities	\$	(129,469)	\$	(149,393)
Preliminary Market Value of Assets	\$	1,763,463	\$	1,904,496
Discounted State Appropriations Receivable		0		160,598
Market Value of Assets	\$	1,763,463	\$	2,065,094

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

Fund Cash Flows from June 30, 2017 to June 30, 2018

Table II-2	
Changes in Market Values for FYE June 30, 2018	
Additions	
Contributions	
State Appropriations	\$ 325,000
Pension Adjustment	806,330
Administrative Revenue - Local	4,188
Net Investment Income	17,354
Total Additions	<u>\$ 1,152,872</u>
Deductions	
Retirement Allowances	\$ 483,570
Benefit Expense - Pension Adjustment	806,330
Miscellaneous Expense	61
Administrative Expense	3,944
Total Deductions	<u>\$ 1,293,905</u>
Net Increase/(Decrease)	\$ (141,033)
Preliminary Market Value of Assets Beginning of Year	\$ 1,904,496
Preliminary Market Value of Assets End of Year	\$ 1,763,463
Discounted State Appropriations Receivable	0
Market Value of Assets End of Year	\$ 1,763,463
Approximate Return	0.97%

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION II – 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.

Table II-3 Development of Actuarial Value of Assets for July 1, 2018		
1. Preliminary Actuarial Value of Assets as of 7/1/2017 ¹	\$	2,560,770
2. Net Cash Flow excluding Investment Income	\$	(158,387)
3. Expected Investment Income ²	\$	48,833
4. Expected Actuarial Value of Assets as of 7/1/2018: (1+2+3)	\$	2,451,216
5. Preliminary Market Value as of 6/30/2018	\$	1,763,463
6. 20% of Difference from MVA = (5-4) x 0.2	\$	(137,551)
7. Preliminary Actuarial Value of Assets as of 7/1/2018: (4+6)	\$	2,313,665
8. Discounted State Appropriations Receivable	\$	0
9. Actuarial Value of Assets as of 7/1/2018: (7+8)	\$	2,313,665
10. Rate of Return on Actuarial Value of Assets		-3.64%

¹ Excludes discounted State appropriations receivable

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

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

Investment Performance

The market value of assets rate of return was 0.97% for the year ending June 30, 2018. This is compared to an assumed return of 2.00% for the same period. On an actuarial value of assets basis, the return for FYE 2018 was -3.64%. Table II-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.

Table II-4 Annual Rates of Return			
Year Ended June 30	Investment Return Assumption	Market Value	Actuarial Value
2009	2.00%		-1.78%
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%
10-Year Compound Average		N/A	-3.15%
5-Year Compound Average		N/A	-3.88%

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

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

- Disclosure of the liabilities at July 1, 2017 and July 1, 2018, 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, 2018 ACTUARIAL VALUATION**

SECTION III – LIABILITIES

Table III-1 shows the actuarial liability, funded ratio, and unfunded actuarial liability as of July 1, 2018, and July 1, 2017 for the Fund.

Table III-1 Actuarial Liabilities		
	July 1, 2018	July 1, 2017
Actuarial Liability		
Actives	\$ 0	\$ 0
Deferred Vested	0	0
Retirees	169,209	165,225
Disabled	0	0
Beneficiaries	2,017,372	2,509,503
Total	\$ 2,186,581	\$ 2,674,728
Actuarial Value of Assets	\$ 2,313,665	\$ 2,721,368
Unfunded Actuarial Liability/(Surplus)	\$ (127,084)	\$ (46,640)
Funded Ratio	105.8%	101.7%

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

Table III-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.

Table III-2			
Development of 2018 Experience (Gain)/Loss			
	Actuarial Liability	Actuarial Value of Assets	Unfunded Actuarial Liability
1. Value as of July 1, 2017	\$ 2,674,728	\$ (2,721,368)	\$ (46,640)
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	\$ (483,570)	\$ 483,570	\$ 0
b.) Exp. Admin. Expenses	0	0	0
4. Expected Interest	\$ 48,683	\$ (49,616)	\$ (933)
5. Expected Value as of July 1, 2018: (1+2+3+4)	\$ 2,239,841	\$ (2,287,414)	\$ (47,573)
6. Impact of:			
a.) Appropriation Adjustment	\$ 0	\$ (163,617)	\$ (163,617)
b.) Contribution Timing	0	0	0
c.) Actual Member Contributions	0	0	0
d.) Conversion from Prior Actuary	10,670	0	10,670
e.) Change in Methods/Assumptions	0	0	0
f.) Change in Benefits	0	0	0
7. Expected Value after Changes: (5+6)	\$ 2,250,511	\$ (2,451,031)	\$ (200,520)
8. Actual Value as of July 1, 2018	\$ 2,186,581	\$ (2,313,665)	\$ (127,084)
9. Actuarial (Gain)/Loss: (8-7)	\$ (63,930)	\$ 137,366	\$ 73,436

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

Table III-3 shows the components of the Actuarial (gain)/loss for the Fund as of July 1, 2018.

Table III-3 Actuarial (Gain)/Loss Analysis	
Components	July 1, 2018
Actuarial Value of Assets	
Investment Return	\$ 137,551
Administrative Expenses	(185)
Total	<u>\$ 137,366</u>
Actuarial Liability	
Inactive Demographic Experience	\$ (63,930)
Actuarial (Gain)/Loss	\$ 73,436

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
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SECTION IV - 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. Because the investment rate of return assumption is recommended by the State Treasurer, we are unable to evaluate whether the investment rate of return assumption includes an appropriate adjustment for administrative expenses.

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 July 1, 1988 was amortized over a closed period of 14 years. Without additional guidance, we have assumed that any future unfunded actuarial liability will be amortized over one year.

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

Table IV-1 Development of Statutory Pension Contribution				
Valuation Date Fiscal Year Ending	July 1, 2018 2020		July 1, 2017 2019	
1. Actuarial Liability	\$	2,186,581	\$	2,674,728
2. Actuarial Value of Assets		<u>2,313,665</u>		<u>2,721,368</u>
3. Unfunded Actuarial Liability: (1-2)	\$	(127,084)	\$	(46,640)
4. Amortization Period (years)		1		1
5. Total Statutory Pension Contribution as of Beginning of Fiscal Year	\$	0	\$	0

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

The data for this valuation was provided by the New Jersey Division of Pensions and Benefits as of July 1, 2018. 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, 2018			
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	1	1
65-69	0	0	0
70-74	0	4	4
75-79	0	3	3
80-84	0	6	6
85 & Over	2	46	48
Total	2	60	62

Table A-2			
Annual Retirement Allowances by Age and Status of Inactive Members			
As of July 1, 2018			
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	3,575	3,575
65-69	0	0	0
70-74	0	9,018	9,018
75-79	0	7,409	7,409
80-84	0	30,433	30,433
85 & Over	43,143	350,500	393,643
Total	\$ 43,143	\$ 400,935	\$ 444,078

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

	Retired	Beneficiaries	Total
1. July 1, 2017	2	75	77
2. Reductions			
a. Died without beneficiary		(15)	(15)
3. Changes in Status			
a. Died with beneficiary			0
4. July 1, 2018	2	60	62

**CONSOLIDATED POLICE AND FIREMEN'S PENSION FUND OF NEW JERSEY
JULY 1, 2018 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 | RP-2000 Combined Healthy Mortality Tables projected on a generational basis from the base year of 2000 to 2014 using Projection scale BB as the base tables. Tables are further projected beyond the valuation date using the Conduent Modified 2014 projection scale. |
| 4. Family Composition Assumptions | <p>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).</p> <p>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).</p> <p>Males are assumed to be four years older than females.</p> <p>No assumption was made for children.</p> |
| 5. Rationale for Assumptions | The actuarial assumptions were adopted by the Division of Pensions and Benefits with the demographic assumptions based on recommendations from the prior actuary. Cheiron has reviewed the assumptions. While we consider these assumptions to be generally reasonable, we have not yet performed our own actuarial experience study. |
| 6. Changes in Actuarial Assumptions since Last Valuation | None. |

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

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

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

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

None.

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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.

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.

8. Average Salary

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

APPENDIX C – SUMMARY OF PLAN PROVISIONS

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 $\frac{1}{2}$ of average salary.

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.

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APPENDIX C – SUMMARY OF PLAN PROVISIONS

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.

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APPENDIX D – HISTORICAL DATA

Table D-1 Historical Summary of Assets and Liabilities						
Valuation Date July 1,	Market Value of Assets	Actuarial Value of Assets	Actuarial Liability	Funded Ratio		
				Market Value	Actuarial Value	
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%	
2009	11,749,083	13,879,949	14,024,132	83.78%	98.97%	

Table D-2 Historical Summary of State Appropriations					
Fiscal Year Ending June 30,	Actuarially Determined Contribution	Actual Pension Contributions	Contribution Deficiency (Excess)	Percentage of Contribution Covered	
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%	
2010	364,248	0	364,248	0.00%	

FYE 2019 actual contribution is based on the State's anticipated appropriation of 60% of the Statutory Contribution.

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.

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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:

$$\begin{array}{ccccccc} \text{Amount} & & \text{Probability of} & & \text{1/(1+Investment Return)} & & \\ & & \text{Payment} & & & & \\ \$100 & \times & (1 - .01) & \times & 1/(1+.1) & = & \$90 \end{array}$$

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.

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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.