CHEIRON Classic Values, Innovative Advice

Prison Officers' 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 26, 2019

Board of Trustees
Prison Officers' 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 Prison Officers' Pension Fund of New Jersey (POPF 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 the demographic assumptions to be generally reasonable, we have not yet performed our own actuarial experience study. The assumed investment rate of return of 5.00% appears high compared to recent Fund experience. While we continue to use this prescribed assumption, we recommend the State review this assumption in light of the Fund's asset allocation. Currently, the Fund's assets are all invested in the State of New Jersey Cash Management Fund, which holds only very short-term, high quality fixed income securities, commercial paper, certificates of deposit and money market funds.

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 Prison Officers' 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

Anu Patel, FSA, MAAA, EA
Principal Consulting Actuary

Jonathan Chipko, FSA, FCA, MAAA, EA
Consulting Actuary

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

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 Prison Officers' Pension Fund of New Jersey,
- Past trends and risks to the System's financial condition,
- 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 June 30, 2018 valuation results are based on the same actuarial methods and assumptions as used in the June 30, 2017 valuation produced by the prior actuary. Cheiron has reviewed the assumptions. While we consider the demographic assumptions to be generally reasonable, we have not yet performed our own actuarial experience study. The assumed investment rate of return of 5.00% appears high compared to recent Fund experience. While we continue to use this prescribed assumption, we recommend the State review this assumption and consider the Fund's current asset allocation.

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 1960 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.

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
Prison Officers' Pension Fund
Summary of Key Valuation Results

Valuation Date Fiscal Year Ending (FYE)	July 1, 2018 2020	July 1, 2017 2019	% Change
Member Data			
Actives	0	0	N/A
Deferred Vesteds	0	0	N/A
Retirees and Beneficiaries	71	77	-7.8%
Total Members	71	77	-7.8%
Annual Retirement Allowances	$ 448,650	$ 488,522	-8.2%
Assets and Liabilities			
Actuarial Liability	$ 2,595,221	$ 2,849,732	-8.9%
Market Value of Assets (MVA)	5,223,456	5,620,868	-7.1%
Unfunded Actuarial Liability (UAL)	$ (2,628,235)	$ (2,771,136)	-5.2%
Funded Ratio (MVA)	201.3%	197.2%	4.1%
Contribution Amounts			
State Contribution	$ 0	$ 0	N/A

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

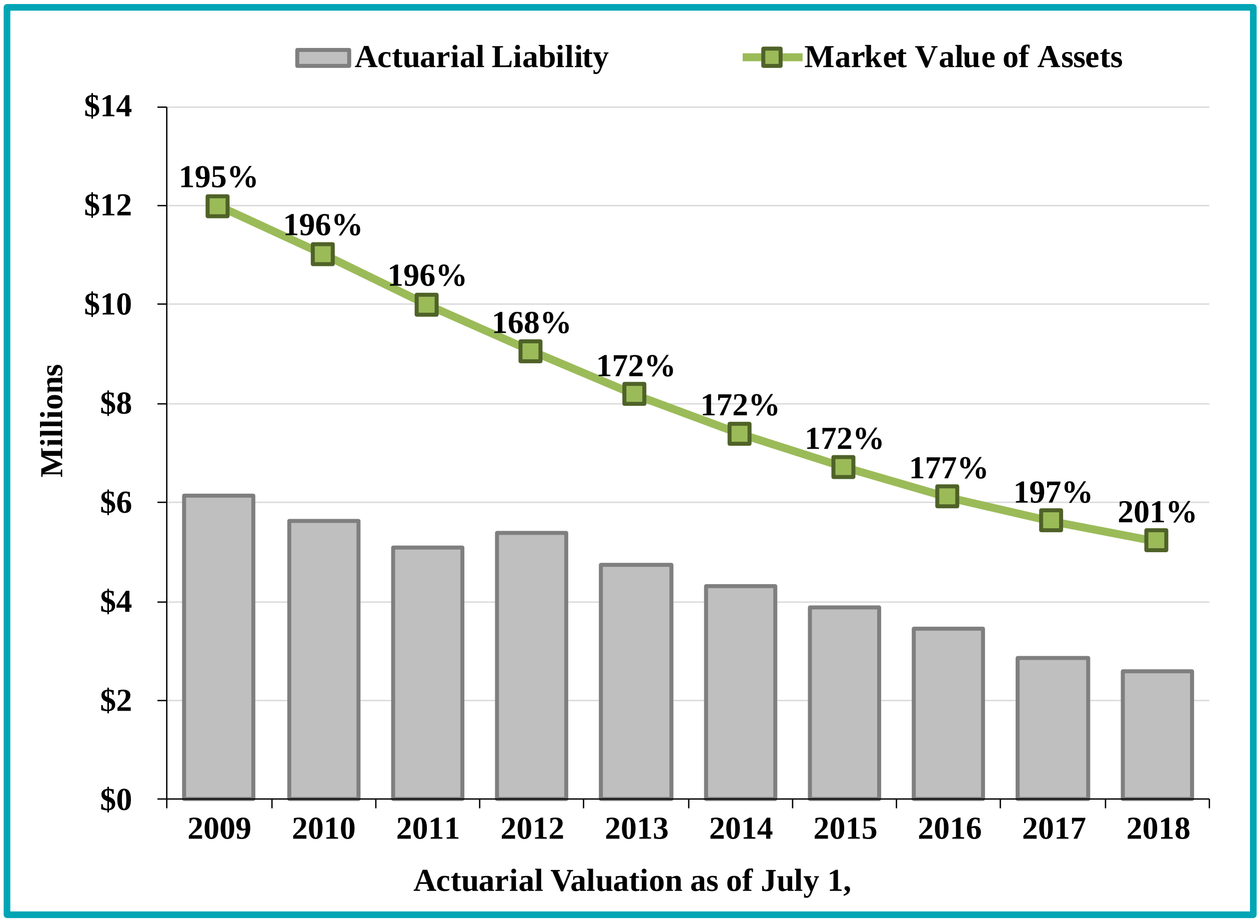
- There is no contribution due for the fiscal year ending 2020.
- The surplus decreased from $2.8 million on July 1, 2017 to $2.6 million on July 1, 2018.
- The Plan's funded ratio, the ratio of actuarial asset value over liabilities, increased from 197.2% as of July 1, 2017 to 201.3% as of July 1, 2018.
- There was a total actuarial experience loss during the year of $282 thousand, consisting of an asset loss of $204 thousand and a liability loss of $78 thousand.

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

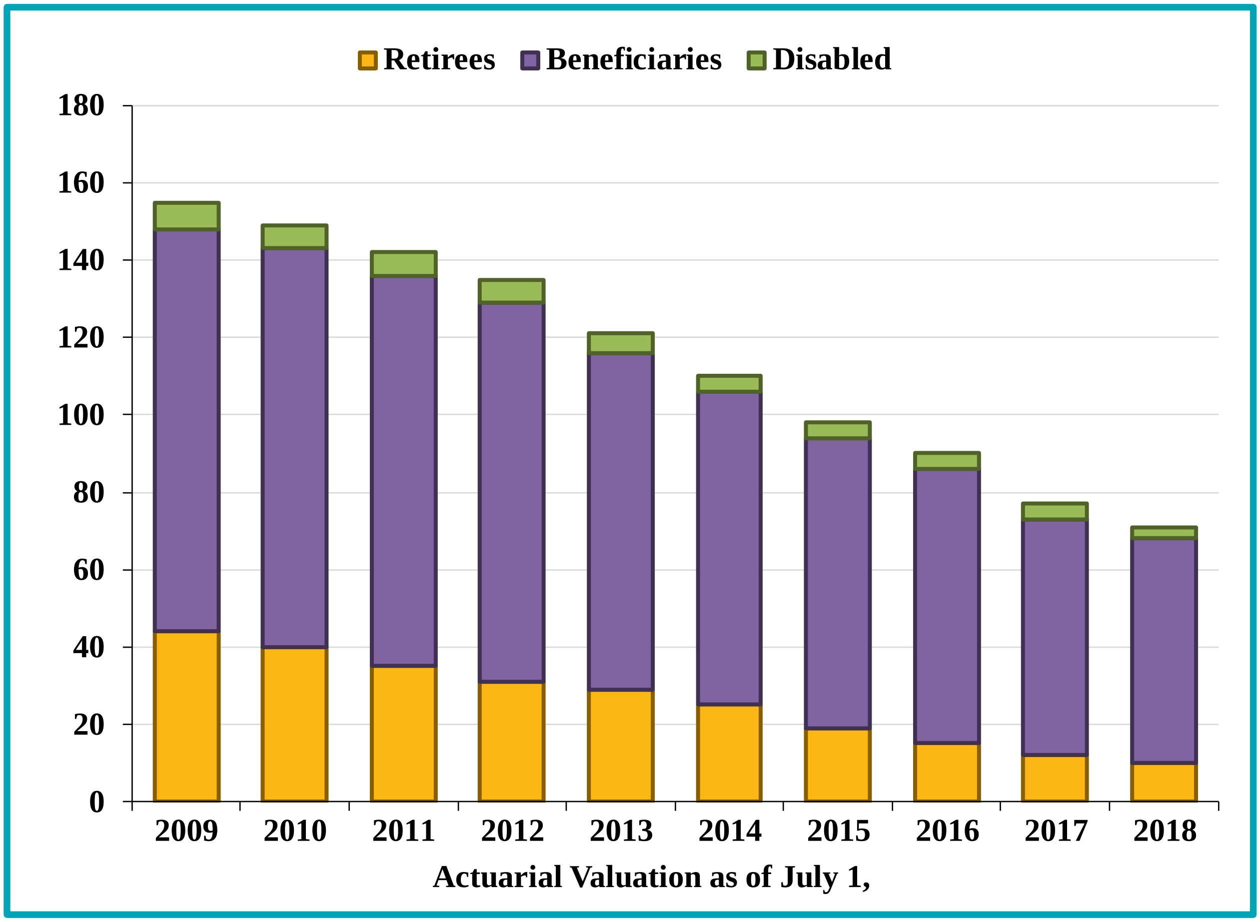
The grey bars represent the Actuarial Liability (AL). The green line is the Market Value of Assets (MVA). The Fund's funded ratio (ratio of MVA to AL) is shown above the green line. The assets and liabilities have been decreasing over the period. This is to be expected since the Fund only has retirees and beneficiaries.



SECTION I – BOARD SUMMARY

Membership Trends

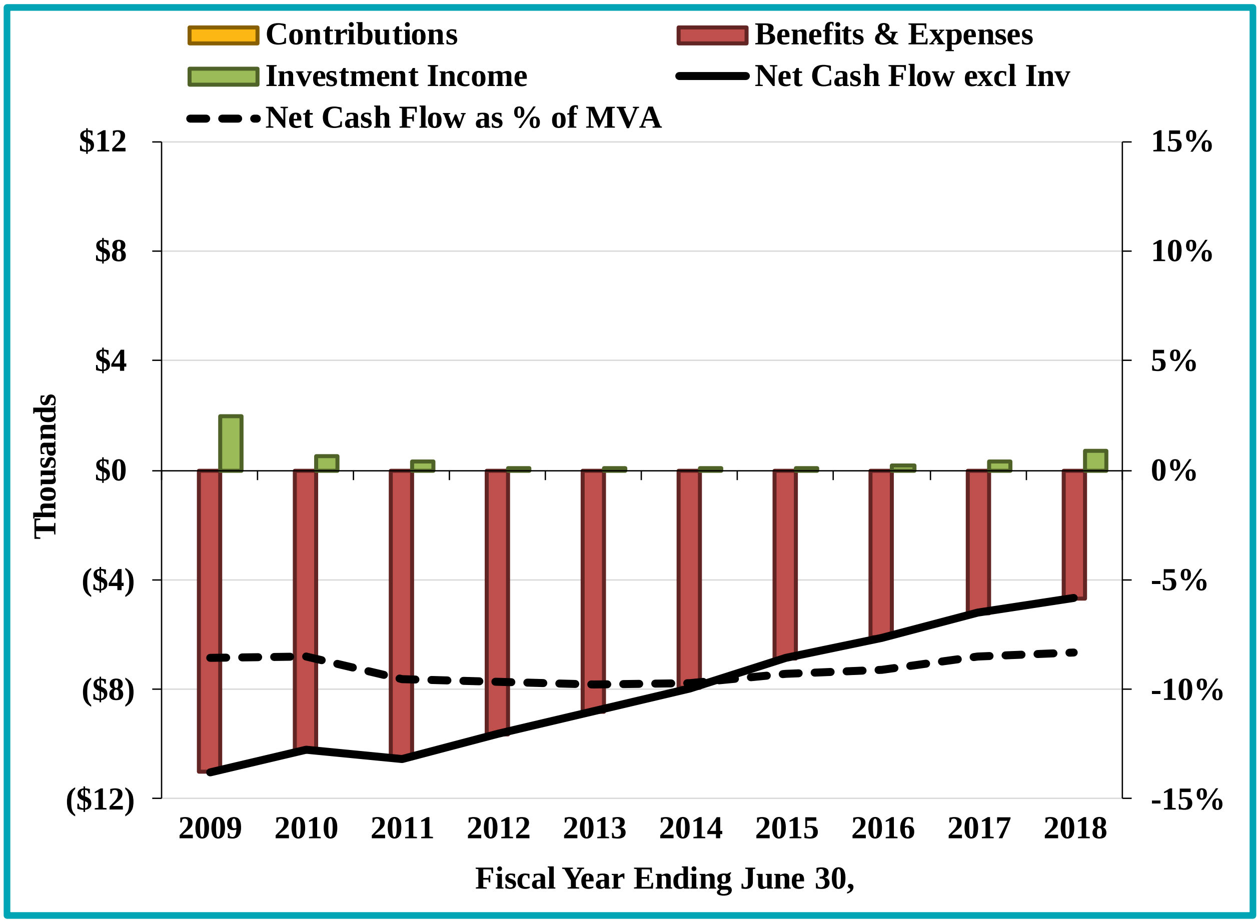
The graph below shows the membership counts of the Fund for the last ten valuations.



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 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.



SECTION II – 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, 2017 and June 30, 2018,
- Statement of cash flows during the year,
- 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 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. For this Fund, the actuarial value of assets is equal to the market value of assets.

SECTION II – ASSETS

Table II-1
Statement of Assets at Market Value

	June 30, 2018	June 30, 2017
Assets		
Cash and Cash Equivalents	$ 228,655	$ 284,097
Investment Holdings	5,075,199	5,417,728
Accrued Interest on Investments	38	17
Accounts Receivable	0	2,507
Total Assets	$ 5,303,892	$ 5,704,349
Liabilities		
Pension Payroll Payable	$ (23,926)	$ (24,475)
Pension Adjustment Payroll Payable	(45,499)	(50,957)
Withholdings Payable	(9,970)	(5,574)
Administrative Expenses Payable	(368)	(1,464)
Accounts Payable - Other	(673)	(1,011)
Total Liabilities	$ (80,436)	$ (83,481)
Preliminary Market Value of Assets	**$ 5,223,456**	**$ 5,620,868**
Discounted State Appropriations Receivable	0	0
Market Value of Assets	**$ 5,223,456**	**$ 5,620,868**

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	$	0
Pension Adjustment		484,565
Net Investment Income		70,215
Total Additions	$	554,780
Deductions		
Retirement Allowances	$	463,312
Benefit Expense - Pension Adjustment		484,565
Miscelleanous Expense - State		314
Administrative Expense		4,001
Total Deductions	$	952,192
Net Increase/(Decrease)	**$**	**(397,412)**
Market Value of Assets Beginning of Year	$	5,620,868
Preliminary Market Value of Assets End of Year	**$**	**5,223,456**
Discounted State Appropriations Receivable		0
Market Value of Assets	**$**	**5,223,456**
Approximate Return		**1.30%**

Actuarial Value of Assets

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

SECTION II – ASSETS

Investment Performance

The market value of assets rate of return was 1.30% for the year ending June 30, 2018. This is compared to an assumed return of 5.00% for the same period. Table II-3 shows the historical market value rates of return. Given the nature of the investments and the historic returns, while we are utilizing the 5.00% assumption that has been historically in place, we recommend consideration of this assumption in the future as we have insufficient information at this time to support this rate as appropriate for this Fund.

Table II-3
Annual Rates of Return

Year Ended June 30	Investment Return Assumption	Market Value
2009	5.00%	1.60%
2010	5.00%	0.47%
2011	5.00%	0.31%
2012	5.00%	0.10%
2013	5.00%	0.11%
2014	5.00%	0.09%
2015	5.00%	0.09%
2016	5.00%	0.28%
2017	5.00%	0.53%
2018	5.00%	1.30%
10-Year Compound Average		**0.49%**
5-Year Compound Average		**0.46%**

SECTION III – 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, 2017,
- The development of the actuarial gain and loss.

Disclosure

The Actuarial Liability is used for determining employer contributions. For POPF, 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.

SECTION III – LIABILITIES

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

Table III-1
Actuarial Liability

	July 1, 2018	July 1, 2017
Actuarial Liability		
Actives	$ 0	$ 0
Deferred Vested	0	0
Retirees	855,694	986,117
Disabled	126,557	182,958
Beneficiaries	1,612,970	1,680,657
Total	**$ 2,595,221**	**$ 2,849,732**
Actuarial Value of Assets	$ 5,223,456	$ 5,620,868
Unfunded Actuarial Liability/(Surplus)	$ (2,628,235)	$ (2,771,136)
Funded Ratio	201.3%	197.2%

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	$ 2,849,732	$ (5,620,868)	$ (2,771,136)
2. Additions			
a.) Normal Cost	$ 0	$ 0	$ 0
b.) Employer Contributions	0	0	0
c.) Exp. Member Contributions	0	0	0
3. Decreases			
a.) Benefit Payments	$ (463,312)	$ 463,312	$ 0
b.) Exp. Admin. Expenses	0	0	0
4. Expected Interest	$ 131,045	$ (269,602)	$ (138,557)
5. Expected Value as of July 1, 2018: (1+2+3+4)	$ 2,517,465	$ (5,427,158)	$ (2,909,693)
6. Impact of:			
a.) Appropriation Adjustment	$ 0	$ 0	$ 0
b.) Contribution Timing	0	0	0
c.) Actual Member Contributions	0	0	0
d.) Conversion from Prior Actuary	(888)	0	(888)
e.) Change in Methods/Assumptions	0	0	0
f.) Change in Benefits	0	0	0
7. Expected Value after Changes: (5+6)	$ 2,516,577	$ (5,427,158)	$ (2,910,581)
8. Actual Value as of July 1, 2018	$ 2,595,221	$ (5,223,456)	$ (2,628,235)
9. Actuarial (Gain)/Loss: (8-7)	$ 78,644	$ 203,702	$ 282,346

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	$ 199,280
Administrative Expenses	4,422
Total	$ 203,702
Actuarial Liability	
Inactive Demographic Experience	$ 78,644
Actuarial (Gain)/Loss	$ 282,346

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 (UAL). Since POPF does not have any active members, there is no normal cost component. Also, because POPF has a significant surplus (assets in excess of actuarial liability) there is no UAL funding 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 provide no opinion on the reasonableness of the assumption and are unable to evaluate whether the investment rate of return assumption includes an appropriate adjustment for administrative expenses.

For POPF, 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.

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	$	2,595,221	$	2,849,732
2. Actuarial Value of Assets		5,223,456		5,620,868
3. Unfunded Actuarial Liability: (1-2)	$	(2,628,235)	$	(2,771,136)
4. Amortization Period (years)		1		1
5. Total Statutory Pension Contribution as of Beginning of Fiscal Year	$	0	$	0

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

APPENDIX A – MEMBERSHIP INFORMATION

Table A-1
Counts by Age and Status of Inactive Members

Attained Age	Status: Retiree	Beneficiary	Ordinary Disability	Accidental Disability	Total
Under 45	0	0	0	0	0
45 to 49	0	0	0	0	0
50 to 54	0	0	0	0	0
55 to 59	0	0	0	0	0
60 to 64	0	0	0	0	0
65 to 69	0	1	0	0	1
70 to 74	0	0	0	0	0
75 to 79	0	5	0	0	5
80 to 84	1	9	1	0	11
85 & up	9	43	1	1	54
Total	10	58	2	1	71

Table A-2
Annual Retirement Allowances by Age and Status of Inactive Members

Attained Age	Status: Retiree	Beneficiary	Ordinary Disability	Accidental Disability	Total
Under 45	$ 0	$ 0	$ 0	$ 0	$ 0
45 to 49	0	0	0	0	0
50 to 54	0	0	0	0	0
55 to 59	0	0	0	0	0
60 to 64	0	0	0	0	0
65 to 69	0	5,174	0	0	5,174
70 to 74	0	0	0	0	0
75 to 79	0	32,363	0	0	32,363
80 to 84	25,660	52,430	7,701	0	85,791
85 & up	112,859	197,550	7,655	7,258	325,322
Total	$ 138,519	$ 287,517	$ 15,356	$ 7,258	$ 448,650

APPENDIX A – MEMBERSHIP INFORMATION

Table A-3
Reconciliation of Plan Membership from July 1, 2017 to July 1, 2018

	Retired	Disabled	Beneficiaries	Total
1. July 1, 2017	**12**	**4**	**61**	**77**
2. Reductions				
a. Died without beneficiary			(6)	(6)
3. Changes in Status				
a. Died with beneficiary	(2)	(1)	3	0
4. July 1, 2018	**10**	**3**	**58**	**71**

APPENDIX B – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

1. Investment Rate of Return	5.00% 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 and the tables will be further projected beyond the valuation date using the Buck Modified 2014 projection scale. RP-2000 disabled retiree mortality table is used for the period after disability retirement for disability retirements.
4. Family Composition Assumptions	Males are assumed to be 3 years older than females. No assumption was made for children.
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 not yet performed our own 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 as follows.

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 July 1, 1988 was amortized over a closed period of 14 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. Changes in Actuarial Methods since Last Valuation

None.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

This summary of Plan provisions provides an overview of the major provisions of the POPF used in the actuarial valuation. It is not intended to replace the more precise language of the NJ State Statutes, Title 43, Chapter 7, 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

Employees of State penal institutions, employed prior to January 1, 1960 who did not transfer to the Police & Firemen's Retirement System in accordance with Chapter 205 of Public Law 1989. The System no longer accepts new members.

2. Plan Year

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

3. Service Credit

A year is credited for each year an employee is a member of the retirement system.

4. Average Final Compensation (AFC)

Average annual compensation for the three years immediately preceding retirement, (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.)

5. Accumulated Deductions

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

6. Benefits

a) Service Retirements

25 years of service, or age 55 and 20 years of service. The benefit is a life annuity equal to the greater of (1), (2), and (3) below:

(1) 2% of AFC up to 30 years of service plus 1% for each year in excess of 30 and prior to age 65;

(2) 50% of final pay; and

(3) For a member with 25 years of service, 2% of AFC up to 30 years of service plus 1% for each year in excess of 30.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

b) Vested Retirements

Eligible upon termination of employment. Benefits are summarized as follows:

(1) Termination with 10 or more years of service: Benefit is a deferred life annuity payable at age 55 equal to 2% of AFC for service up to 30 years plus 1% for service over 30 years.

(2) Termination with less than 10 years of service: Refund of accumulated deductions.

c) Ordinary Disability Retirement

Permanent and total disability for causes other than as a direct result of a traumatic event occurring during the performance of regular or assigned duties. Benefit is an immediate life annuity equal to ½ of AFC.

d) Accidental Disability Retirement

Permanent and total disability as a direct result of a traumatic events occurring while performing regular or assigned duties. Benefit is an immediate life annuity of ⅔ of AFC.

e) Death Benefits

Spouse must be either married to the member prior to retirement, or at least five years before the member's death. Benefit is an annuity equal to 25% of member's AFC, plus an additional 15% for one surviving dependent child or 25% for at least two surviving dependent children.

If there is no surviving spouse or spouse remarries, an annuity equal to 20% of member's AFC will be given to one surviving dependent child, or 35% of the member's AFC to two surviving dependent children, or 50% of the member's AFC to three or more surviving dependent children.

If there is no surviving spouse or child, an annuity equal to 25% of member's AFC will be given to one dependent parent or 40% to two dependent parents, provided the member has not retired.

Minimum spousal annuity is $1,600 per annum. If no other benefit is payable prior to retirement, the member's beneficiary will receive the accumulated deductions.

f) 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.

7. Employee Contributions

Each member contributes 6% of compensation.

8. Changes in Plan Provisions Since Last Valuation

None.

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	Funded Ratio Actuarial Value
2018	$ 5,223,456	$ 5,223,456	$ 2,595,221	201.3%	201.3%
2017	5,620,868	5,620,868	2,849,732	197.2%	197.2%
2016	6,111,233	6,111,233	3,461,099	176.6%	176.6%
2015	6,704,568	6,704,568	3,889,524	172.4%	172.4%
2014	7,383,201	7,383,201	4,301,307	171.7%	171.7%
2013	8,171,920	8,171,920	4,748,938	172.1%	172.1%
2012	9,044,236	9,044,236	5,395,505	167.6%	167.6%
2011	9,997,650	9,997,650	5,096,792	196.2%	196.2%
2010	11,018,367	11,018,367	5,635,024	195.5%	195.5%
2009	11,986,919	11,986,919	6,136,441	195.3%	195.3%

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:

Amount		Probability of Payment		1/(1+Investment Return)		
$100	x	(1 - .01)	x	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.

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.