



# **State Police Retirement System of New Jersey**

## **GASB 68 Report as of June 30, 2020**

**Produced by Cheiron**

**March 2021**

## TABLE OF CONTENTS

<i>Section</i>		<i>Page</i>
Section I	Board Summary .....	1
Section II	Certification .....	2
Section III	Determination of Discount Rate .....	4
Section IV	Employer Reporting Amounts .....	5
 <i>Appendices</i>		
Appendix A	Membership Information .....	9
Appendix B	Actuarial Assumptions and Methods .....	10
Appendix C	Summary of Plan Provisions.....	17
Appendix D	Determination of Discount Rate .....	22
Appendix E	Glossary of Terms.....	26

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**SECTION I – BOARD SUMMARY**

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

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

**Highlights**

The reporting date for SPRS is June 30, 2020. Measurements as of the reporting date are based on the fair value of assets as of June 30, 2020 and the Total Pension Liability as of the valuation date, July 1, 2019, updated to June 30, 2020. There were two changes in the assumptions. The assumed discount rate used to measure the Total Pension Liability was changed as of the measurement date. In addition, the mortality assumption was updated upon direction from the DPB. We are not aware of any other significant events that are measurable at this time between the valuation date and the measurement date, so the update procedures only included the addition of service cost and interest cost offset by actual benefit payments, and an adjustment to reflect the changes in assumptions. Additional information about the TPL can be found in the GASB 67 report.

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

<b>Table I-1 Summary of Results</b>		
<b>Measurement Date</b>	<b>6/30/2020</b>	<b>6/30/2019</b>
Net Pension Liability	\$ 3,317,373,005	\$ 2,828,062,019
Deferred Outflows	(408,461,219)	(264,256,018)
Deferred Inflows	<u>624,336,548</u>	<u>891,953,286</u>
Net Impact on Statement of Net Position	\$ 3,533,248,334	\$ 3,455,759,287
Pension Expense	\$ 195,400,307	\$ 191,439,089
Pension Expense (% of Payroll)	65.97%	69.41%

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**SECTION II – CERTIFICATION**

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

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

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

For purposes of this report, the projection of the Plan's contributions and projected benefit payments as of June 30, 2020 was based on the recommended demographic assumptions of the July 1, 2014 – June 30, 2018 Experience Study, approved by the Board of Trustees on January 28, 2020. The calculation of the Total Pension Liability as of June 30, 2020 was based on the same demographic assumptions except for the mortality assumption, which was based on the SOA's MP-2020 mortality improvement scale upon direction from the DPB. While we do not find the use of the SOA's Scale MP-2020 unreasonable, it does not reflect the analysis of actual mortality experience from our Experience Study which was the basis for our recommended mortality assumptions, including the mortality improvement scale.

This report was prepared using census data as of the July 1, 2019 valuation date and financial information as of the June 30, 2020 measurement date. Given the uncertainty and lack of credible data regarding the impact that COVID-19 may have had on the System's demographic experience between the measurement date and reporting date, no specific adjustments have been made at this time. Chapter 54, P.L. 2020, amends eligibility for accidental disability and accidental death benefits for SPRS members when related to the contraction of COVID-19 during the Public Health Emergency declared by the Governor in Executive Order 103 of 2020, as extended. Chapter 46, P.L. 2020 delays mandatory retirement in the SPRS when it would occur during a period of a state of emergency. We will continue to monitor developments regarding the COVID-19 pandemic and the impact it may have on the System. Actual experience, both demographic and economic, will be reflected in subsequent years as experience emerges.

This report also reflects three other changes to the plan provisions. Chapter 157, P.L. 2019 expanded the definition of regular or assigned duties for purposes of accidental disability retirement to include the World Trade Center (WTC) rescue, recovery, or cleanup operations between September 11, 2001 and October 11, 2011 under certain conditions. For such members who participated in the WTC rescue, recovery, or cleanup operations, the total and permanent disability may occur after retirement on a service retirement or an ordinary disability retirement.

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**SECTION II – CERTIFICATION**

After reviewing the members who have submitted eligibility registration forms and/or amended benefits requests forms with the DPB, we do not expect this legislation to have a material impact on the benefits payable by the System. Therefore, the impact of Chapter 157, P.L. 2019 will be recognized as part of the demographic experience as members are approved for such benefits.

Chapter 305, P.L. 2019 increased the benefit for a surviving child in the event of ordinary death while in active service. Previously, if there was no surviving spouse, or upon the surviving spouse's death or remarriage, a total of 20% (35%, 50%) of final compensation was payable to one (two, three or more) dependent child(ren). Under Chapter 305, P.L. 2019, if there is no surviving spouse, or upon the surviving spouse's death or remarriage, 50% of final compensation is payable to surviving children in equal shares. This legislation did not impact the Total Pension Liability for this report due to the current demographic assumptions and covered population.

Chapter 251, P.L. 2019 permits service credit transferred from another State-administered retirement system to apply towards creditable service in the SPRS. Any service credit that is transferred to the SPRS will be recognized as part of the demographic experience at the time it first appears in the census data.

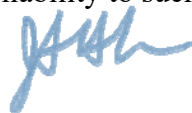
Based on the State Treasurer's recommendation the following investment return assumptions are used to determine the actuarially determined contributions:

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

In accordance with Paragraph 40 of GASB Statement No. 67, the projection of the Plan's fiduciary net position is based on a long-term expected rate of return of 7.00% per annum. The discount rate used to measure the Total Pension Liability is 5.00% as of June 30, 2020 and is described in Section III of the report.

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

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



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



Anu Patel, FSA, MAAA, EA  
Principal Consulting Actuary

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**SECTION III – DETERMINATION OF DISCOUNT RATE**

The discount rate used to measure the Total Pension Liability was 5.51% as of June 30, 2019 and 5.00% as of June 30, 2020. As discussed with the Division of Pensions and Benefits, the projection of cash flows used to determine the discount rate as of June 30, 2020 assumed:

- In accordance with Paragraph 40 of GASB Statement No. 67, the projection of the Plan’s fiduciary net position is based on a long-term expected rate of return of 7.00% per annum.
- In accordance with Paragraph 37 of GASB Statement No. 67, the projection of the Plan’s contributions and projected benefit payments are based on the same assumptions used to determine the expected contributions for the System. The demographic assumptions are based on the recommendations of the July 1, 2014 – June 30, 2018 Experience Study as approved by the Board of Trustees on January 28, 2020.

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

- Effective with the July 1, 2019 valuation: 7.30% per annum,
- Effective with the July 1, 2021 valuation: 7.00% per annum.
- It is assumed that the State will contribute 78.00% of the actuarially determined contribution and 100% of its Non-Contributory Group Insurance Premium Fund (NCGIPF) contribution for all years of the projection. The 78.00% contribution rate is the total State contribution rate expected to be paid in fiscal year ending June 30, 2021 with respect to the actuarially determined contribution for the fiscal year ending June 30, 2021 for all State administered retirement systems.
- Consistent with Chapter 83, P.L. 2016, it is assumed that the State will make pension contributions in equal amounts at the end of each quarter.
- Annual administrative expenses are assumed to be 0.27% of expected pension benefit payments.

Based on these assumptions, the pension Plan’s fiduciary net position was projected to be available to make all projected future benefit payments of current Plan members through fiscal year ending 2057. Municipal bond rates of 3.50% as of June 30, 2019 and 2.21% as of June 30, 2020 were used in the development of the blended GASB discount rate after the Plan’s fiduciary net position was no longer sufficient to make future benefit payments. As selected by the State Treasurer, the rates are based on the Bond Buyer GO 20-Bond Municipal Bond Index. Based on the long-term rate of return of 7.00% and the municipal bond rate of 3.50% as of June 30, 2019 and the long-term rate of return of 7.00% and the municipal bond rate of 2.21% as of June 30, 2020, the blended GASB discount rates are 5.51% as of June 30, 2019 and **5.00%** as of June 30, 2020. The assumed discount rates have been determined in accordance with the method prescribed by GASB Statement No. 67 See Appendix D for the determination of the discount rate.

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**SECTION IV – EMPLOYER REPORTING AMOUNTS**

We understand the State has elected to use the 2020 measurement date for its 2021 reporting date. As a result, the schedules in this section will be used by the State for its 2021 reporting.

The impact of experience gains or losses and assumption changes on the TPL are recognized in expense over the average expected remaining service life of all active and inactive members of the System. As of the measurement date, this recognition period was 5.58 years.

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

<b>Table IV-1</b>		
<b>Schedule of Deferred Inflows and Outflows of Resources</b>		
	<b>Deferred Outflows of Resources</b>	<b>Deferred Inflows of Resources</b>
Differences between expected and actual experience	\$ 12,419,367	\$ 19,148,398
Changes in assumptions	340,861,894	605,188,150
Net differences between projected and actual earnings on pension plan investments	55,179,958	0
<b>Total</b>	<b><u>\$ 408,461,219</u></b>	<b><u>\$ 624,336,548</u></b>
Amounts reported as deferred outflows and deferred inflows of resources will be recognized in pension expense as follows:		
<b>Measurement year ended June 30:</b>		
2021	(105,511,518)	
2022	(138,963,525)	
2023	(45,402,635)	
2024	41,782,855	
2025	32,219,494	
Thereafter	\$ 0	





**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**SECTION IV – EMPLOYER REPORTING AMOUNTS**

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

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

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

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

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

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

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**SECTION IV – EMPLOYER REPORTING AMOUNTS**

<b>Table IV-3 Calculation of Pension Expense</b>		
<b>Measurement Year Ending</b>	<b>2020</b>	<b>2019</b>
Change in Net Pension Liability	\$ 489,310,986	\$ (231,607,539)
Change in Deferred Outflows	(144,205,201)	226,127,843
Change in Deferred Inflows	(267,616,738)	98,735,829
Employer Contributions	<u>117,911,260</u>	<u>98,182,956</u>
<b>Pension Expense</b>	<b>\$ 195,400,307</b>	<b>\$ 191,439,089</b>
<b>Pension Expense as % of Payroll</b>	<b>65.97%</b>	<b>69.41%</b>
<b>Operating Expenses</b>		
Service cost	\$ 92,264,920	\$ 100,705,109
Employee contributions	(24,292,258)	(24,183,990)
Administrative expenses	<u>632,762</u>	<u>596,137</u>
Total	\$ 68,605,424	\$ 77,117,256
<b>Financing Expenses</b>		
Interest cost	\$ 253,377,036	\$ 240,494,663
Expected return on assets	<u>(121,382,576)</u>	<u>(120,907,678)</u>
Total	\$ 131,994,460	\$ 119,586,985
<b>Changes</b>		
Benefit changes	\$ 0	\$ 0
Recognition of assumption changes	(34,455,719)	(32,450,592)
Recognition of liability gains and losses	(868,540)	2,305,685
Recognition of investment gains and losses	<u>30,124,682</u>	<u>24,879,755</u>
Total	\$ (5,199,577)	\$ (5,265,152)
<b>Pension Expense</b>	<b>\$ 195,400,307</b>	<b>\$ 191,439,089</b>

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX A – MEMBERSHIP INFORMATION**

Plan Membership		
	July 1, 2019	July 1, 2018
Contributing Actives	2,766	2,661
Non-Contributing Actives	54	52
Terminated Vested	0	0
Inactive Receiving Benefits*	3,400	3,404
Total	6,220	6,117
Annual Compensation for Contributing Actives	\$ 296,189,926	\$ 275,790,087
Annual Retirement Allowances for Those Receiving Benefits	\$ 223,394,278	\$ 222,196,734

\* QDRO recipients are excluded from the counts

STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**A. Actuarial Assumptions**

- |  |  |
|--|--|
| <b>1. Investment Rate of Return for determining Actuarially Determined Contributions</b> | <ul style="list-style-type: none"><li>• July 1, 2019 valuation: 7.30% per annum, compounded annually.</li><li>• July 1, 2020 valuation: 7.30% per annum, compounded annually.</li><li>• July 1, 2021 and later valuations: 7.00% per annum, compounded annually.</li></ul> |
| <b>2. Long-Term Expected Rate of Return</b>  | 7.00% per annum, compounded annually.  |
| <b>3. GASB 67 Effective Discount Rate</b>  | <ul style="list-style-type: none"><li>• June 30, 2019: 5.51% per annum, compounded annually.</li><li>• June 30, 2020: 5.00% per annum, compounded annually.</li></ul>  |
| <b>4. Price Inflation</b>  | 2.75% per annum, compounded annually.  |
| <b>5. Wage Inflation</b>   | 3.25% per annum, compounded annually.  |
| <b>6. Cost-of-Living Adjustments (COLAs)</b>   | No future COLAs are assumed. Previously granted COLAs are included in the data.  |
| <b>7. Salary Increases</b>   | Salaries are assumed to increase by 2.95% per year through fiscal year 2025 and 3.95% per year for fiscal years 2026 and thereafter.<br><br>Salary increases are assumed to occur on January 1.  |
| <b>8. 401(a)(17) Pay Limit</b>   | \$280,000 in 2019 increasing 2.75% per annum, compounded annually.   |
| <b>9. Social Security Wage Base</b>  | \$132,900 in 2019 increasing 3.25% per annum, compounded annually.   |

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**10. Termination**

Termination rates are as follows:

Service	Rates
0-3	0.450%
4	0.300
5	0.225
6	0.200
7	0.175
8	0.150
9	0.125
10	0.100
11-19	0.075
20	0.000

No termination is assumed after attainment of retirement eligibility.

All members with 10 or more years of service at termination are assumed to elect a deferred retirement benefit.

**11. Disability**

Representative disability rates are as follows:

Age	Ordinary Disability	Accidental Disability
20	0.027%	0.015%
25	0.041	0.025
30	0.061	0.053
35	0.169	0.194
40	0.172	0.208
45	0.218	0.214
50	0.375	0.220
54	0.505	0.295

No ordinary disability is assumed prior to attainment of ordinary disability retirement eligibility at four years of service or after attainment of special retirement eligibility at 25 years of service.

Accidental disability rates apply at all ages until the mandatory retirement age of 55.

Members retiring under the ordinary disability decrement with 20 or more years of service are assumed to receive the involuntary disability retirement benefit.

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

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

12. Mortality

Pre-Retirement: The Pub-2010 Public Safety Above-Median Income Employee mortality table [*PubS-2010(A) Employee*] as published by the Society of Actuaries (SOA), unadjusted, and with future improvement from the base year of 2010 on a generational basis. For purposes of calculating projected cash flows used to determine the GASB discount rate, mortality improvement is based on SOA's Scale MP-2018. Upon direction from the DPB, for purposes of calculating the Total Pension Liability, mortality improvement is based on SOA's Scale MP-2020.

35% of the deaths are assumed to be accidental.

For purposes of pre-retirement accidental death benefits based on Adjusted Final Compensation, the benefit is assumed to increase at the same rate as active salaries.

Healthy Retirees (Healthy Annuitants): The Pub-2010 Public Safety Above-Median Income Healthy Retiree mortality table [*PubS-2010(A) Healthy Retiree*] as published by the SOA, unadjusted, and with future improvement from the base year of 2010 on a generational basis. For purposes of calculating projected cash flows used to determine the GASB discount rate, mortality improvement is based on SOA's Scale MP-2018. Upon direction from the DPB, for purposes of calculating the Total Pension Liability, mortality improvement is based on SOA's Scale MP-2020.

Beneficiaries (Contingent Annuitants): The Pub-2010 General Above-Median Income Healthy Retiree mortality table [*PubG-2010(A) Healthy Retiree*] as published by the SOA, unadjusted, and with future improvement from the base year of 2010 on a generational basis. For purposes of calculating projected cash flows used to determine the GASB discount rate, mortality improvement is based on SOA's Scale MP-2018. Upon direction from the DPB, for purposes of calculating the Total Pension Liability, mortality improvement is based on SOA's Scale MP-2020.

Disabled Mortality (Disabled Annuitants): The Pub-2010 Public Safety Disabled Retiree mortality table [*PubS-2010 Disabled Retiree*] as published by the Society of Actuaries, unadjusted, and with future improvement from the base year of 2010 on a generational basis. For purposes of calculating projected cash flows used to determine the GASB discount rate, mortality improvement is based on SOA's Scale MP-2018. Upon direction from the DPB, for purposes of calculating the Total Pension Liability, mortality improvement is based on SOA's Scale MP-2020.

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**13. Retirement**

For those with 24 years of service or less: 0.50%

For those with 25 years of service:

Age	Rates
48 or younger	25.00%
49-54	50.00

For those with 26 or more years of service: 35.00%

Mandatory retirement at age 55.

**14. Family Composition Assumptions**

For members not currently in receipt, 83.3% of members are assumed married to spouses of the opposite sex. Males are assumed to be three years older than females.

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

No additional dependent children or parents are assumed.

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

For current dependents receiving a benefit other than a pre-retirement accidental death benefit, those under age 18 are assumed to receive a benefit until age 18 while those over age 18 are assumed to receive a benefit for the remainder of their lifetime.

**15. Data**

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

For current beneficiaries with missing data, reasonable assumptions were made based on the information available in prior years.

Inactives receiving benefits according to the 2018 data but omitted from the 2019 data are assumed to have died without a beneficiary.

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

- 16. Rationale for Assumptions**                      The demographic assumptions used in this report reflect the results of the July 1, 2014 – June 30, 2018 Experience Study, approved by the Board of Trustees on January 28, 2020. The investment return assumption was recommended by the State Treasurer. The MP-2020 mortality improvement scale was used to calculate the Total Pension Liability upon direction from the DPB.
- 17. Projection Basis**                      This report includes projections of future assets, benefit payments and contributions for the purpose of determining the GASB 67 discount rate.
- The projections are based on the census data as of July 1, 2019 and the financial information as of June 30, 2020. The projections assume continuation of the plan provisions and actuarial assumptions in effect as of July 1, 2019 and do not reflect the impact of any changes in benefits or actuarial assumptions that may be adopted after July 1, 2020 unless otherwise indicated. While the assumptions individually are reasonable for the underlying valuation that supports the projections, specifically for projection purposes, they are also considered reasonable in the aggregate.
- The projections assume that all future assumptions are met except where indicated with respect to future investment returns and demographic assumptions.
- 18. Changes in Assumptions Since Last Valuation**                      The mortality improvement scale used to calculate the Total Pension Liability was updated from the MP-2019 scale to the MP-2020 scale upon direction from the DPB.
- The GASB 67 effective discount rate has been updated in accordance with the method prescribed by GASB Statement No. 67.



## APPENDIX B – 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 linearly allocated to periods prior to the valuation year based on service. The unfunded actuarial liability is the actuarial liability on the valuation date less the actuarial value of assets.

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

- Beginning with the July 1, 2010 actuarial valuation, the accrued liability contribution shall be computed so that if the contribution is paid annually in level dollars, it will amortize the unfunded accrued liability over an open 30 year period.
- Beginning with the July 1, 2019 actuarial valuation, the accrued liability contribution shall be computed so that if the contribution is paid annually in level dollars, it will amortize the unfunded accrued liability over a closed 30 year period (i.e., for each subsequent actuarial valuation the amortization period shall decrease by one year).
- Beginning with the July 1, 2029 actuarial valuation, when the remaining amortization period reaches 20 years, any increase or decrease in the unfunded accrued liability as a result of actuarial losses or gains for subsequent valuation years shall serve to increase or decrease, respectively, the amortization period for the unfunded accrued liability, unless an increase in the amortization period will cause it to exceed 20 years. If an increase in the amortization period as a result of actuarial losses for a valuation year would exceed 20 years, the accrued liability contribution shall be computed for the valuation year using a 20 year amortization period.

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

#### 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.

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

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

**3. State Contribution Payable Dates**

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

**4. Valuation Software**

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

**5. Changes in Methods Since the Last Valuation**

None.

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

This summary of Plan provisions provides an overview of the major provisions of the SPRS used in the actuarial valuation. It is not intended to replace the more precise language of the NJ State Statutes, Title 53, Chapter 5A, 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**

All members of the former State Police and Benevolent Fund and full-time commissioned officers, non-commissioned officers or troopers of the Division of State Police. Membership is a condition of employment.

- a) Tier 1 Member: Any member hired on or before May 21, 2010.
- b) Tier 2 Member: Any member hired after May 21, 2010.

**2. Plan Year**

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

**3. Service Credit**

Service rendered while a member as described above.

**4. Credited Service**

A year is credited for each year of service as an officer or trooper in the State Police.

**5. Compensation**

Base salary in accordance with established salary policies of the state for all employees in the same position. Compensation does not include individual salary adjustments granted primarily in anticipation of the retirement or for temporary or extracurricular duties beyond the regular work day or shift. 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. Chapter 1, P. L. 2010 provides that for members hired on or after May 22, 2010, the amount of compensation used for employer and member contributions and benefits under the System cannot exceed the annual maximum wage contribution base for Social Security, pursuant to the Federal Insurance Contributions Act.

**6. Final Compensation**

Average compensation received by the member in the last 12 months of credited service preceding retirement or death. Such term includes the value of the member's maintenance allowance for the same period. Chapter 1, P. L. 2010 provides that for members hired on or after May 22, 2010, Final Compensation means the average annual compensation for service for which contributions are made during any three fiscal years of membership providing the largest possible benefit to the member or the member's beneficiary.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

**7. Aggregate Contributions**

The sum of all amounts deducted from the compensation of a member or contributed by him or on his behalf.

**8. Member Contributions**

Each member contributes 9.0% of base salary. For contribution purposes, compensation does not include overtime, bonuses, maintenance or any adjustments before retirement.

**9. Adjusted Final Compensation**

For purposes of the pre-retirement accidental death benefit, the amount of compensation or compensation as adjusted, as the case may be, increased by the same percentage increase which is applied in any adjustments of the compensation schedule of active members after the member's death and before the date on which the deceased member of the retirement system would have accrued 25 years of service under an assumption of continuous service, at which time that amount will become fixed. Adjustments to compensation or adjusted compensation shall take effect at the same time as any adjustments in the compensation schedule of active members.

**10. Benefits**

**a) Service and Special Retirement:**

Mandatory retirement at age 55. Voluntary retirement prior to age 55.

- (1) Service Retirement: 20 years of service credit, or members as of August 29, 1985 who would not have 20 years of service credit at age 55.

Benefit is an annual retirement allowance equal to 50% of final compensation.

- (2) Special Retirement: 25 years of service credit.

Benefit is an annual retirement allowance equal to 65% of final compensation, plus 1% for each year of service credit in excess of 25 years, to a maximum of 70% of final compensation.

- (3) Members as of August 29, 1985 who would have 20 years of service credit but not 25 years at age 55.

Benefit is an annual retirement allowance equal to 50% of final compensation, plus 3% for each year of service credit in excess of 20 years.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

b) **Deferred Retirement:**

Termination of service prior to age 55 with 10 years of service credit.

Benefit is either a refund of aggregate contributions, or a deferred life annuity beginning at age 55 equal to 2% of final compensation for each year of service credit up to 25 years.

For members who die during the deferral period, the benefit is a return of aggregate contributions.

c) **Non-Vested Termination:**

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

Benefit is a return of aggregate contributions.

d) **Death Benefits**

(1) **Ordinary Death Before Retirement:** Death of an active member of the plan. Benefit is equal to:

- a) Lump sum payment equal to 350% of final compensation, also known as the noncontributory group life insurance benefit, plus
- b) Spousal life annuity of 50% of final compensation payable until spouse's death or remarriage. If there is no surviving spouse, or upon death or remarriage, 50% of final compensation payable to surviving children in equal shares. If there is no surviving spouse or dependent child(ren), 25% (40%) of final compensation to one (two) dependent parent(s). If there is no surviving spouse, dependent child(ren) or parent(s), the benefit is a refund of accumulated contributions.

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

- a) Lump sum payment equal to 350% of final compensation, also known as the noncontributory group life insurance benefit, plus
- b) Spousal life annuity of 70% of final compensation or adjusted final compensation (if appropriate) payable until spouse's death. If there is no surviving spouse, or upon death of the surviving spouse, 70% of final compensation or adjusted final compensation (if appropriate) payable to surviving children in equal shares. If there is no surviving spouse or dependent children, 25% (40%) of final compensation or adjusted final compensation (if appropriate) to one (two) dependent parents. If there is no surviving spouse, dependent child(ren) or parent(s), the benefit is a refund of accumulated contributions.

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

(3) Death After Retirement: Death of a retired member of the plan. Benefit is equal to:

- a) Lump sum payment equal to 50% of final compensation for a member retired under service, special or deferred retirement. For a member receiving a disability benefit, lump sum payment of 350% of final compensation if death occurs prior to age 55 and 50% of final compensation if death occurs after age 55. This benefit is also known as the noncontributory group life insurance benefit, plus
- b) Spousal life annuity of 50% of final compensation payable until spouse's death or remarriage. If there is no surviving spouse, or upon death or remarriage, a total of 20% (35%, 50%) of final compensation payable to one (two, three or more) dependent child(ren). Previously granted COLAs also apply.

e) **Disability Retirement**

(1) Ordinary Disability Retirement: Four years of service credit and mentally or physically incapacitated for the performance of his usual duty and of any other available duty in the Division of State Police and such incapacity is likely to be permanent.

Benefit is an immediate life annuity equal to the greater of:

- a) 40% of final compensation, or
- b) 1.5% of final compensation for each year of service credit.

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

Benefit is an immediate life annuity equal to:

- a) For members with 20 years of service credit but less than 25 years, 50% of final compensation plus 3% of final compensation for each year of service credit in excess of 20 years, to a maximum of 65% of final compensation.
- b) For all other members, the Ordinary Disability benefit.

(3) Accidental Disability Retirement: Totally and permanently disabled as a direct result of a traumatic event occurring during and as a result of his regular or assigned duties and such member is mentally or physically incapacitated for the performance of his usual duties in the Division of State Police. Under certain conditions, regular or assigned duties may include the World Trade Center (WTC) rescue, recovery, or cleanup operations between September 11, 2001 and October 11, 2011. For such members who participated in the WTC rescue, recovery, or cleanup operations, the total and permanent disability may occur after retirement on a service retirement or an ordinary disability retirement.

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

Benefit is an immediate life annuity equal to 2/3 of annual rate of compensation, including the maintenance allowance, at the time of the traumatic event or retirement, whichever is greater.

**11. Forms of Payment**

No optional forms of payment available.

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

Chapter 157, P.L. 2019 expanded the definition of regular or assigned duties for purposes of accidental disability retirement to include World Trade Center (WTC) rescue, recovery, or cleanup operations between September 11, 2001 and October 11, 2011 under certain conditions. For such members who participated in the WTC rescue, recovery, or cleanup operations, the total and permanent disability may occur after retirement on a service retirement or an ordinary disability retirement.

Chapter 305, P.L. 2019 increased the benefit for a surviving child in the event of ordinary death while in active service. Previously, if there was no surviving spouse, or upon the surviving spouse's death or remarriage, a total of 20% (35%, 50%) of final compensation was payable to one (two, three or more) dependent child(ren). Under Chapter 305, if there is no surviving spouse, or upon the surviving spouse's death or remarriage, 50% of final compensation is payable to surviving children in equal shares.

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX D – DETERMINATION OF DISCOUNT RATE**

**Table 1 - Projection of the Pension Plan's Fiduciary Net Position**

(In Thousands)

Projections Commence June 30, 2020

Year	Projected Beginning Fiduciary Net Position (a)	Projected Member Contributions (b)	Projected Employer Contributions (c)	Projected Benefit Payments (d)	Projected Administrative Expenses (e)	Projected Investment Earnings (f)	Projected Ending Fiduciary Net Position (g) = (a) + (b) + (c) - (d) - (e) + (f)
1	\$ 1,727,762	\$ 22,512	\$ 141,948	\$ 238,212	\$ 652	\$ 117,194	\$ 1,770,551
2	1,770,551	21,988	147,468	245,733	673	120,055	1,813,656
3	1,813,656	21,538	161,191	252,581	692	123,177	1,866,290
4	1,866,290	20,822	166,844	261,312	715	126,683	1,918,611
5	1,918,611	20,203	171,713	268,735	735	130,195	1,971,251
6	1,971,251	19,823	176,908	274,025	750	133,820	2,027,027
7	2,027,027	19,003	182,837	283,441	775	137,526	2,082,177
8	2,082,177	18,154	187,274	293,345	802	141,132	2,134,590
9	2,134,590	17,427	191,367	302,010	826	144,584	2,185,131
10	2,185,131	16,497	195,892	311,868	853	147,868	2,232,668
11	2,232,668	15,070	199,932	325,294	890	150,789	2,272,275
12	2,272,275	13,661	198,565	337,858	924	153,045	2,298,763
13	2,298,763	12,604	197,042	347,180	950	154,503	2,314,782
14	2,314,782	11,553	196,350	356,032	974	155,266	2,320,945
15	2,320,945	10,438	195,462	364,632	997	155,340	2,316,556
16	2,316,556	9,655	194,260	369,959	1,012	154,792	2,304,293
17	2,304,293	9,080	193,891	373,078	1,020	153,798	2,286,964
18	2,286,964	8,454	194,044	376,189	1,028	152,461	2,264,707
19	2,264,707	7,544	194,006	381,307	1,042	150,696	2,234,604
20	2,234,604	6,272	193,000	388,652	1,062	148,266	2,192,428
21	2,192,428	5,061	190,812	394,940	1,079	145,000	2,137,282
22	2,137,282	3,929	188,658	400,201	1,093	140,864	2,069,439
23	2,069,439	2,896	186,574	404,335	1,104	135,884	1,989,354
24	1,989,354	1,752	184,521	409,069	1,117	130,024	1,895,465
25	1,895,465	874	181,869	410,937	1,122	123,289	1,789,438
26	1,789,438	459	179,829	408,519	1,115	115,885	1,675,977
27	1,675,977	226	179,008	404,213	1,102	108,063	1,557,959
28	1,557,959	105	178,636	398,659	1,086	99,981	1,436,936
29	1,436,936	49	178,535	392,251	1,068	91,728	1,313,929
30	1,313,929	13	178,583	385,405	1,049	83,355	1,189,426
31	1,189,426	0	178,666	378,074	1,028	74,895	1,063,885
32	1,063,885	0	178,789	370,357	1,006	66,378	937,689
33	937,689	0	178,929	362,356	984	57,826	811,104
34	811,104	0	179,056	354,076	961	49,255	684,377
35	684,377	0	179,166	345,522	937	40,683	557,766
36	557,766	0	179,258	336,706	912	32,127	431,534
37	431,534	0	179,330	327,646	887	23,606	305,937
38	305,937	0	179,383	318,368	861	15,136	181,228
39	0	0	0	308,900	835	0	0
40	0	0	0	299,277	808	0	0
41	0	0	0	289,531	781	0	0
42	0	0	0	279,696	754	0	0
43	0	0	0	269,803	726	0	0
44	0	0	0	259,881	699	0	0
45	0	0	0	249,957	672	0	0
46	0	0	0	240,049	645	0	0
47	0	0	0	230,172	617	0	0
48	0	0	0	220,329	590	0	0
49	0	0	0	210,517	563	0	0
50	0	0	0	200,730	536	0	0



**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX D – DETERMINATION OF DISCOUNT RATE**

**Table 1 - Projection of the Pension Plan's Fiduciary Net Position**

(In Thousands)

Projections Commence June 30, 2020

Year	Projected Beginning Fiduciary Net Position (a)	Projected Member Contributions (b)	Projected Employer Contributions (c)	Projected Benefit Payments (d)	Projected Administrative Expenses (e)	Projected Investment Earnings (f)	Projected Ending Fiduciary Net Position (g) = (a) + (b) + (c) - (d) - (e) + (f)
51	\$ 0	\$ 0	\$ 0	\$ 190,963	\$ 510	\$ 0	\$ 0
52	0	0	0	181,210	483	0	0
53	0	0	0	171,469	456	0	0
54	0	0	0	161,743	430	0	0
55	0	0	0	152,040	403	0	0
56	0	0	0	142,374	377	0	0
57	0	0	0	132,767	351	0	0
58	0	0	0	123,244	325	0	0
59	0	0	0	113,838	300	0	0
60	0	0	0	104,588	275	0	0
61	0	0	0	95,535	251	0	0
62	0	0	0	86,725	227	0	0
63	0	0	0	78,205	204	0	0
64	0	0	0	70,021	183	0	0
65	0	0	0	62,216	162	0	0
66	0	0	0	54,832	143	0	0
67	0	0	0	47,898	124	0	0
68	0	0	0	41,445	107	0	0
69	0	0	0	35,494	92	0	0
70	0	0	0	30,063	78	0	0
71	0	0	0	25,161	65	0	0
72	0	0	0	20,789	54	0	0
73	0	0	0	16,943	44	0	0
74	0	0	0	13,605	35	0	0
75	0	0	0	10,755	28	0	0
76	0	0	0	8,360	21	0	0
77	0	0	0	6,385	16	0	0
78	0	0	0	4,785	12	0	0
79	0	0	0	3,515	9	0	0
80	0	0	0	2,529	7	0	0
81	0	0	0	1,780	5	0	0
82	0	0	0	1,224	3	0	0
83	0	0	0	821	2	0	0
84	0	0	0	537	1	0	0
85	0	0	0	342	1	0	0
86	0	0	0	212	1	0	0
87	0	0	0	128	0	0	0
88	0	0	0	75	0	0	0
89	0	0	0	42	0	0	0
90	0	0	0	23	0	0	0
91	0	0	0	12	0	0	0
92	0	0	0	6	0	0	0
93	0	0	0	3	0	0	0
94	0	0	0	2	0	0	0
95	0	0	0	1	0	0	0
96	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX D – DETERMINATION OF DISCOUNT RATE**

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

Projections Commence June 30, 2020

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

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

Year	Projected Beginning Fiduciary Net Position*	Projected Benefit Payments for current Plan participants**	"Funded" Portion of Benefit Payments (d) = (c) if (b) >= (c)	"Unfunded" Portion of Benefit Payments (e) = (c) - (d)	Present Value of "Funded" Benefit Payments (f) = (d) / (1+7.00%)^[a] - .5]	Present Value of "Unfunded" Benefit Payments (g) = (e) / (1+2.21%)^[a] - .5]	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) / (1+5.00%)^[a] - .5]
(a)	(b)	(c)	(d) = (c) if (b) >= (c)	(e) = (c) - (d)	(f) = (d) / (1+7.00%)^[a] - .5]	(g) = (e) / (1+2.21%)^[a] - .5]	(h) = (c) / (1+5.00%)^[a] - .5]
1	\$ 1,727,762	\$ 238,212	\$ 238,212	\$ 0	\$ 230,289	\$ 0	\$ 232,476
2	1,770,551	245,733	245,733	0	222,018	0	228,405
3	1,813,656	252,581	252,581	0	213,276	0	223,598
4	1,866,290	261,312	261,312	0	206,213	0	220,320
5	1,918,611	268,735	268,735	0	198,197	0	215,797
6	1,971,251	274,025	274,025	0	188,877	0	209,575
7	2,027,027	283,441	283,441	0	182,586	0	206,461
8	2,082,177	293,345	293,345	0	176,604	0	203,508
9	2,134,590	302,010	302,010	0	169,926	0	199,550
10	2,185,131	311,868	311,868	0	163,993	0	196,258
11	2,232,668	325,294	325,294	0	159,862	0	194,966
12	2,272,275	337,858	337,858	0	155,175	0	192,861
13	2,298,763	347,180	347,180	0	149,025	0	188,752
14	2,314,782	356,032	356,032	0	142,826	0	184,354
15	2,320,945	364,632	364,632	0	136,707	0	179,823
16	2,316,556	369,959	369,959	0	129,630	0	173,768
17	2,304,293	373,078	373,078	0	122,171	0	166,895
18	2,286,964	376,189	376,189	0	115,130	0	160,279
19	2,264,707	381,307	381,307	0	109,062	0	154,729
20	2,234,604	388,652	388,652	0	103,891	0	150,206
21	2,192,428	394,940	394,940	0	98,665	0	145,373
22	2,137,282	400,201	400,201	0	93,439	0	140,300
23	2,069,439	404,335	404,335	0	88,228	0	135,004
24	1,989,354	409,069	409,069	0	83,421	0	130,086
25	1,895,465	410,937	410,937	0	78,320	0	124,462
26	1,789,438	408,519	408,519	0	72,766	0	117,842
27	1,675,977	404,213	404,213	0	67,288	0	111,051
28	1,557,959	398,659	398,659	0	62,022	0	104,314
29	1,436,936	392,251	392,251	0	57,033	0	97,753
30	1,313,929	385,405	385,405	0	52,372	0	91,477
31	1,189,426	378,074	378,074	0	48,014	0	85,467
32	1,063,885	370,357	370,357	0	43,957	0	79,739
33	937,689	362,356	362,356	0	40,194	0	74,304
34	811,104	354,076	354,076	0	36,706	0	69,151
35	684,377	345,522	345,522	0	33,476	0	64,270
36	557,766	336,706	336,706	0	30,488	0	59,650
37	431,534	327,646	327,646	0	27,727	0	55,283
38	305,937	318,368	305,937	12,431	24,196	5,476	51,161
39	0	308,900	0	308,900	0	133,144	47,278
40	0	299,277	0	299,277	0	126,207	43,625
41	0	289,531	0	289,531	0	119,457	40,196
42	0	279,696	0	279,696	0	112,904	36,983
43	0	269,803	0	269,803	0	106,556	33,977
44	0	259,881	0	259,881	0	100,418	31,171
45	0	249,957	0	249,957	0	94,495	28,554
46	0	240,049	0	240,049	0	88,787	26,117
47	0	230,172	0	230,172	0	83,293	23,851
48	0	220,329	0	220,329	0	78,007	21,745
49	0	210,517	0	210,517	0	72,922	19,788
50	0	200,730	0	200,730	0	68,028	17,970

**STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY  
GASB 68 REPORTING FOR JUNE 30, 2020 MEASUREMENT DATE**

**APPENDIX D – DETERMINATION OF DISCOUNT RATE**

**Table 2 - Actuarial Present Values of Projected Benefit Payments**

(In Thousands)

Projections Commence June 30, 2020

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

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

Year	Projected Beginning Fiduciary Net Position*	Projected Benefit Payments for current Plan participants**	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments	Present Value of "Funded" Benefit Payments (f) = (d) / (1+7.00%)^{(a) - .5]	Present Value of "Unfunded" Benefit Payments (g) = (e) / (1+2.21%)^{(a) - .5]	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) / (1+5.00%)^{(a) - .5]
(a)	(b)	(c)	(d) = (c) if (b) >= (c)	(e) = (c) - (d)	(f) = (d) / (1+7.00%)^{(a) - .5]	(g) = (e) / (1+2.21%)^{(a) - .5]	(h) = (c) / (1+5.00%)^{(a) - .5]
51	\$ 0	\$ 190,963	\$ 0	\$ 190,963	\$ 0	\$ 63,319	\$ 16,282
52	0	181,210	0	181,210	0	58,786	14,715
53	0	171,469	0	171,469	0	54,423	13,262
54	0	161,743	0	161,743	0	50,226	11,914
55	0	152,040	0	152,040	0	46,192	10,667
56	0	142,374	0	142,374	0	42,320	9,513
57	0	132,767	0	132,767	0	38,611	8,449
58	0	123,244	0	123,244	0	35,067	7,470
59	0	113,838	0	113,838	0	31,690	6,571
60	0	104,588	0	104,588	0	28,486	5,750
61	0	95,535	0	95,535	0	25,457	5,003
62	0	86,725	0	86,725	0	22,610	4,325
63	0	78,205	0	78,205	0	19,948	3,715
64	0	70,021	0	70,021	0	17,474	3,168
65	0	62,216	0	62,216	0	15,191	2,681
66	0	54,832	0	54,832	0	13,098	2,250
67	0	47,898	0	47,898	0	11,195	1,872
68	0	41,445	0	41,445	0	9,477	1,543
69	0	35,494	0	35,494	0	7,941	1,258
70	0	30,063	0	30,063	0	6,580	1,015
71	0	25,161	0	25,161	0	5,388	809
72	0	20,789	0	20,789	0	4,356	637
73	0	16,943	0	16,943	0	3,473	494
74	0	13,605	0	13,605	0	2,729	378
75	0	10,755	0	10,755	0	2,110	285
76	0	8,360	0	8,360	0	1,605	211
77	0	6,385	0	6,385	0	1,199	153
78	0	4,785	0	4,785	0	879	109
79	0	3,515	0	3,515	0	632	77
80	0	2,529	0	2,529	0	445	52
81	0	1,780	0	1,780	0	306	35
82	0	1,224	0	1,224	0	206	23
83	0	821	0	821	0	135	15
84	0	537	0	537	0	87	9
85	0	342	0	342	0	54	6
86	0	212	0	212	0	33	3
87	0	128	0	128	0	19	2
88	0	75	0	75	0	11	1
89	0	42	0	42	0	6	1
90	0	23	0	23	0	3	0
91	0	12	0	12	0	2	0
92	0	6	0	6	0	1	0
93	0	3	0	3	0	0	0
94	0	2	0	2	0	0	0
95	0	1	0	1	0	0	0
96	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0
					\$ 4,313,771 +	\$ 1,811,468 =	\$ 6,125,239

**APPENDIX E – GLOSSARY OF TERMS**

**1. Actuarially Determined Contribution**

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

**2. Actuarial Valuation Date**

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

**3. Deferred Inflow of Resources**

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

**4. Deferred Outflow of Resources**

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

**5. Entry Age Actuarial Cost Method**

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

**6. Measurement Date**

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

**APPENDIX E – GLOSSARY OF TERMS**

**7. Net Pension Liability**

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

**8. Plan Fiduciary Net Position**

The fair or market value of assets.

**9. Reporting Date**

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

**10. Service Cost**

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

**11. Total Pension Liability**

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