

# **Public Employees' Retirement System of New Jersey**

## **Actuarial Valuation Report as of July 1, 2020**

**Produced by Cheiron**

**April 2021**

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***LETTER OF TRANSMITTAL***

April 1, 2021

Board of Trustees  
Public Employees' Retirement System of New Jersey  
State of New Jersey  
Department of the Treasury  
Division of Pension and Benefits, CN 295  
Trenton, New Jersey 08625-0295

Dear Board Members:

At your request, we have performed the July 1, 2020 Actuarial Valuation of the Public Employees' Retirement System of New Jersey (PERS or System).

In preparing our report, we relied on information (some oral and some written) supplied by the Division of Pensions and Benefits (DPB). 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 System's contribution for Fiscal Year Ending 2022. 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 in the July 1, 2019 valuation. The demographic and economic (other than the investment rate of return) actuarial assumptions are based on the recommended assumptions from the July 1, 2014 – June 30, 2018 Experience Study, approved by the Board of Trustees on February 19, 2020. The investment return assumption of 7.30% is based on the recommendation of the State Treasurer.

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 actuarial valuation report was prepared exclusively for the Public Employees' Retirement System 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,

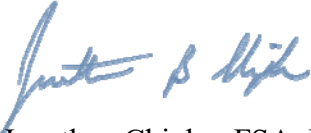
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**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**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 Public Employees Retirement System of New Jersey,
- Past and expected future trends and risks to the System's financial condition, and
- The State's and Local employers' contributions for the Fiscal Year Ending (FYE) 2022.

In this Section we present a summary of the principal valuation results. This includes the basis on which the July 1, 2020 valuation was completed and an examination of the current financial condition of the System. In addition, we present a review of the key historical trends followed by the System's projected financial outlook. The stress testing in accordance with the requirements set out in Chapter 277, P.L. 2017 follows in Section II.

This report does not include calculations under GASB Statements Nos. 67 and 68 which were provided in separate reports.

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

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
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**SECTION I – BOARD SUMMARY**

**Valuation Basis**

The July 1, 2020 valuation results are based on the same actuarial methods and assumptions as used in the July 1, 2019 valuation. The demographic and economic assumptions, aside from the valuation interest rate, are based on the July 1, 2014 – June 30, 2018 Experience Study, which was approved by the Board of Trustees on February 19, 2020. The valuation is based on a 7.30% interest rate, which was recommended by the State Treasurer.

This report is prepared using census data, plan provisions, and financial information as of July 1, 2020 provided by the Division of Pensions and Benefits, and does not reflect any changes in the membership, plan provisions, or assets that occur after the valuation date. Events following that date are not, and should not be, reflected in this report.

Whereas there remains a lot of uncertainty, we continue to monitor developments regarding the COVID-19 pandemic and the impact it may have on the System. Chapter 54, P.L. 2020 amends eligibility for accidental disability and accidental death benefits for PERS law enforcement officers, firefighters, or emergency medical responders 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. Actual experience, both demographic and economic, will be reflected in subsequent valuations as experience emerges.

This valuation reflects one other change to the plan provisions. Chapter 157, P.L. 2019 expanded the definition of regular or assigned duties for purposes of accidental disability retirement for PERS law enforcement officers or emergency medical technicians 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, total and permanent disability may occur after retirement on a service retirement or an ordinary disability retirement. After reviewing the members who have submitted eligibility registration forms and/or amended benefits request forms with the DPB, we do not expect this legislation to have a material impact on the benefits payable by the System. Therefore, we expect the impact of Chapter 157, P.L. 2019 will be recognized over time as part of the demographic experience as members are approved for such benefits.

This valuation also reflects the expected depletion of the Benefit Enhancement Fund (BEF), which is used to fund the Local employers' additional normal cost associated with Chapter 133, P.L. 2001. Upon the depletion of the BEF, the State is responsible for funding this additional normal cost for Local employers. The BEF covered a portion of this year's additional normal cost for Local employers and the State's FYE 2022 contribution will fund the remaining amount. Therefore, the State's FYE 2022 Statutory contribution includes an increased normal cost component compared to the FYE 2021 Statutory contribution. The State's FYE 2023 Statutory contribution will fund the entire additional normal cost for Local employers, which is expected to result in an increased normal cost component compared to the FYE 2022 Statutory contribution.

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The Appropriations Act of Fiscal Year 2020 reduced the State pension contribution of \$1,432,190,871 to \$990,323,874. The \$990,323,874 includes revenue of \$213,353,000 from the Lottery Enterprise Contribution Act. In addition, there was a Chapter 259, P.L. 2009 contribution of \$595,242, which was payable by fund transfer from the Second Injury Fund.

The potential impact of the Appropriations Act of 2021 reduces the State pension contribution for Fiscal Year Ending 2021 from the Statutory amount of \$1,622,539,084 to \$1,266,011,342 (78% of the State Statutory contribution less the Lottery Enterprise Contribution offset plus expected revenue from the Lottery Enterprise Contribution Act {78% x \$1,622,539,084 - \$227,931,388 + \$228,362,244}). The \$1,266,011,342 also includes expected State-paid Local contributions of \$13,013,178. In addition, there is a Chapter 259, P.L. 2009 contribution of \$566,508, which is payable by fund transfer from the Second Injury Fund. This valuation reflects the potential impact of the Appropriations Act of 2021. The 78% appropriation amount represents a decrease from the 80% appropriation assumed in the prior actuarial report.

Chapter 83, P.L. 2016 requires the State to make the required pension contributions on a quarterly basis: 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, State contributions are assumed to be made on a quarterly basis.

In accordance with Chapter 78, P.L. 2011, a pension committee is to be established for the State portion of the System and the Local portion of the System when the employer's "target funded ratio" is achieved. The "target funded ratio" is defined as the ratio of the actuarial value of assets divided by the actuarial liability expressed as a percentage that is 75% in fiscal year 2012 and increased annually by equal increments in each of the subsequent seven fiscal years, until the funded ratio equals 80% at which time it will remain at 80% for all subsequent fiscal years. The Local employers' portion of the System attained the required "target funded ratio" in Fiscal Year Ending 2012, establishing the committee for the Local employers' portion of the System. The State portion of the System has not attained the required "target funded ratio" and thus the pension committee has not been established for the State portion of the System.

Under Chapter 98, P.L. 2017, the Lottery Enterprise Contribution Act, the Public Employees' Retirement System receives 21.02% of the proceeds of the Lottery Enterprise, based on its members' past or present employment in schools and institutions in the State for a term of 30 years. As of the July 1, 2020 valuation, 26 years remain. Revenues from Chapter 98, P.L. 2017, the Lottery Enterprise Contribution Act, are assumed to be contributed to the trust on a monthly basis. The Chapter 78, P.L. 2011 "target funded ratio" is based on the actuarial value of assets plus the allocable special asset value. The special asset value is the present value of remaining lottery contributions to the retirement systems as provided to us by the Division of Pensions and Benefits. Effective with the fiscal year 2018, the State's pension contribution shall be reduced by the product of the allocable percentage for such retirement system, the adjustment percentage for such retirement system and the special asset adjustment.

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The valuation excludes assets and liabilities under the Non-Contributory Group Insurance Premium Fund. The Non-Contributory Group Insurance premiums are separately funded on a pay-as-you-go basis. For Local employers, the Non-Contributory Group Insurance Contribution is calculated as the present value of expected benefit payments for the upcoming year based on valuation assumptions.

**Key Results**

Following are Table I-1 and Table I-2 which summarize the key results of the valuation with respect to the System's membership, assets and liabilities, and contributions for State and Local employers. The results are presented and compared for both the current and prior year.



**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
**JULY 1, 2020 ACTUARIAL VALUATION**

**SECTION I – BOARD SUMMARY**

**Table I-1**  
**Summary of Key Valuation Results**  
**State**

Valuation Date Fiscal Year Ending (FYE)	July 1, 2020 2022	July 1, 2019 2021	% Change
<b><u>Member Data</u></b>			
Contributing Actives <sup>1</sup>	67,774	67,906	-0.2%
Non-Contributing Actives <sup>1</sup>	9,331	9,255	0.8%
Deferred Vesteds	213	229	-7.0%
Retirees and Beneficiaries <sup>2</sup>	60,783	59,849	1.6%
Total Members	<u>138,101</u>	<u>137,239</u>	0.6%
Appropriation Payroll <sup>3</sup>	\$ 4,637,529,278	\$ 4,539,069,588	2.2%
Annual Retirement Allowances in Pay	\$ 1,726,418,877	\$ 1,671,166,694	3.3%
<b><u>Assets and Liabilities</u></b>			
Actuarial Liability	\$ 26,285,137,008	\$ 25,666,760,996	2.4%
Actuarial Value of Assets (AVA) <sup>4</sup>	<u>8,045,759,732</u>	<u>8,017,468,579</u>	0.4%
Unfunded Actuarial Liability/(Surplus)	\$ 18,239,377,276	\$ 17,649,292,417	3.3%
Funded Ratio (AVA)	30.6%	31.2%	-0.6%
Actuarial Value of Assets <sup>4</sup> including Special Asset Value (AVA + SAV)	<u>\$ 10,687,660,452</u>	<u>\$ 10,669,315,506</u>	0.2%
Unfunded Actuarial Liability/(Surplus)	\$ 15,597,476,556	\$ 14,997,445,490	4.0%
Funded Ratio (AVA + SAV)	40.7%	41.6%	-0.9%
Market Value of Assets (MVA) <sup>4</sup>	<u>\$ 7,249,876,062</u>	<u>\$ 7,454,643,131</u>	-2.7%
Unfunded Actuarial Liability/(Surplus)	\$ 19,035,260,946	\$ 18,212,117,865	4.5%
Funded Ratio (MVA)	27.6%	29.0%	-1.4%
<b><u>Contribution Amounts</u></b> <sup>5</sup>			
State Normal Cost at End of Year <sup>6</sup>	\$ 172,944,579	\$ 141,910,256	21.9%
Amortization Payment of UAL <sup>6</sup>	<u>1,545,517,639</u>	<u>1,480,628,828</u>	4.4%
Total Statutory Contribution for FYE	\$ 1,718,462,218	\$ 1,622,539,084	5.9%
Expected Percent Appropriated	100%	78%	22.0%
State Appropriation for Pension	\$ 1,718,462,218	\$ 1,265,580,486	35.8%
Lottery Enterprise Contribution Offset	<u>(230,352,113)</u>	<u>(227,931,388)</u>	1.1%
Net State Contribution	\$ 1,488,110,105	\$ 1,037,649,098	43.4%

<sup>1</sup> Reflects all records for multiple members, which are members employed by more than one PERS-participating employer at the same time

<sup>2</sup> QDRO recipients are excluded from member counts

<sup>3</sup> Limited annual compensation for contributing actives

<sup>4</sup> Includes discounted State receivable contributions and Lottery proceeds from the upcoming Fiscal Year as shown in Table III-2

<sup>5</sup> In addition to the amounts shown, the Statutory Contributions are satisfied by funds transferred from the Second Injury Fund in amounts equal to \$577,270 and \$566,508 for FYE 2022 and 2021, respectively.

<sup>6</sup> Includes \$48,654,369 and \$16,683,561 for FYE 2022 and 2021, respectively for Local obligations payable by the State in accordance with Chapter 133, P.L. 2001 and Chapter 366, P.L. 2001

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION I – BOARD SUMMARY**

<b>Table I-2 Summary of Key Valuation Results Local Employers</b>			
<b>Valuation Date Fiscal Year Ending (FYE)</b>	<b>July 1, 2020 2022</b>	<b>July 1, 2019 2021</b>	<b>% Change</b>
<b><u>Member Data</u></b>			
Contributing Actives <sup>1</sup>	142,757	145,287	-1.7%
Non-Contributing Actives <sup>1</sup>	26,914	26,597	1.2%
Deferred Vesteds	664	713	-6.9%
Retirees and Beneficiaries <sup>2</sup>	123,992	122,643	1.1%
<b>Total Members</b>	<b>294,327</b>	<b>295,240</b>	<b>-0.3%</b>
Appropriation Payroll <sup>3</sup>	\$ 7,328,393,274	\$ 7,236,080,086	1.3%
Annual Retirement Allowances in Pay	\$ 2,328,399,284	\$ 2,251,384,758	3.4%
<b><u>Assets and Liabilities</u></b>			
Actuarial Liability	\$ 36,410,100,750	\$ 35,526,210,970	2.5%
Actuarial Value of Assets (AVA) <sup>4</sup>	24,424,654,983	23,928,515,595	2.1%
Unfunded Actuarial Liability/(Surplus)	\$ 11,985,445,767	\$ 11,597,695,375	3.3%
Funded Ratio (AVA)	67.1%	67.4%	-0.3%
Market Value of Assets (MVA) <sup>4</sup>	\$ 22,891,936,466	\$ 23,249,120,186	-1.5%
Unfunded Actuarial Liability/(Surplus)	\$ 13,518,164,284	\$ 12,277,090,784	10.1%
Funded Ratio (MVA)	62.9%	65.4%	-2.5%
<b><u>Contribution Amounts</u></b>			
Employer Normal Cost at End of Year <sup>5</sup>	\$ 159,894,395	\$ 161,070,184	-0.7%
Amortization Payment of UAL <sup>5</sup>	995,632,110	956,787,538	4.1%
ERI Payments	3,255,531	9,657,753	-66.3%
Chapter 19, P.L. 2009 Payments	9,040,135	8,863,793	2.0%
<b>Total Statutory Contribution for FYE</b>	<b>\$ 1,167,822,171</b>	<b>\$ 1,136,379,268</b>	<b>2.8%</b>
Phase-in of the Impact of Assumption Changes <sup>6</sup>	(38,391,509)	(76,783,019)	-50.0%
<b>Net Local Employer Contribution</b>	<b>\$ 1,129,430,662</b>	<b>\$ 1,059,596,249</b>	<b>6.6%</b>
Non-Contributory Group Insurance Contribution	\$ 53,981,229	\$ 52,875,923	2.1%

<sup>1</sup> Reflects all records for multiple members, which are members employed by more than one PERS-participating employer at the same time

<sup>2</sup> QDRO recipients are excluded from member counts

<sup>3</sup> Limited annual compensation for contributing actives

<sup>4</sup> Includes discounted State receivable contributions as shown in Table III-2

<sup>5</sup> Excludes \$48,654,369 and \$16,683,561 for FYE 2022 and 2021, respectively for Local obligations payable by the State in accordance with Chapter 133, P.L. 2001 and Chapter 366, P.L. 2001

<sup>6</sup> Only includes impact of assumption changes from the July 1, 2014 - June 30, 2018 Experience Study. The impact of the valuation interest rate change as of July 1, 2019 is not phased-in.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
**JULY 1, 2020 ACTUARIAL VALUATION**

**SECTION I – BOARD SUMMARY**

The key results of the July 1, 2020 actuarial valuation **for the State** are as follows:

- The total Statutory contribution increased from \$1,623 million for FYE 2021 to \$1,718 million for FYE 2022 prior to any adjustments for the potential Appropriations Act of 2022 or the Lottery Enterprise offset.
- The funded ratio, the ratio of actuarial asset value over liabilities, decreased from 31.2% to 30.6%. The funded ratio that is used to measure against the “target funded ratio” and is based on the actuarial value of assets plus special asset value, decreased from 41.6% as of July 1, 2019 to 40.7% as of July 1, 2020. Using the market value of assets, the funded ratio also decreased from 29.0% to 27.6%.
- The unfunded actuarial liability based on the actuarial asset value plus special asset value increased from \$15.0 billion on July 1, 2019 to \$15.6 billion on July 1, 2020. The unfunded actuarial liability used in determining the Statutory contributions (excess of actuarial liability over the actuarial value of assets) increased from \$17.6 billion to \$18.2 billion.
- During the year, there was a total actuarial experience loss of \$343 million, consisting of an asset loss of \$205 million and a liability loss of \$138 million. The rate of return on the actuarial value of assets was 4.34% compared to the expected return of 7.30%, resulting in the \$205 million asset loss.
- Though there were two changes in eligibility for accidental disability resulting from Chapter 54, P.L. 2020 and Chapter 157, P.L. 2019, these did not impact the actuarial liability as of July 1, 2020.

The key results of the July 1, 2020 actuarial valuation **for Local employers** are as follows:

- The total Statutory contribution increased from \$1,136 million for FYE 2021 to \$1,168 million for FYE 2022 prior to any phase-in.
- The funded ratio, the ratio of actuarial asset value over liabilities, decreased from 67.4% as of July 1, 2019 to 67.1% as of July 1, 2020. Based on the market value of assets, the funded ratio also decreased from 65.4% to 62.9%.
- The unfunded actuarial liability increased from \$11.6 billion on July 1, 2019 to \$12.0 billion on July 1, 2020 on an actuarial value of assets basis.
- During the year, there was a total actuarial experience loss of \$344 million, consisting of an asset loss of \$397 million and a liability gain of \$53 million. The rate of return on the actuarial value of assets was 5.59% compared to the expected return of 7.30%, resulting in the \$397 million asset loss.
- Last year the Board of Trustees adopted a three-year phase-in of the \$115 million increase in the FYE 2021 Statutory pension contribution due to the assumption changes from the 2018 experience study. The FYE 2022 Local employers' net pension contribution now reflects 2/3<sup>rd</sup> of that impact, or \$77 million. This results in a reduction in the Local employers' FYE 2022 net pension contribution of \$38 million (\$115 million - \$77 million).
- Though there were two changes in eligibility for accidental disability resulting from Chapter 54, P.L. 2020 and Chapter 157, P.L. 2019, these did not impact the actuarial liability as of July 1, 2020.

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**SECTION I – BOARD SUMMARY**

**Recent Trends**

Although most of the attention given to the valuation reflects the current computed unfunded actuarial liability, funded ratio, and contribution amounts, each valuation is merely a snapshot of the long-term progress of a pension fund. It is important to take a step back from these latest results and view them in the context of the System's recent history. Below, we present a series of graphs which display historical trends for 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. Note that the contribution amounts in this section include State-paid Local obligations with Local employers' contribution amounts to illustrate their impact on the Local employers' portion of the unfunded actuarial liability. The historical amounts in Appendix D show the State-paid Local obligations with State contributions.

In reviewing the historic trends over the 10 year period, the declining funded status coupled with significant negative net cash flow highlights the potential risk of running out of assets to pay benefits unless the State consistently contributes the full amount of the Statutory required contributions.

Assets and Liabilities

The gray bars represent the Actuarial Liability (AL). The green line is the Market Value of Assets (MVA), the gold line is the Actuarial Value of Assets (AVA) and the blue line (which starts in 2016) is the AVA plus the Special Asset Value (SAV). The System's funded ratio (ratio of assets to actuarial liability) on a MVA basis, an AVA basis and an AVA+SAV basis, is shown next to the respective asset lines.

The liability has been increasing over time in part due to additional benefit accruals but also due to decreases in the discount rate and other assumption changes.

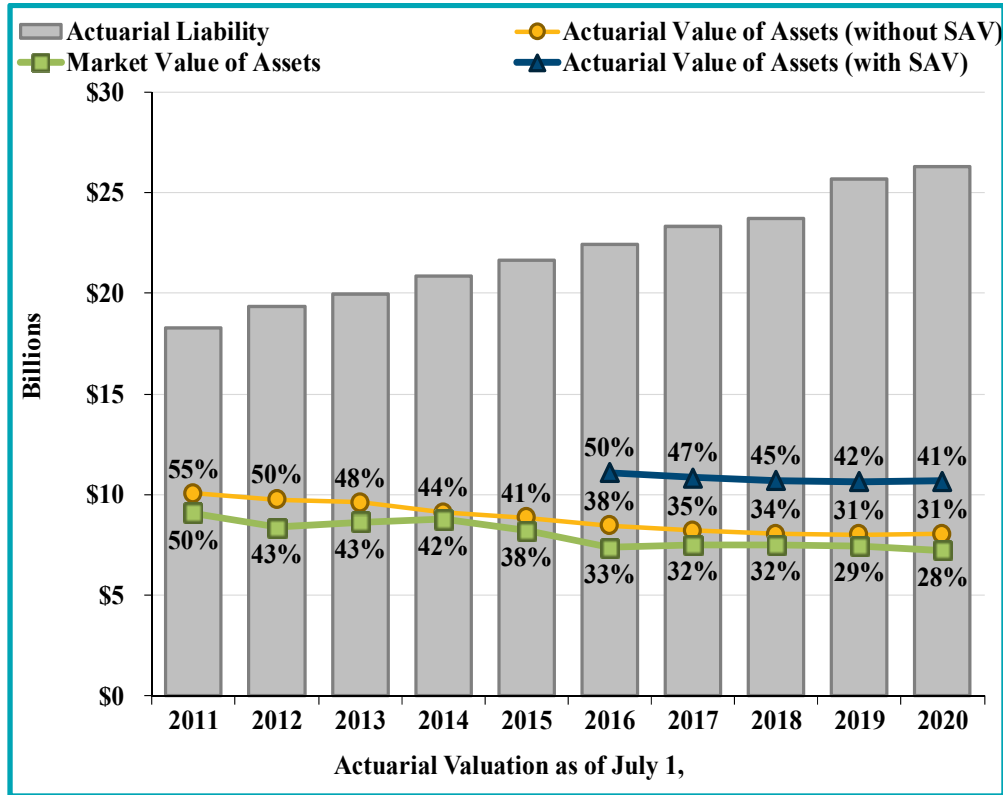
For State, the funded ratio has been decreasing over time in part due to decreases in the discount rate, recognition of the 2008/2009 market losses and because the State has not been making the full Statutory contribution for the entire period shown.

For Local employers, the AVA funded ratio has decreased over the period due to decreases in the discount rate and recognition of the 2008/2009 market losses. (The MVA funded ratio behaves differently during the period because the 2008/2009 market losses were immediately recognized in the MVA.) In addition, while Local employers have been making the full Statutory contribution, the State has not been making the full State-paid Local Statutory contribution for the entire period shown. To date, the State-paid Local Statutory contributions have been small relative to the overall Statutory contribution. However, the State-paid Local obligations are expected to increase over the next couple years with the expected depletion of the Benefit Enhancement Fund (BEF). Upon depletion, the State will be responsible for the Local employer normal cost associated with Chapter 133, P.L. 2001.

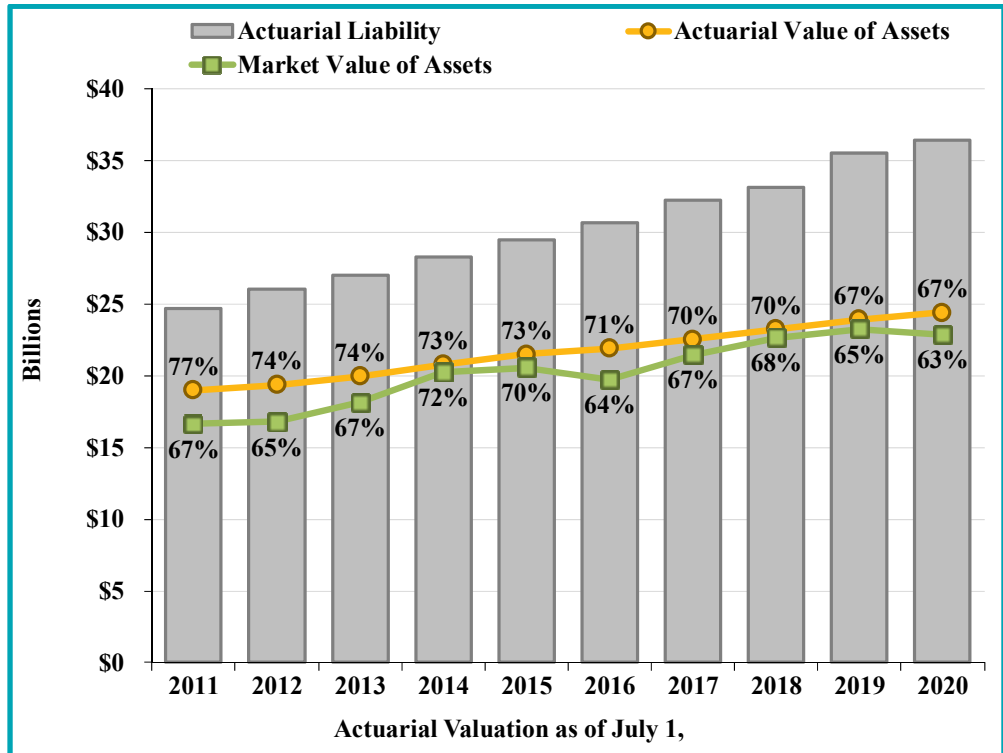
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**SECTION I – BOARD SUMMARY**

**State**



**Local Employers**



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Membership Trends

The following graphs show the membership counts of the System for the last ten valuations. The numbers which appear above each bar represent the ratio of the number of inactive and non-contributing active members to contributing active members at each valuation date, and provide a measure of the maturity of the System. We refer to this as the *support ratio*. The support ratios for both State and Local employers have increased over the period. As more of the liability moves from actives to inactive, the System will experience more volatility in contribution rates when actuarial gains and losses are recognized.

With the current inactive-to-active ratio of around 1.0, there are almost as many active members as inactive members implying that the risk factors for both the State and Local employers are not at a high level relative to other mature pension systems.

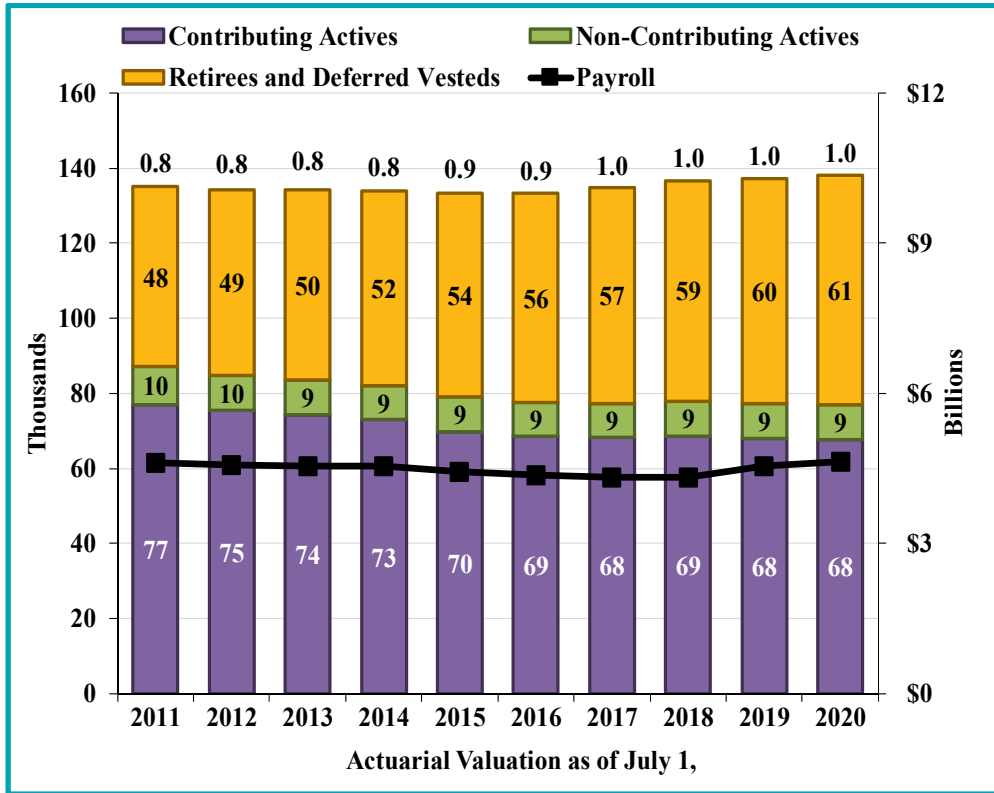
Valuations for 2017 and later reflect all records for multiple members, which are active members employed by more than one participating employer at the same time.

The numbers that are shown in the middle of the bars represent the number of actives or inactive members in thousands. The black line represents the appropriation payroll for contributing actives over the period and corresponds with the right-hand scale.

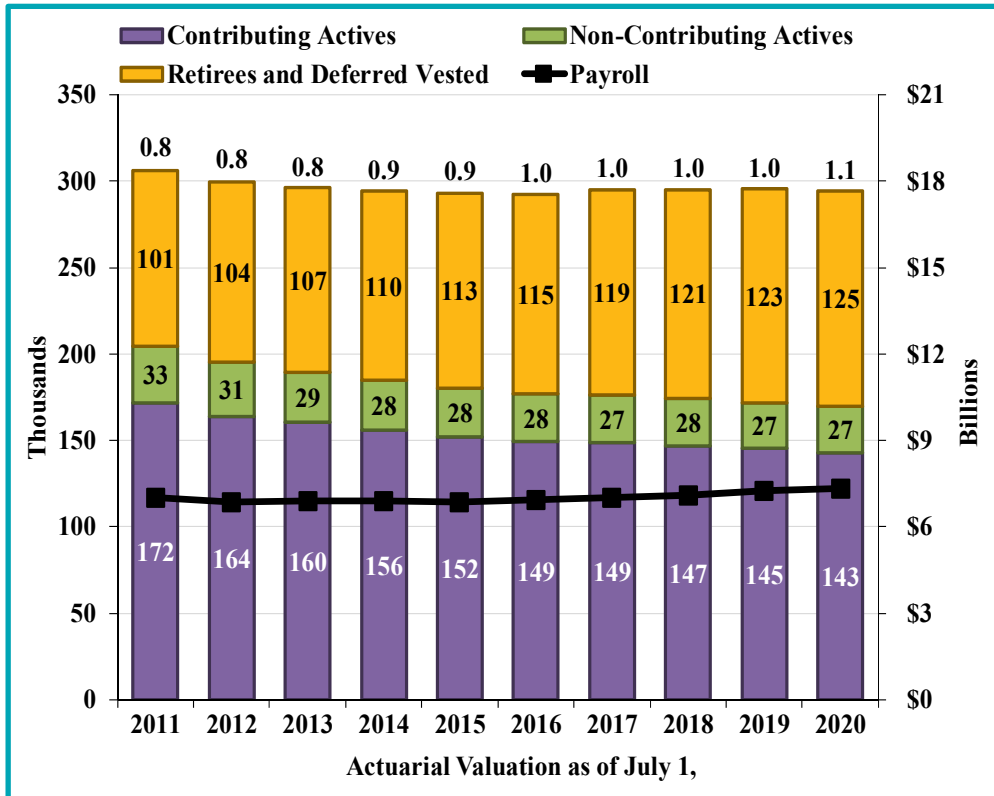
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**Local Employers**



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Cash Flows

The following graphs show the System net cash flow (contributions less benefit payments and expenses) at the end of each fiscal year. For the entire period shown, the net cash flow excluding investments has been negative. This illustrates that contributions have not been sufficient to cover benefits and expenses in any years over the past decade. A major implication of a negative cash flow is that the difference each year must be met first from cash generated by investments and then be paid out of the principal assets, representing additional risk for the System if investments need to be sold in a down market to cover benefit payments. The black dotted line shows the net cash flow as a percent of the market assets and goes with the axis on the right.

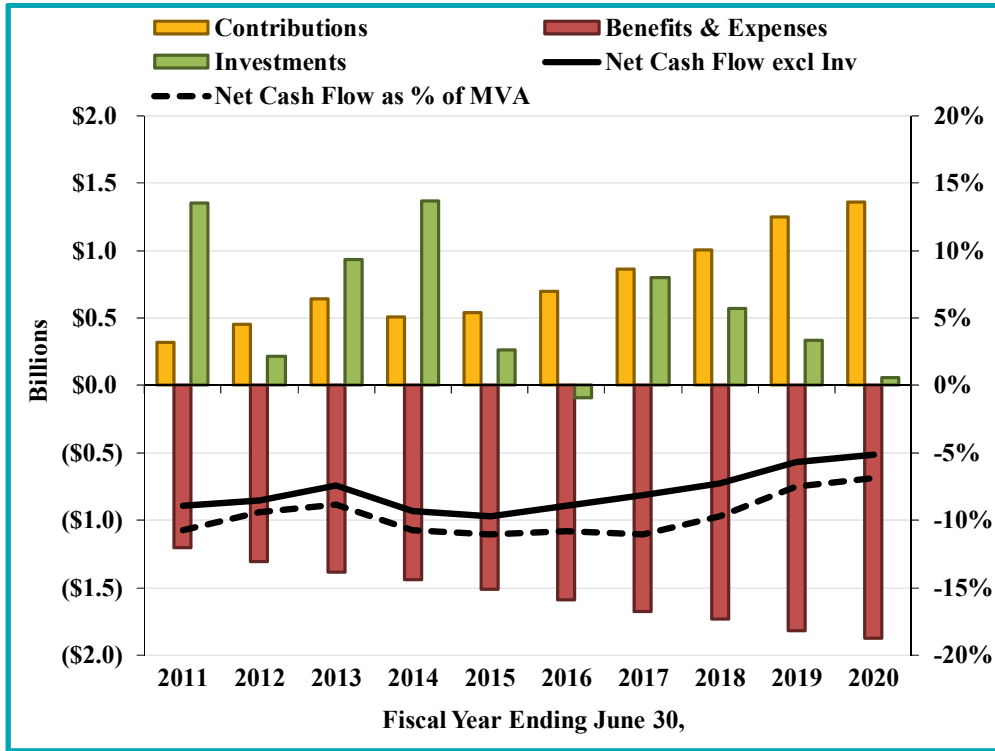
The net cash flow for State has been significantly more negative than the net cash flow for Local employers, and even more disconcerting is that the negative cash flow as a percentage of the market value of assets for State has been greater than the long-term investment return assumption with the exception of this past year. By itself, this represents a plan that is expected to defund with the risk of insolvency if the contributions do not continue to catch up to cover a higher portion of the benefit payments and expenses. In 2020, the net cash flow was -6.8%, which implies almost all of the assumed investment return if achieved at 7.30% will be needed to cover the negative cash flow. Because the State appropriation percentages have generally increased by approximately 10% per year, the State's negative cash flow has improved since 2017. For Local employers, the negative cash flow has increased over the period shown due to an increase in the number of retirees and their corresponding benefit payments.



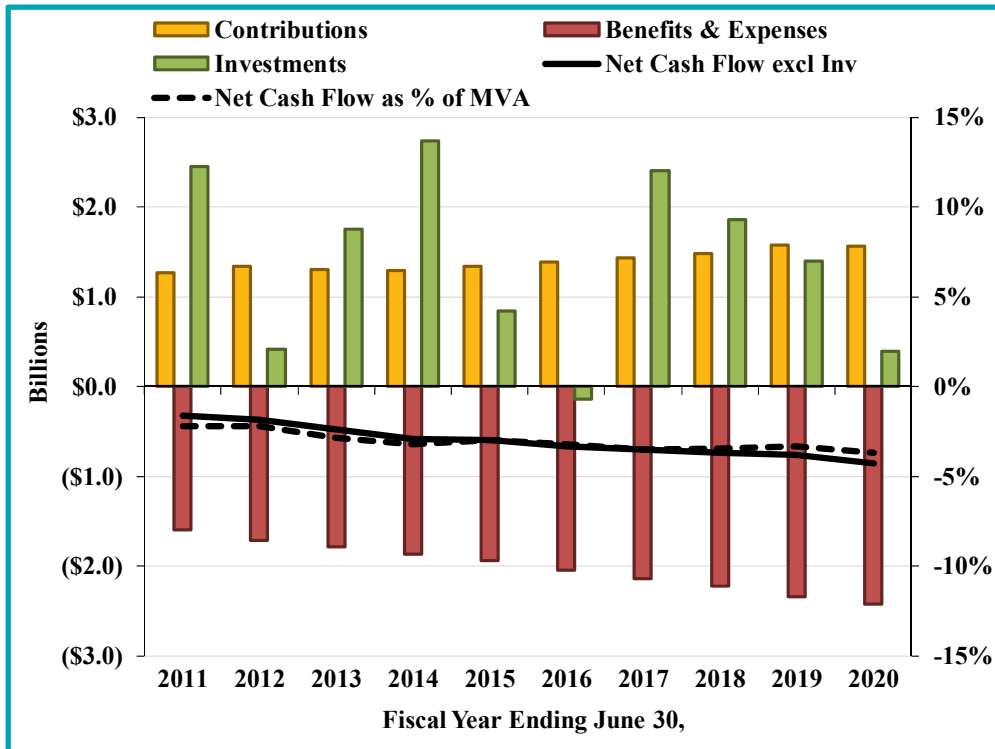
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**State**



**Local Employers**



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**SECTION I – BOARD SUMMARY**

Contributions

These graphs show the historical trends for the State and Local employer contributions. The Local employer contributions include the State-paid Local obligations, but not Early Retirement Incentive (ERI) or Chapter 19, P.L. 2009 payments. The Statutory contributions are comprised of the normal cost (blue bars) and the amortization of the UAL (gold bars). The green line shows the actual contributions over the period. For FYE 2021 and 2022, the green line has a lighter shade to indicate that these are expected, rather than actual, contributions. The expected contributions are based on the anticipated appropriations shown in Table I-1 and Table I-2.

The red line is the **tread water line**, which is the normal cost plus the interest on the UAL. The tread water line shows the minimum contributions needed to avoid an increase in the UAL.

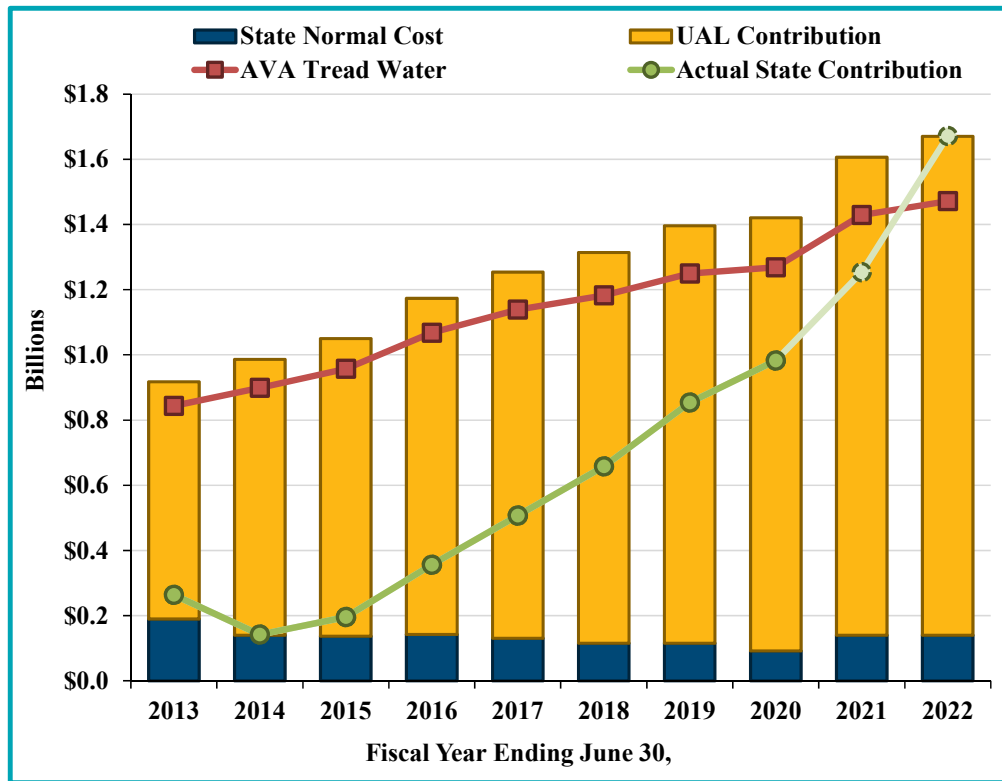
The graph for State shows that not only has the State been making contributions less than required by Statute, but that the State contributions have historically been significantly below the tread water line. When contributions are lower than the normal cost plus interest on the UAL, the unfunded actuarial liability is expected to grow from one year to the next. For FYE 2021 and 2022, the State is expected to appropriate 78% and 100% of the Statutory contribution, respectively. For FYE 2022, actual State contributions are expected to be greater than the tread water amount for the first time during the entire period shown.

The graph for Local employers shows that the Local employers have consistently made their Statutory contributions. While the State has not been contributing the full State-paid Local obligations, the total contributions have still been greater than the tread water line. In FYE 2021 and FYE 2022, actual contributions are expected to be lower than the Statutory contribution because the Board adopted a three-year phase-in of the impact of the assumption changes from the July 1, 2014 – June 30, 2018 Experience Study. Even with the phase-in, actual contributions are expected to exceed the tread water line. Actual contributions are expected to return to the Statutory contribution level in FYE 2023 when the impact of the assumption changes is fully phased-in.

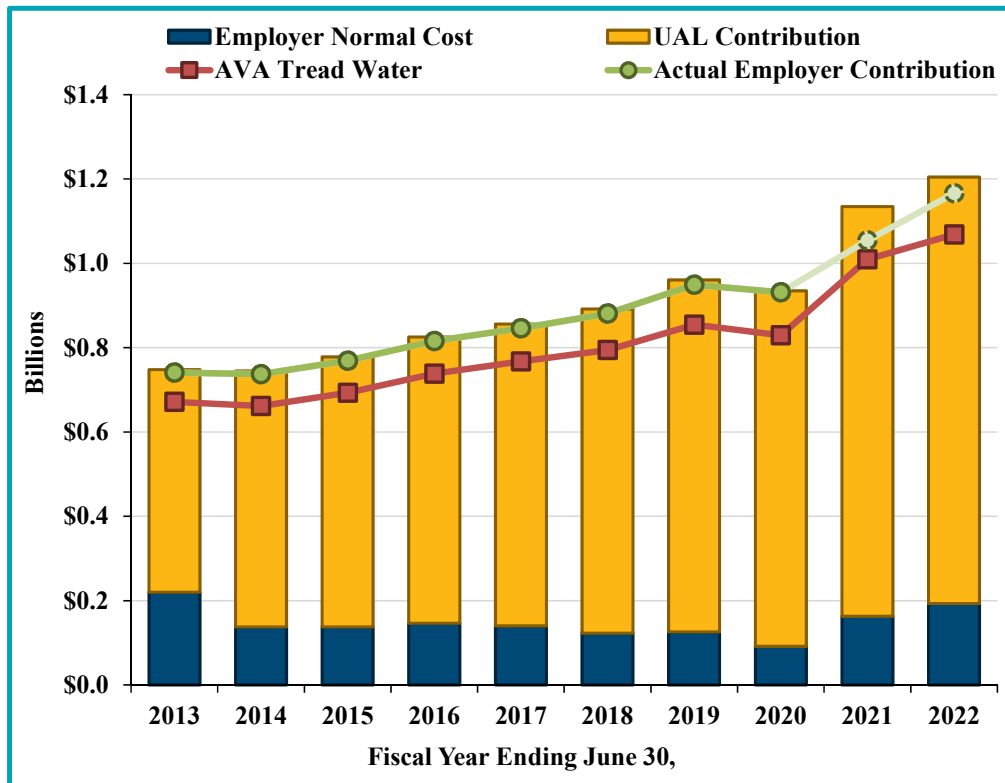
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**SECTION I – BOARD SUMMARY**

**State**



**Local Employers**



SECTION I – BOARD SUMMARY

**Projected Future Outlook**

The analysis of projected financial trends is perhaps the most important component of the valuation. This has been recognized by the State Legislation in their adoption of Chapter 277, P.L. 2017 requiring the System have stress testing performed annually. The graphs presented in this section show the expected progress of the System's funded status over the next 30 years, measured in terms of the expected funded ratios and State and Local employer contributions assuming that the System is ongoing.

While experience will not conform exactly to the assumptions every year, the trends reflect reasonable expectations. As a result, in addition to the baseline projection in this section, we provided additional **stress testing** in Section II based on varying investment returns in the future. It is our opinion the stress testing analyses shown in Section II meet the requirements of Chapter 277, P. L. 2017.

The projections assume a constant active population. As members retire, terminate and die based on the current valuation assumptions, it is assumed that new members will replace them based on characteristics (age/gender/salary) similar to recent new members.

Additional assumptions used for these projections, including the investment rate of return for each subsequent valuation as recommended by the State Treasurer, as well as the anticipated appropriation percentages, are shown in Appendix B.

Baseline Scenario

The baseline projection shows the outcome if all actuarial assumptions, including the long-term rate of return assumption of 7.00%, as recommended by the State Treasurer, are exactly met. For each scenario we show two graphs.

The top graph compares the Market Value of Assets (green line) and the Actuarial or smoothed Value of Assets (gold line) to the System's Actuarial Liabilities (gray bars). For the State, the graph also shows the Actuarial Value of Assets + the Special Asset Value (blue line). In addition, at the top of the graph, we show the System's funded ratio on an Actuarial Value of Assets basis (ratio of Actuarial Value of Assets to Actuarial Liabilities). The years shown in the graph signify the valuation date as of July 1 of the labeled year.

The State's funded ratio on an Actuarial Value of Assets basis is projected to remain level over the next couple years, as the valuation investment rate of return assumption decreases from 7.30% to 7.00%, before beginning a slow but steady increase to 100% by 2049.

The Local employers' funded ratio on an Actuarial Value of Assets basis is projected to drop slightly over the next few years, as the Local employers' contribution phases in the impact of the assumption changes from the July 1, 2014 – June 30, 2018 Experience Study and the valuation investment rate of return assumption decreases from 7.30% to 7.00%, before beginning a slow but steady increase to 86% by 2050.

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The funded ratio for State increases faster than the Local employers' portion and reaches 100% compared to 86% for Local employers by the end of the projection period because of the expected lottery revenue that is contributed each year in excess of the Statutory contributions. This additional revenue helps pay down the UAL sooner for the State portion.

The bottom graph shows the contributions by fiscal year. The member contributions are in purple, the State contributions are in gold, the State-paid Local contributions are in light blue and the Local employers' contributions are in green. We show the contribution values in dollars except for the State-paid Local contributions which are small compared to total contributions.

The projected lottery revenue is provided by the DPB and is outlined in blue. Lottery revenue amounts shaded in gold are offsets to Statutory contributions. Lottery revenue amounts shaded white are additional contributions in excess of the Statutory contributions that pay down the UAL. The lottery revenue through FYE 2022 largely offsets the Statutory contribution while lottery amounts after that include additional payments toward the UAL. The lottery offsets during the projection period are calculated based on the methodology as defined in Chapter 98, P.L. 2017.

The projection assumes the State appropriates 100% of the Statutory contribution in FYE 2022 and each year thereafter. Local employers contribute 100% of the Statutory amount, except in FYE 2022 as the impact of the assumption changes from the July 1, 2014 – June 30, 2018 Experience Study is phased in. Both the appropriated State and Local employer contributions and the member contributions are labeled. The contributions exclude amounts payable for the Non-Contributory Group Insurance.

The dashed black line in the bottom graph shows the gross normal cost. The difference between the dashed black line and the purple bar is the State and Local employers' portion of the normal cost.

The solid black line is the tread water line based on the Actuarial Value of Assets. Because the tread water metric equals the normal cost plus interest on the UAL, the difference between the solid black line and the dashed black line is the interest on the UAL. When the contributions exceed the solid line, as is the case for all future years for both State and Local employers, the UAL is expected to decrease and the funded ratio is expected to increase. If contributions fall below the solid black line, the UAL would be expected to increase and the funded ratio would be expected to decrease.

The Statutory State contribution increases noticeably in FYE 2023 as the valuation investment rate of return assumption decreases from 7.30% to 7.00%. Thereafter, the Statutory contributions remain relatively steady until the lottery revenue stops. Once the appropriated amount equals the Statutory contribution, beginning in FYE 2022, the contributions reach the level necessary to pay down the UAL and the tread water line begins to decrease relative to the Statutory contribution. Additionally, expected lottery revenue that is contributed each year in excess of the Statutory contribution also helps pay down the UAL sooner.

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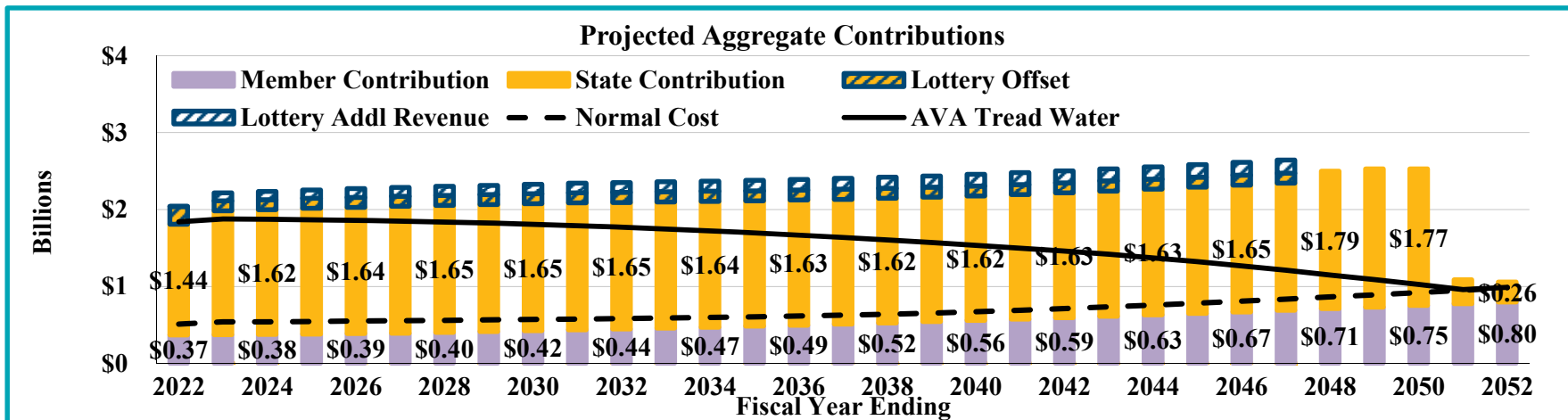
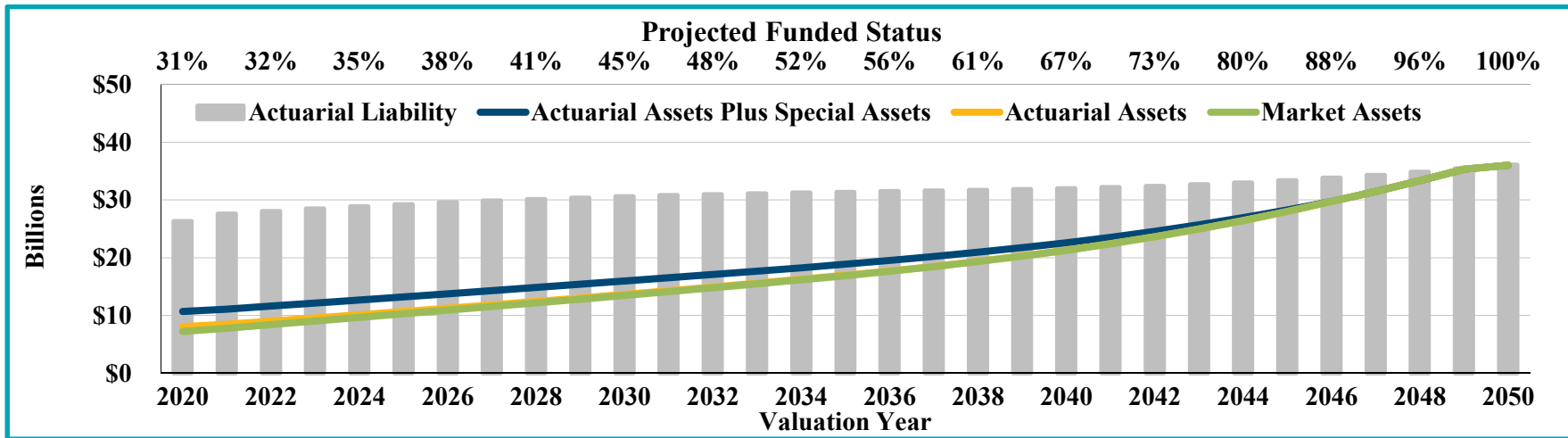
The Local employers' contribution increases noticeably in FYE 2023 as the Local employers' contribution phases in the impact of the assumption changes from the July 1, 2014 – June 30, 2018 Experience Study and the valuation investment rate of return assumption decreases from 7.30% to 7.00%. Thereafter, the Local employers' contributions gradually increase. The State-paid Local contributions are expected to increase in FYE 2023 as the Benefit Enhancement Fund is fully depleted and the State becomes responsible for the Local employers Chapter 133, P.L. 2001 normal cost. After that, the State-paid Local contributions gradually decrease as the population eligible for the Chapter 133, P.L. 2001 benefit enhancements decreases.

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**Baseline: 7.0% return for all years**

State

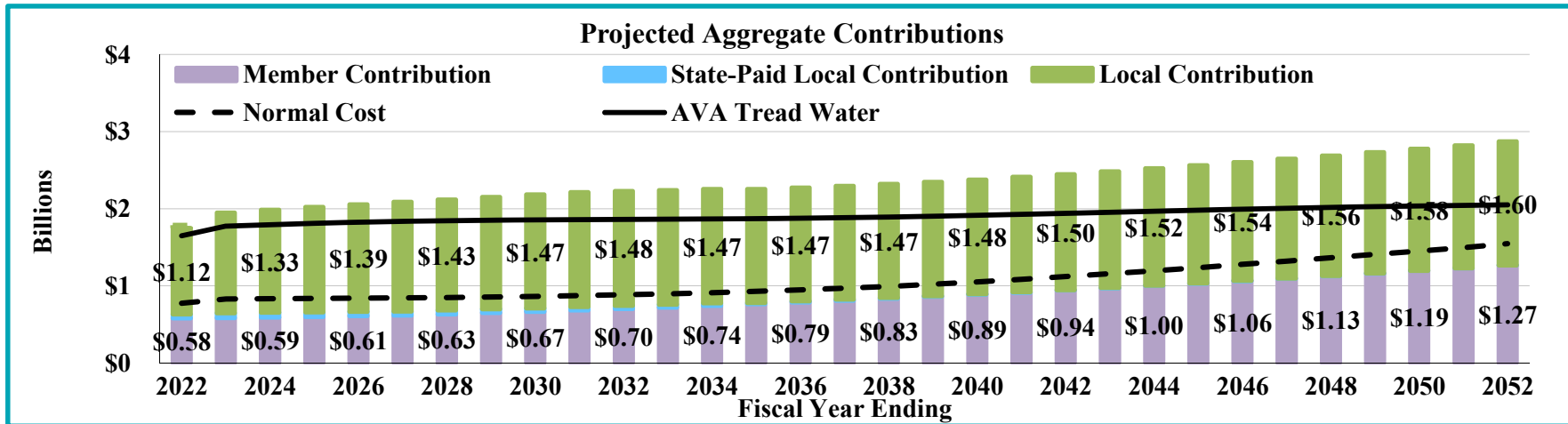
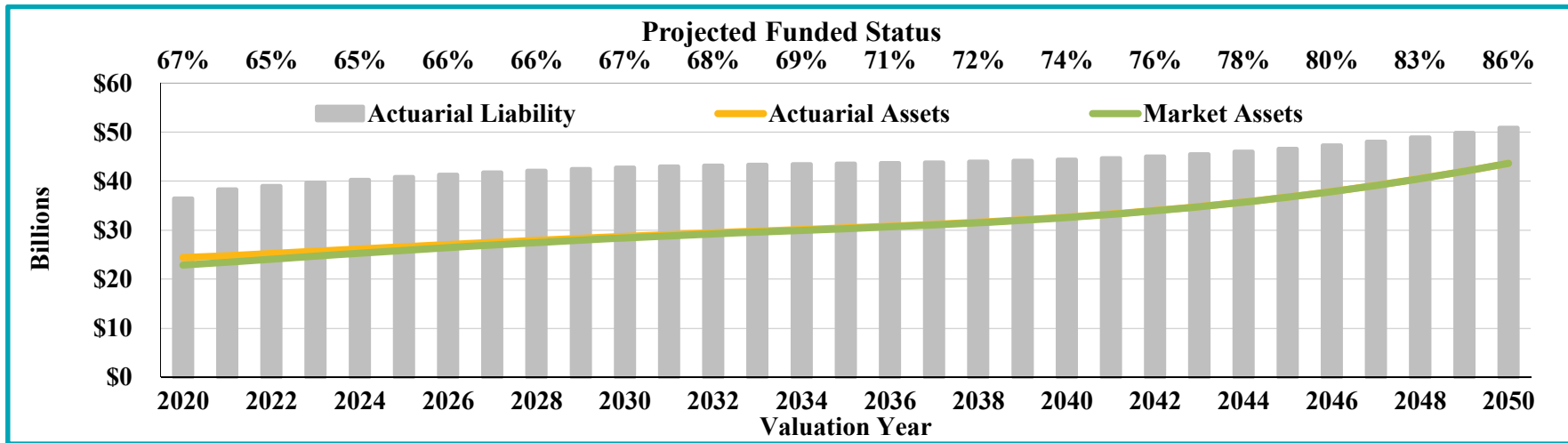


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**Baseline: 7.0% return for all years**

**Local Employers**





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**SECTION II – ASSESSMENT AND DISCLOSURE OF RISK**

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

### **Identification of Risks**

The fundamental risk to the System is that the contributions needed to pay the benefits become unaffordable. While there are a number of factors that could lead to contribution amounts becoming unaffordable, we believe the primary risks are:

- Investment risk,
- Assumption change risk, and
- Contribution risk.

Other risks that we have not identified may also turn out to be important.

*Investment risk* is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the unfunded actuarial liability necessitating higher contributions in the future unless there are other gains that offset these investment losses. The potential volatility of future investment returns is determined by the System's asset allocation and the affordability of the investment risk is determined by the amount of assets invested relative to the size of the plan sponsor or other contribution base.

*Assumption change risk* is the potential for the environment to change such that future valuation assumptions are different than the current assumptions. For example, declines in interest rates over the last three decades resulted in higher investment returns for fixed income investments, but lower expected future returns necessitating either a change in investment policy, a reduction in discount rate, or some combination of the two. Assumption change risk is an extension of the other risks identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in environment when the current assumption is no longer reasonable.

*Contribution risk* is the potential for actual future contributions to deviate from expected future Statutory contributions. There are different sources of contribution risk ranging from the sponsor choosing to not make contributions in accordance with the funding policy to material changes in the contribution base (e.g., covered employees, covered payroll, sponsor revenue) that affect the amount of contributions the System can collect.

The charts below show the components of changes in the Unfunded Actuarial Liability (UAL) for the State and Local employers over the last 10 years, including investment gains and losses on the Actuarial Value of Assets, liability gains and losses, assumption and plan/policy changes, and contributions compared to the tread water level of contributions (normal cost plus interest on the UAL.) The net UAL change is shown by the dark blue line. Tables II-1 and II-2 below the chart summarize the changes in the UAL over the last 10 years.

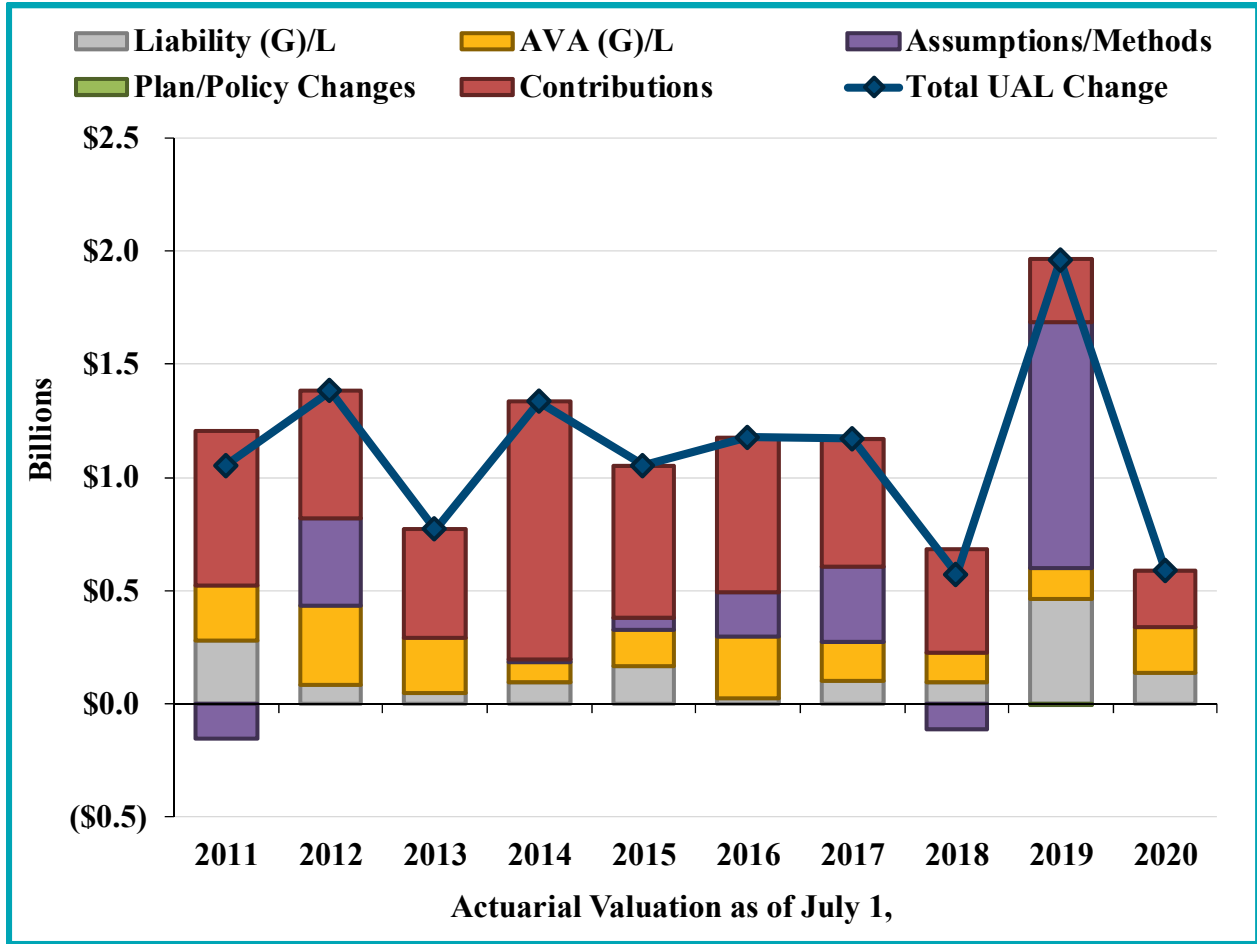
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**SECTION II – ASSESSMENT AND DISCLOSURE OF RISK**

These total changes in UAL support our identification of investment returns, assumption changes, and contributions as the primary risks to the System.

**Historical Changes in UAL 2011-2020**

State



Actuarial Valuation as of July 1,

**Table II-1  
Changes in Unfunded Actuarial Liability  
(Dollar amounts in millions)**

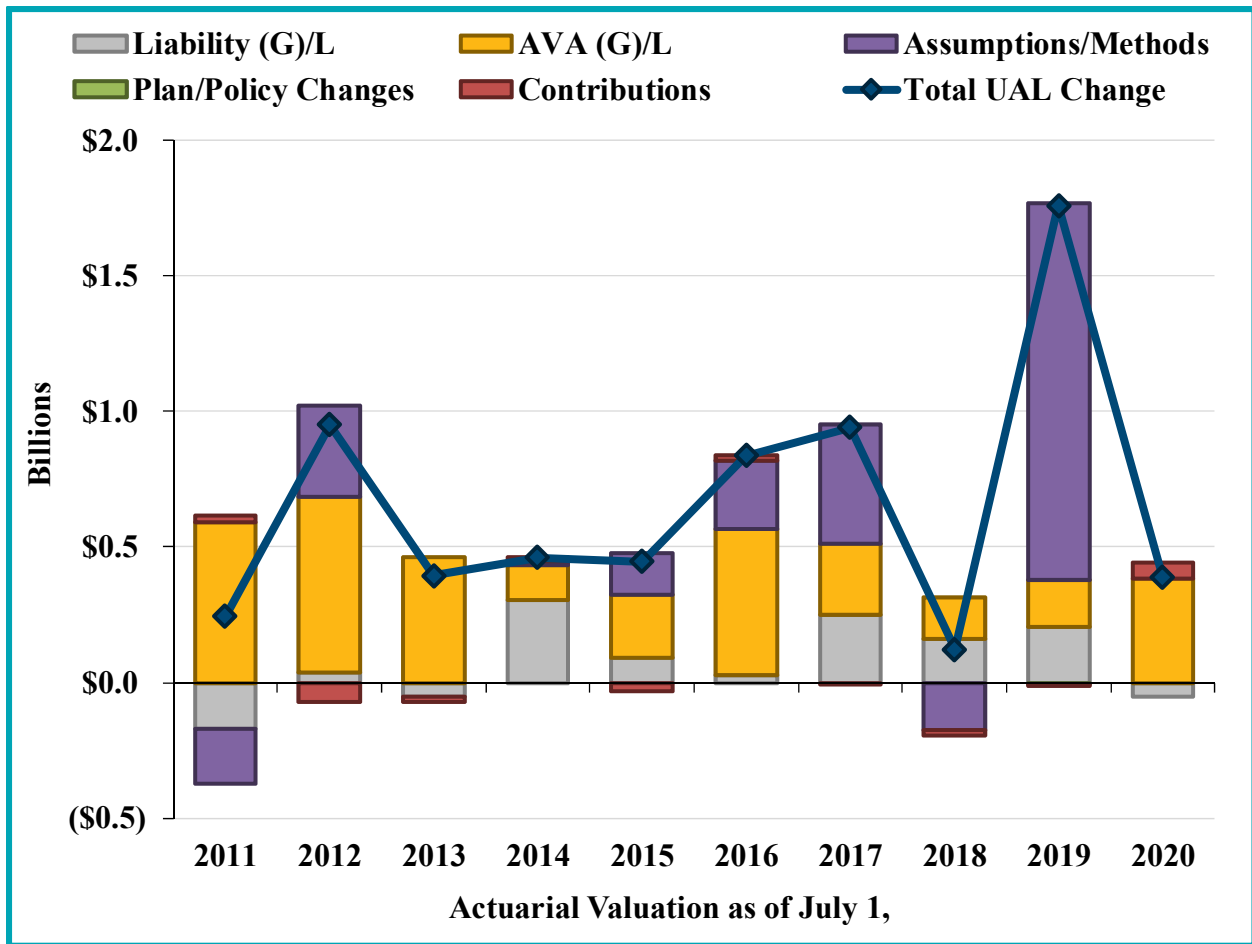
	State										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
<b>Discount Rate</b>	7.95%	7.90%	7.90%	7.90%	7.90%	7.65%	7.50%	7.50%	7.30%	7.30%	
<b>Source</b>											
AVA (G)/L	\$ 243.2	\$ 346.2	\$ 243.8	\$ 87.5	\$ 162.4	\$ 274.0	\$ 171.9	\$ 131.0	\$ 140.7	\$ 199.0	\$ 1,999.6
Liability (G)/L	281.3	84.4	47.3	95.3	164.5	21.2	103.2	93.3	461.3	138.4	1,490.1
Assumptions/Methods	(155.1)	389.7	0.0	10.7	53.2	199.0	328.7	(112.3)	1,081.7	0.0	1,795.7
Plan/Policy Changes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(6.6)	0.0	(6.6)
Contributions <sup>1</sup>	682.8	560.5	479.3	1,141.6	672.7	683.4	567.9	460.2	283.5	252.8	5,784.6
<b>Net UAL Change</b>	<b>\$ 1,052.3</b>	<b>\$ 1,380.7</b>	<b>\$ 770.4</b>	<b>\$ 1,335.2</b>	<b>\$ 1,052.8</b>	<b>\$ 1,177.6</b>	<b>\$ 1,171.7</b>	<b>\$ 572.1</b>	<b>\$ 1,960.7</b>	<b>\$ 590.1</b>	<b>\$ 11,063.5</b>

<sup>1</sup> UAL change due to contributions (greater)/less than normal cost plus interest on the UAL

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**SECTION II – ASSESSMENT AND DISCLOSURE OF RISK**

**Local Employers**



**Table II-2  
Changes in Unfunded Actuarial Liability  
(Dollar amounts in millions)**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
<b>Discount Rate</b>	7.95%	7.90%	7.90%	7.90%	7.90%	7.65%	7.50%	7.50%	7.30%	7.30%	
<b>Source</b>											
AVA (G)/L	\$ 590.3	\$ 647.7	\$ 464.5	\$ 129.1	\$ 234.6	\$ 536.0	\$ 263.1	\$ 154.9	\$ 169.8	\$ 383.2	\$ 3,573.2
Liability (G)/L	(169.5)	35.8	(49.5)	303.9	90.1	28.9	249.2	161.1	207.2	(53.2)	803.9
Assumptions/Methods	(203.3)	337.1	0.0	12.6	152.6	252.0	439.2	(176.7)	1,392.6	0.0	2,205.9
Plan/Policy Changes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(6.4)	0.0	(6.4)
Contributions <sup>1</sup>	27.6	(70.0)	(20.1)	15.6	(29.6)	20.5	(9.2)	(16.2)	(4.2)	57.8	(27.8)
<b>Net UAL Change</b>	<b>\$ 245.0</b>	<b>\$ 950.7</b>	<b>\$ 394.8</b>	<b>\$ 461.2</b>	<b>\$ 447.7</b>	<b>\$ 837.4</b>	<b>\$ 942.2</b>	<b>\$ 123.0</b>	<b>\$ 1,758.9</b>	<b>\$ 387.8</b>	<b>\$ 6,548.7</b>

<sup>1</sup> UAL change due to contributions (greater)/less than normal cost plus interest on the UAL

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On a smoothed asset basis, the investment gains and losses (gold bars) from 2011 to 2020 reflect material investment losses, primarily driven by the market decline of 2008 and 2009. In aggregate, over the 10-year period, investment losses have added approximately \$1,999.6 million to the State's UAL and approximately \$3,573.2 million to the Local employers' UAL.

On the liability side (gray bars), the System has experienced a combination of gains and losses, however smaller in magnitude compared to the assets, increasing the UAL by approximately \$1,490.1 million for the State and \$803.9 million for Local employers over the 10-year period.

Assumption and method changes (purple bars) over the last 10 years have increased the UAL by approximately \$1,795.7 million for the State and \$2,205.9 million for Local employers. The significant assumption changes have included reductions in the discount rate from 8.25% to 7.30% as well as decreases in mortality rates and projected mortality improvement. It is important to note that the discount rate changes simply reflect a downward revision to the estimate of future investment earnings and ultimately costs will be determined by actual investment earnings.

Plan changes (green bars) over the last 10 years have decreased the UAL by approximately \$6.6 million for the State and \$6.4 million for Local employers.

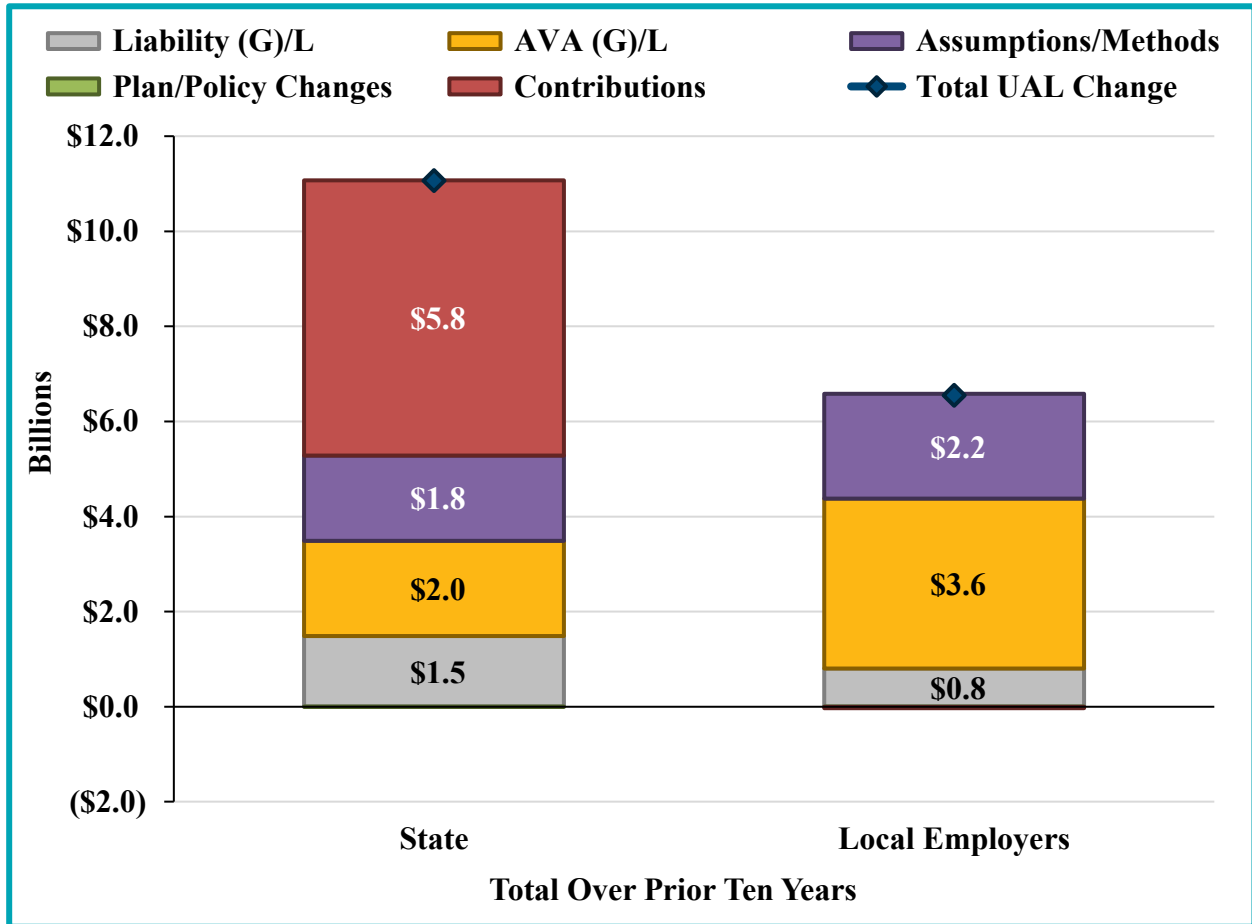
Each year, the UAL is expected to increase for benefit accruals attributable to the current year (the normal cost) and interest on the UAL. This expected increase is referred to as the tread water level. If contributions are greater than the tread water level, the UAL is expected to decrease. Conversely, if contributions are less than the tread water level, the UAL is expected to increase. Changes due to contributions greater or less than the tread water level (red bars) have increased the State's UAL by approximately \$5,784.6 million and decreased Local employers' UAL by approximately \$27.8 million over the last 10 years.

In general, the amortization methods used to determine the Statutory contributions are designed to collect more than the tread water level. However, contributions may be less than this threshold due to the State appropriating less than the Statutory contributions.

The following chart shows the total changes to the UAL for each portion of the System over the 10-year period by source.

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**SECTION II – ASSESSMENT AND DISCLOSURE OF RISK**



**Plan Maturity Measures**

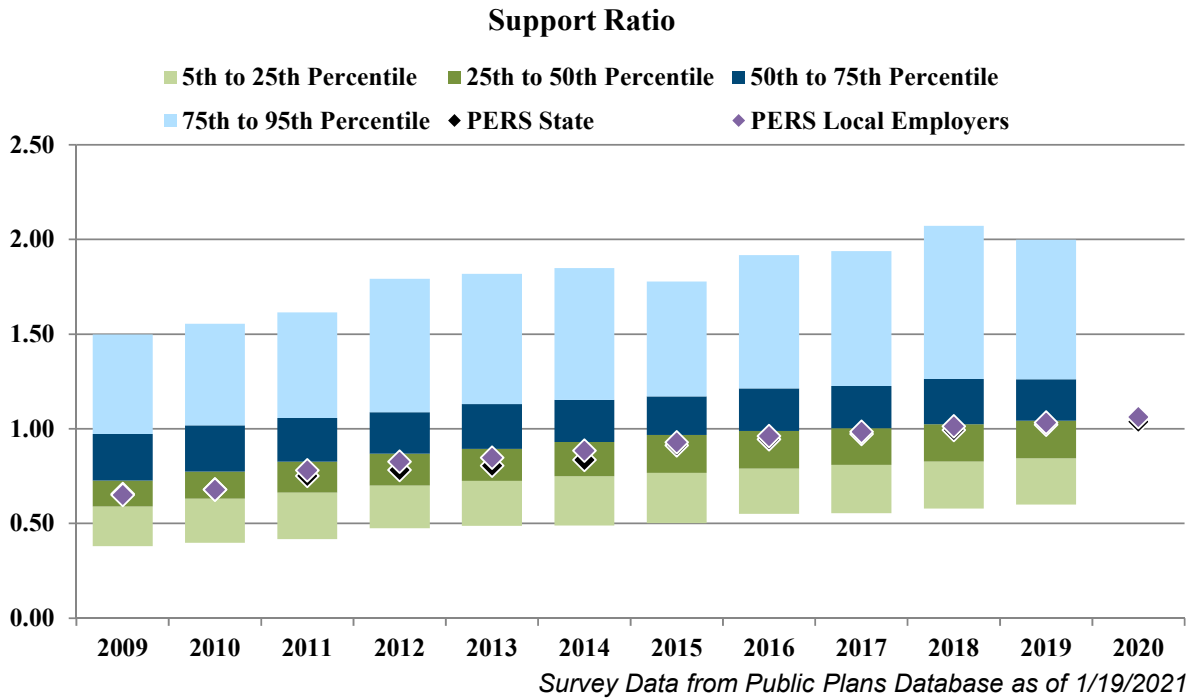
The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of the plan compared to other plans and how the maturity has changed over time.

Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic - the larger the plan is compared to the contribution or revenue base that supports it, the more sensitive the plan will be to risk. The measures below have been selected as the most important in understanding the primary risks identified for the System.

**SECTION II – ASSESSMENT AND DISCLOSURE OF RISK**

**Inactives per Active (Support Ratio)**

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or entitled to a deferred benefit) to the number of active members. We refer to this ratio as the *support ratio*. The revenue base supporting the plan is usually proportional to the number of active members, so a relatively high number of inactives compared to actives indicate a larger plan relative to its revenue base as well. We also discussed this risk metric in Section I.



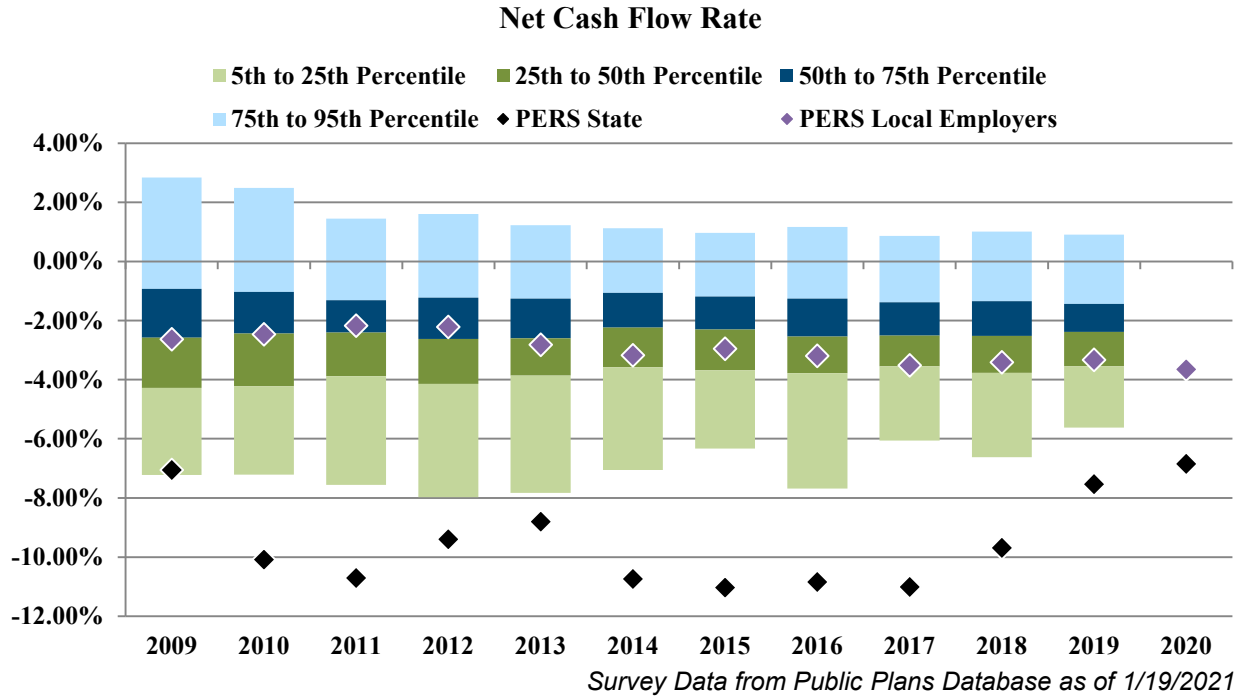
The chart above shows the distribution from the 5<sup>th</sup> to 95<sup>th</sup> percentile of support ratios for the plans in the Public Plans Database. The diamonds show how the State (black) and Local employers (purple) compare dating back to 2009. Note that the PERS support ratios for State and Local employers are very similar to each other and overlap in some years. Both State and Local employers have been less mature than the median plan. The support ratios increased following the Great Recession, but have since stabilized near the 50<sup>th</sup> percentile.

**Net Cash Flow**

The net cash flow of the plan as a percentage of the beginning of year assets indicates the sensitivity of the plan to short-term investment returns. Net cash flow is equal to contributions less benefit payments and administrative expenses. Mature plans can have large amounts of benefit payments compared to contributions, particularly if they are well funded. Investment losses in the short-term are compounded by the net withdrawal from the plan leaving a smaller asset base to try to recover from the investment losses. Large negative cash flows can also create liquidity issues. We also discussed this risk metric in Section I.

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The chart above shows the distribution from the 5<sup>th</sup> to 95<sup>th</sup> percentile of net cash flow for the plans in the Public Plans Database. The diamonds show how the State and Local employers' net cash flow compares to other public plans. Since the Great Recession, the State has been at or below the 5<sup>th</sup> percentile compared to the database of other public plans in terms of having significantly more negative cash flow as a percentage of assets causing a serious defunding risk for the System. The Local employers were near the 50<sup>th</sup> percentile from 2009 to 2013 and have since fallen closer to the 25<sup>th</sup> percentile.

**Assessing Costs and Risks**

The fundamental risk to the System is that the contributions needed to fund the benefits become unaffordable. Assessing this risk, however, is complex because there is no bright line of what is unaffordable and the contribution amounts themselves are affected not just by the experience of the System, but also by the interaction of that experience and decisions by the State and the Board related to the amount of contributions appropriated, assumptions, asset smoothing methods, and amortization periods.

**Investment Risk - Stress Testing**

This section illustrates stress testing of the investment return assumption and is an extension of the baseline projections provided in the Summary section. Under the baseline results, we assumed the ultimate 7.00% investment return assumption each and every year beginning July 1, 2020.

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For stress testing purposes, we developed six hypothetical scenarios to illustrate the impact investment returns may have on future funded status and contribution amounts. The scenarios are balanced between positive and negative scenarios and are based on a lognormal distribution of one and five year expected returns as shown in the table below using the capital market assumptions from the New Jersey Division of Investments (geometric return of 6.94%, standard deviation of 11.05%).

<b>Distribution of Expected Average Annual Returns</b>		
<b>Percentile</b>	<b>1 Year</b>	<b>5 Year</b>
5%	-9.7%	-0.8%
25%	-0.2%	3.7%
50%	6.9%	6.9%
75%	14.6%	10.3%
95%	26.6%	15.3%

The scenarios include: a one-year shock using the 5th and 95th percentile returns for one year; a 5-year moderate scenario using the 25th and 75th percentile returns for five years; and a 5-year significant scenario using the 5th and 95th percentile returns for five years. The table below summarizes the theoretical scenarios.

<b>FYE</b>	<b>Theoretical Scenarios</b>					
	<b>1-Yr Shock</b>		<b>5-Yr Moderate</b>		<b>5-Yr Significant</b>	
	<b>Neg</b>	<b>Pos</b>	<b>Neg</b>	<b>Pos</b>	<b>Neg</b>	<b>Pos</b>
2021	-9.7%	26.6%	3.7%	10.3%	-0.8%	15.3%
2022	7.0%	7.0%	3.7%	10.3%	-0.8%	15.3%
2023	7.0%	7.0%	3.7%	10.3%	-0.8%	15.3%
2024	7.0%	7.0%	3.7%	10.3%	-0.8%	15.3%
2025	7.0%	7.0%	3.7%	10.3%	-0.8%	15.3%
2026+	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%

In reviewing each of these projections, it is the future trends, not necessarily the actual values, that are important to observe in consideration of the risks of the System and the potential volatility of future funded ratios and Statutory contribution levels.

We note that when asset returns are high, excess assets may be used to offset employer costs. We have not shown the implications of a surplus and assume that the employer will always contribute at least the normal cost.

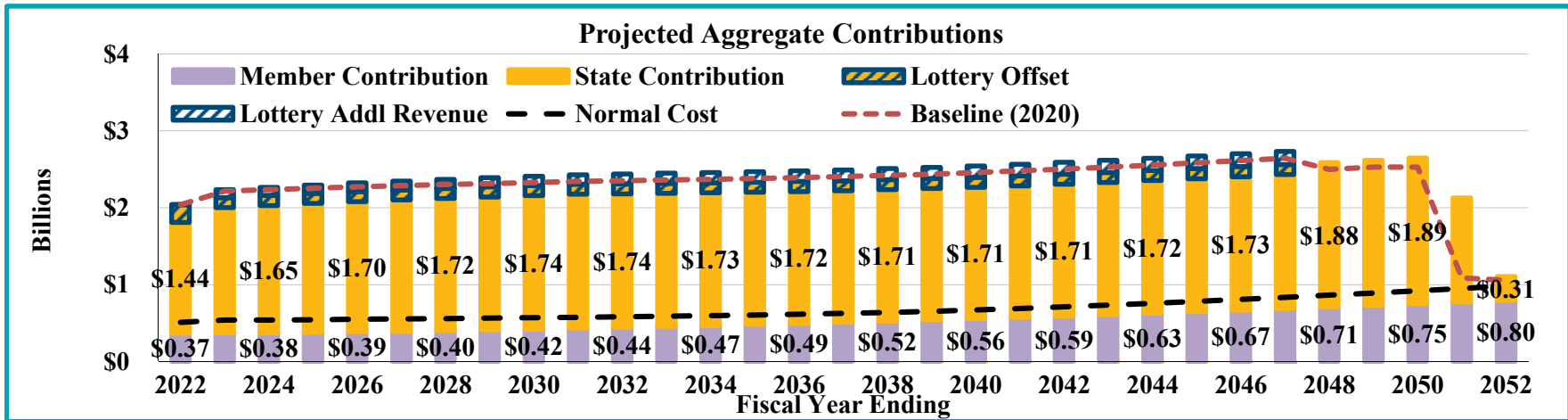
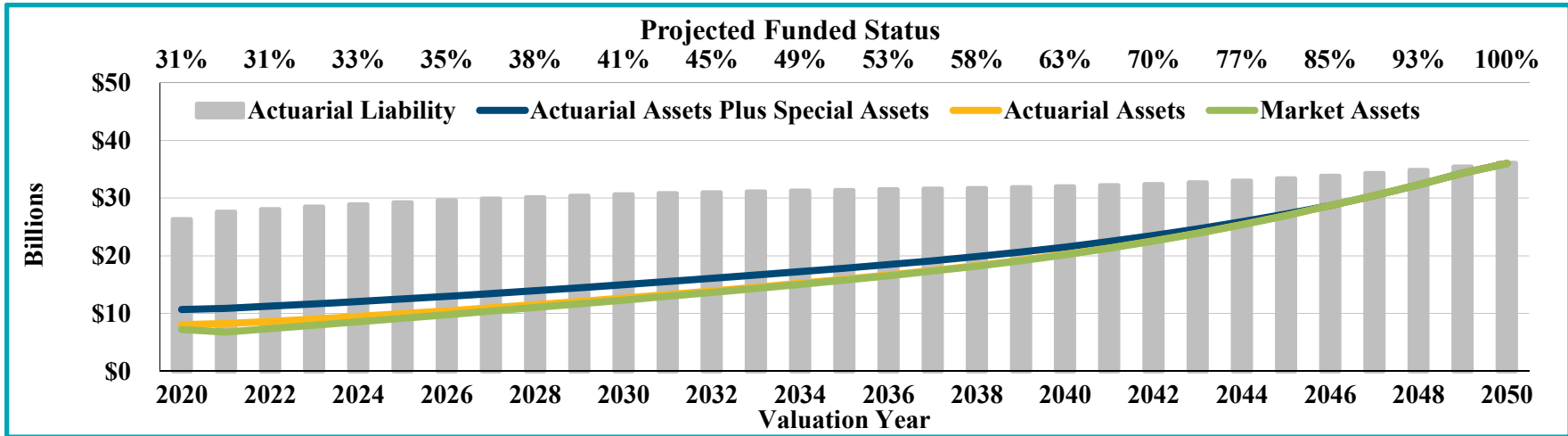
The graphs on the following pages show the projections under each of these theoretical scenarios. Instead of the tread water line shown for the baseline projection, the contribution graphs include a dashed red line representing the expected contributions under the baseline projections shown in the Summary section to facilitate the comparison between the particular scenario and the baseline projections assuming all assumptions are met.



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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**One-Year Negative Shock Scenario: -9.7% return FYE 2021, 7.0% after**  
**State**

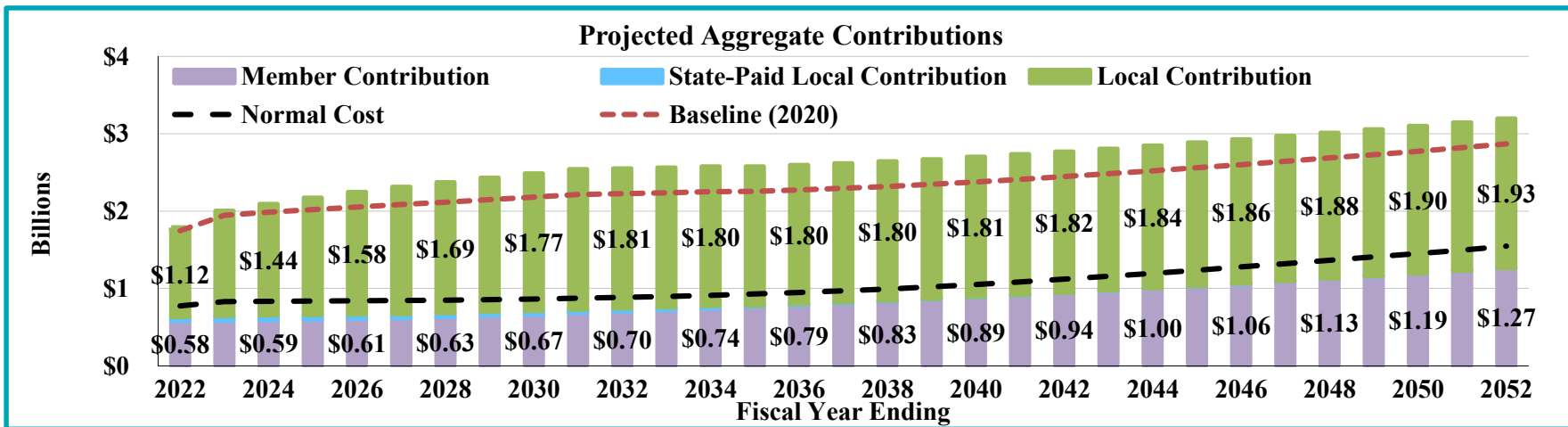
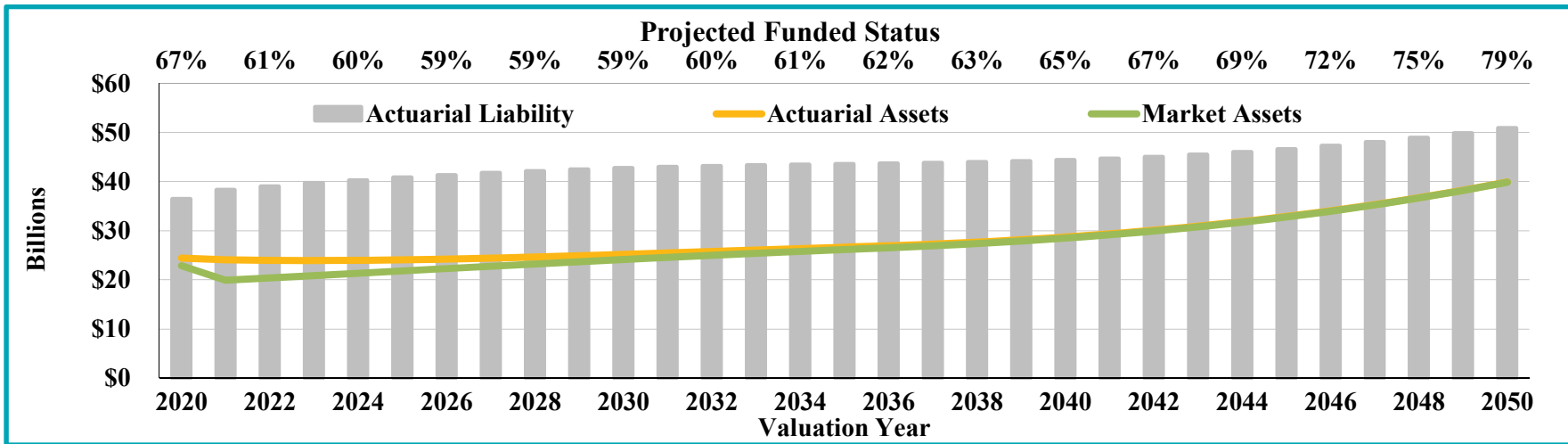


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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**One-Year Negative Shock Scenario: -9.7% return FYE 2021, 7.0% after**

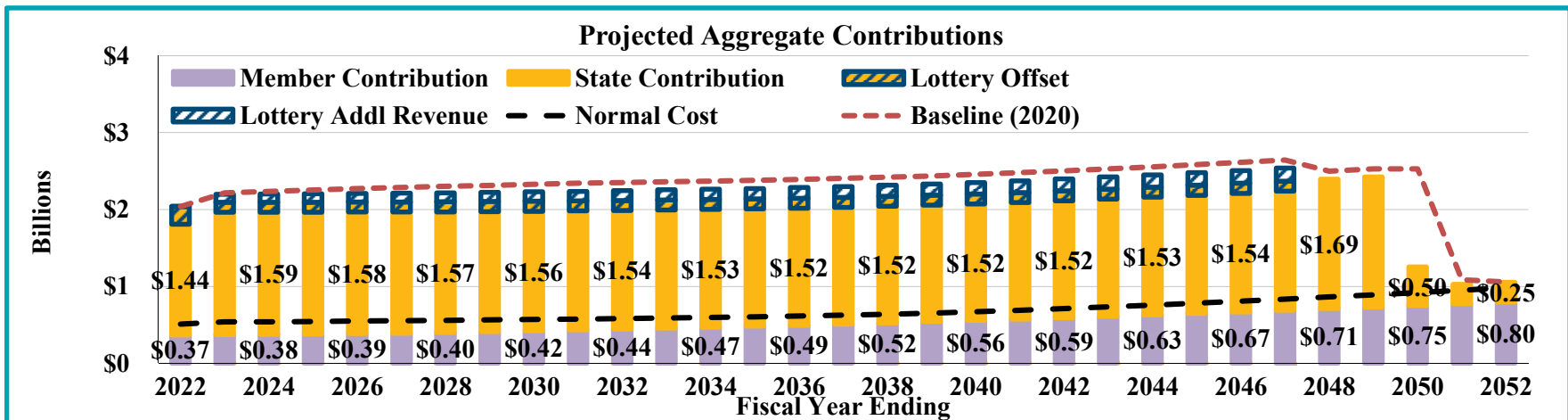
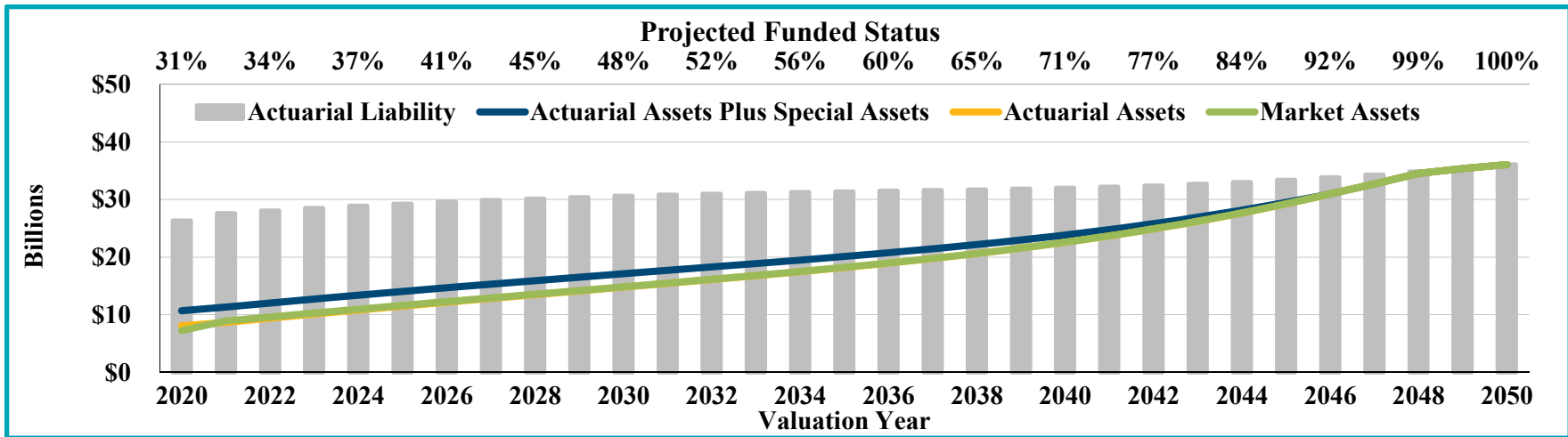
**Local Employers**



PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**One-Year Positive Shock Scenario: 26.6% return FYE 2021, 7.0% after**  
**State**

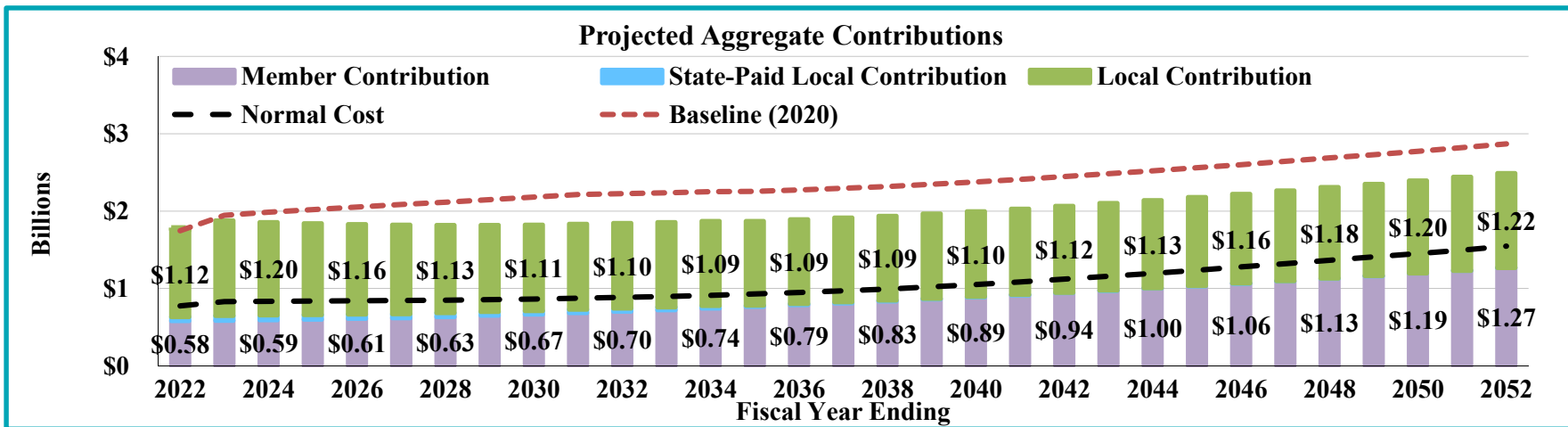
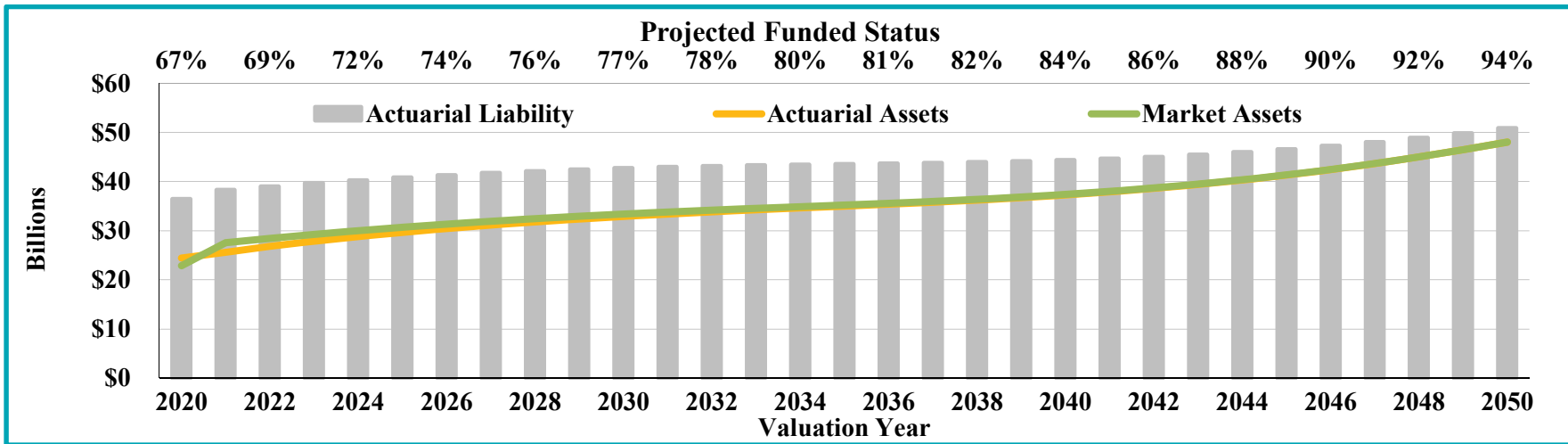


PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**One-Year Positive Shock Scenario: 26.6% return FYE 2021, 7.0% after**

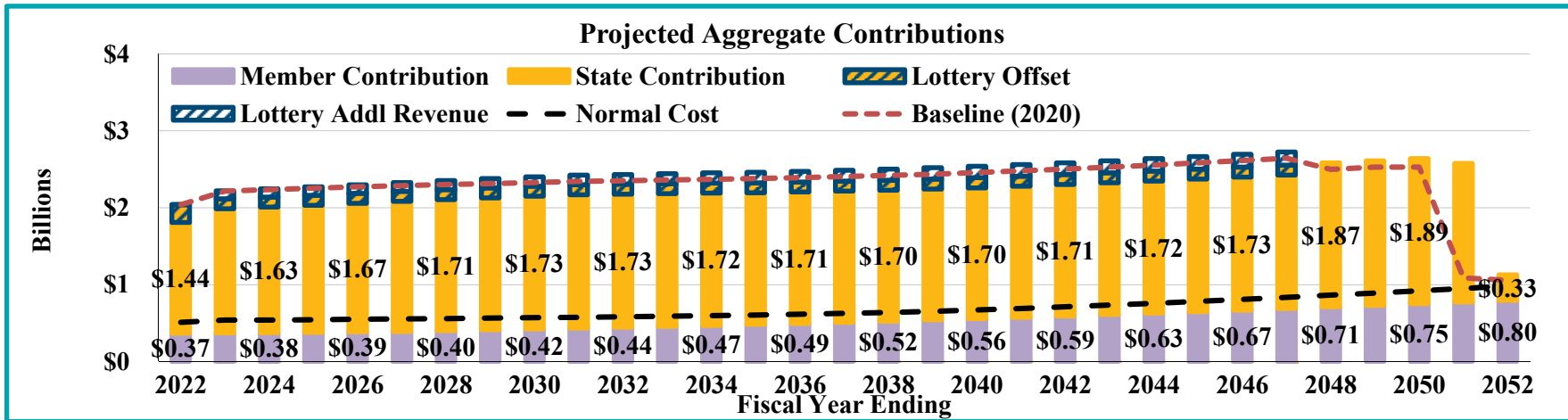
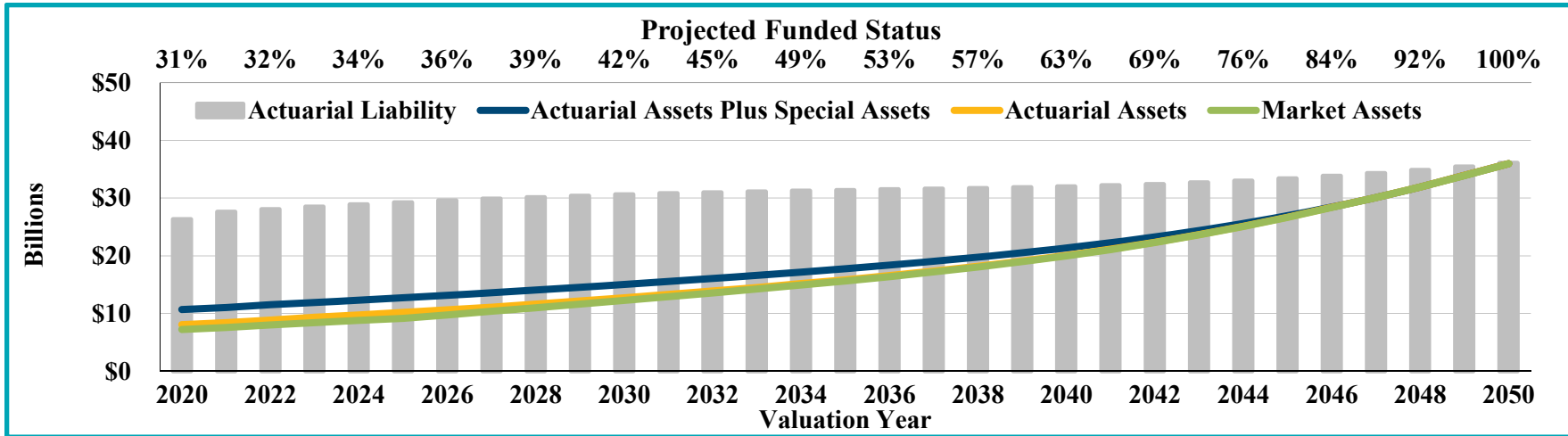
**Local Employers**



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 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

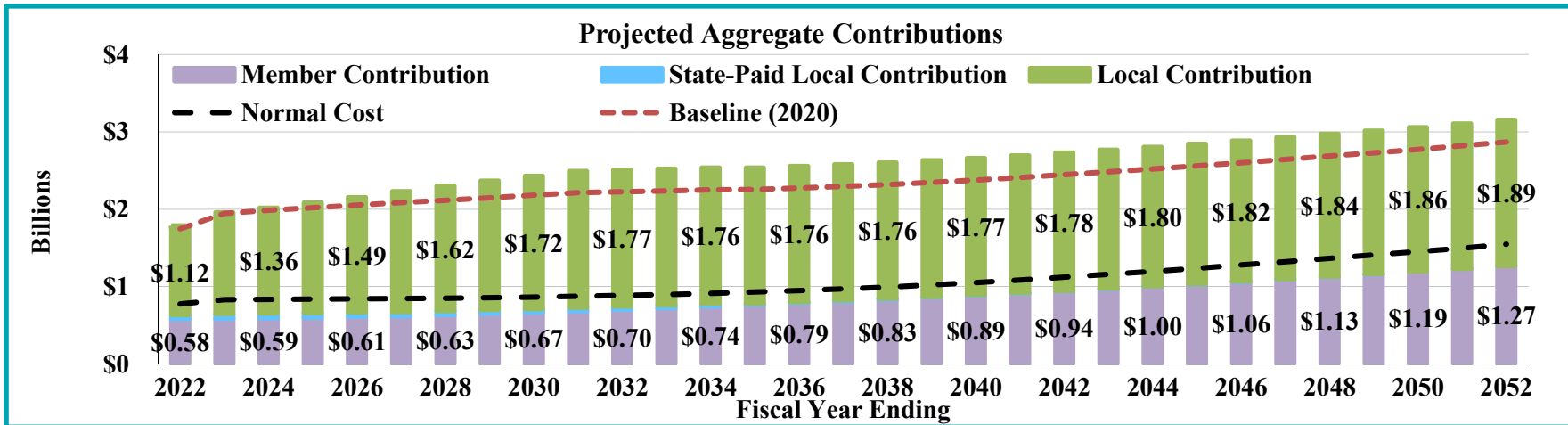
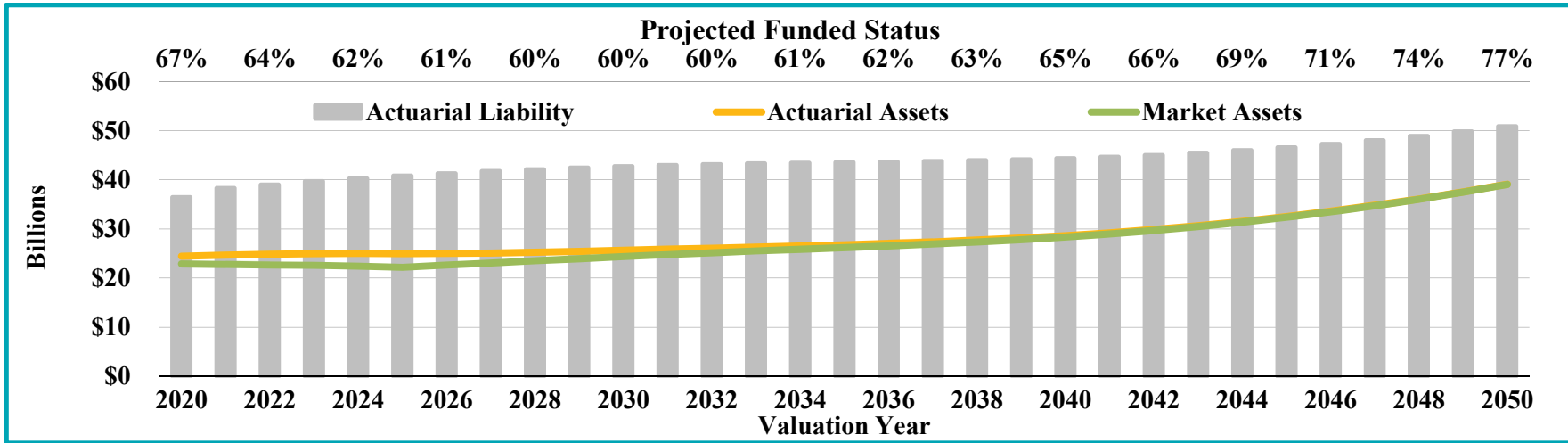
**Five-Year Moderate Negative Scenario: 3.7% return FYE 2021-2025, 7.0% after State**



PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
 JULY 1, 2020 ACTUARIAL VALUATION

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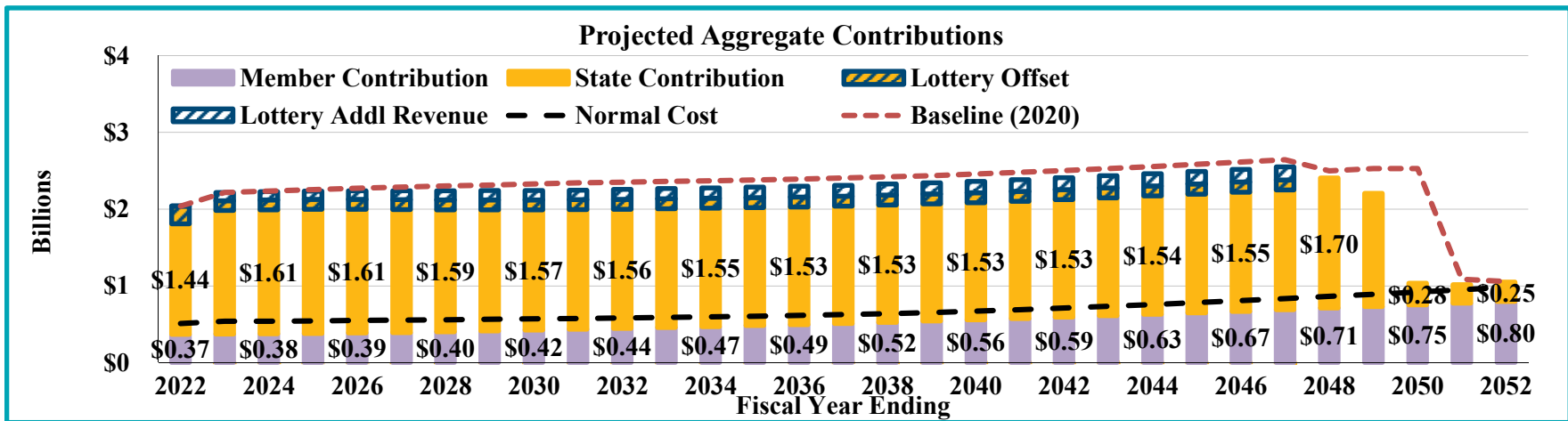
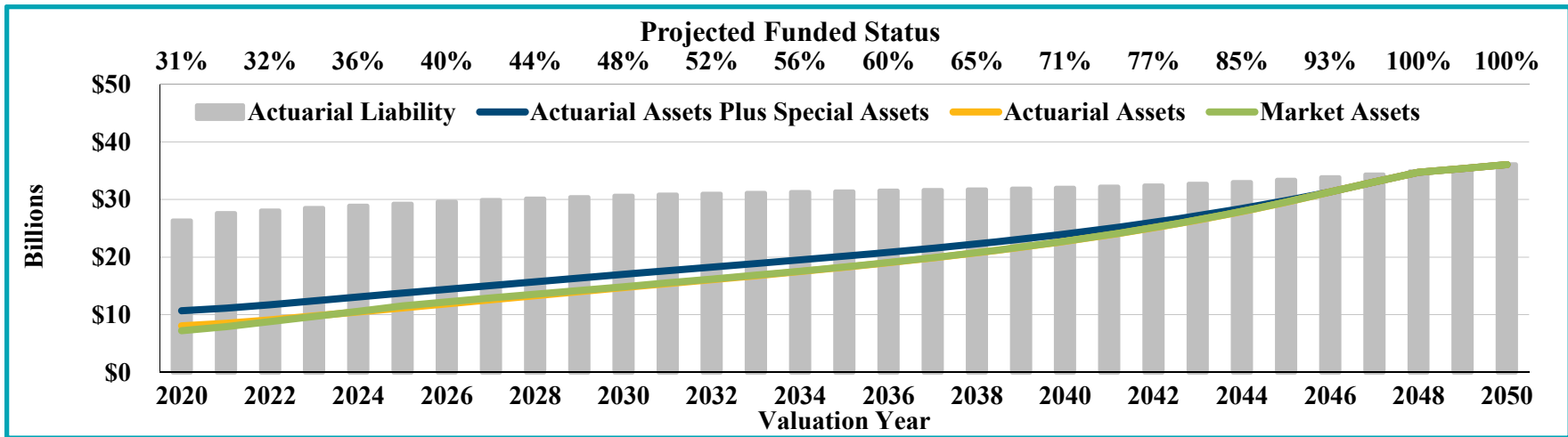
**Five-Year Moderate Negative Scenario: 3.7% return FYE 2021-2025, 7.0% after**  
**Local Employers**



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 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

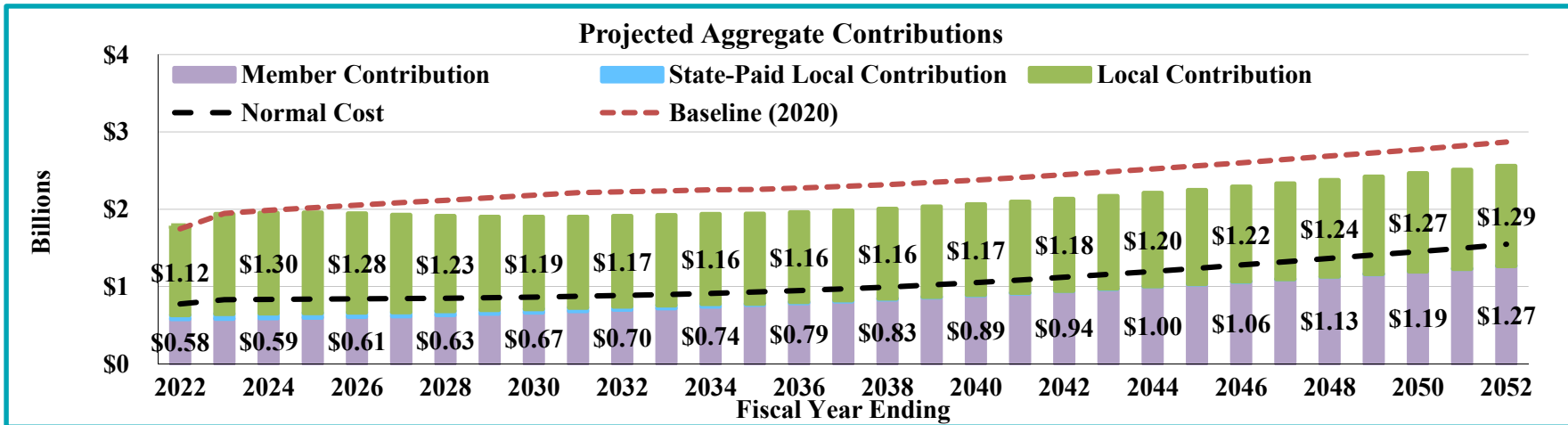
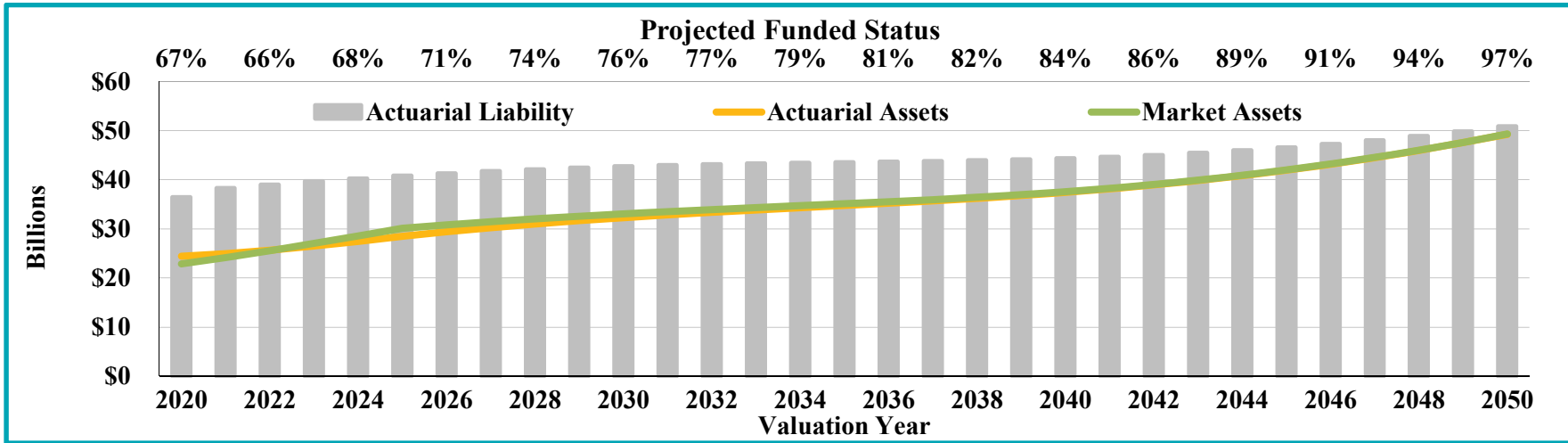
**Five-Year Moderate Positive Scenario: 10.3% return FYE 2021-2025, 7.0% after State**



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**Five-Year Moderate Positive Scenario: 10.3% return FYE 2021-2025, 7.0% after**  
**Local Employers**



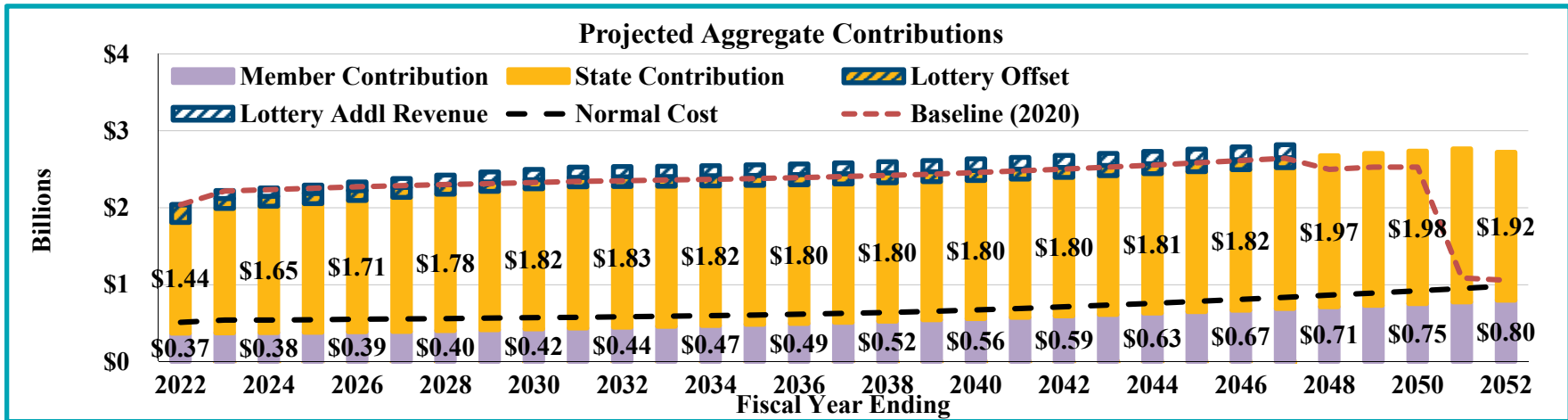
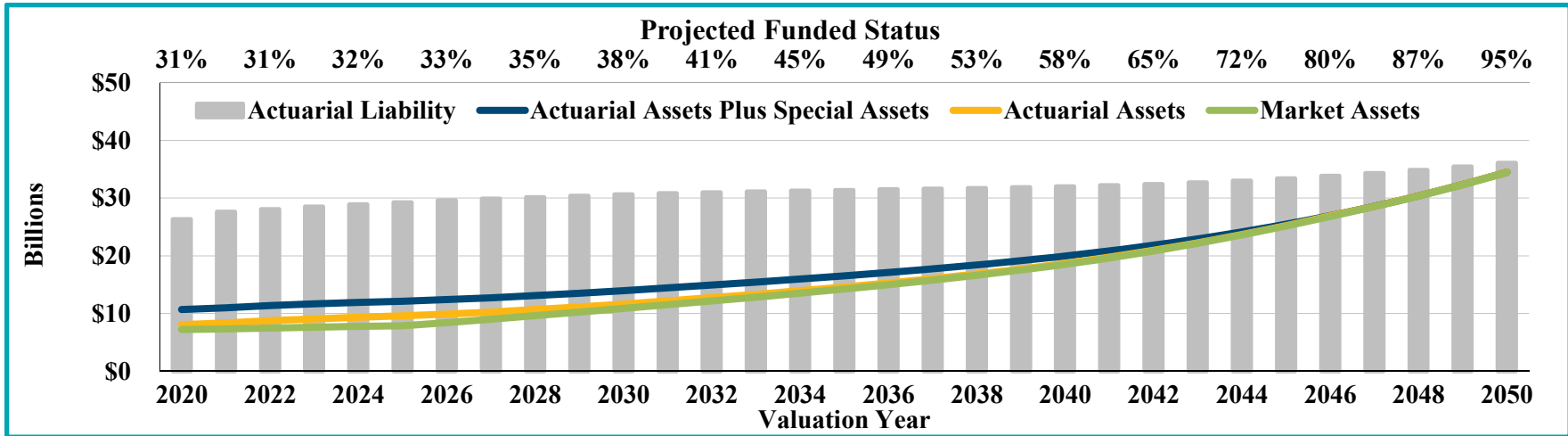


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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**Five-Year Significant Negative Scenario: -0.8% return FYE 2021-2025, 7.0% after**

State

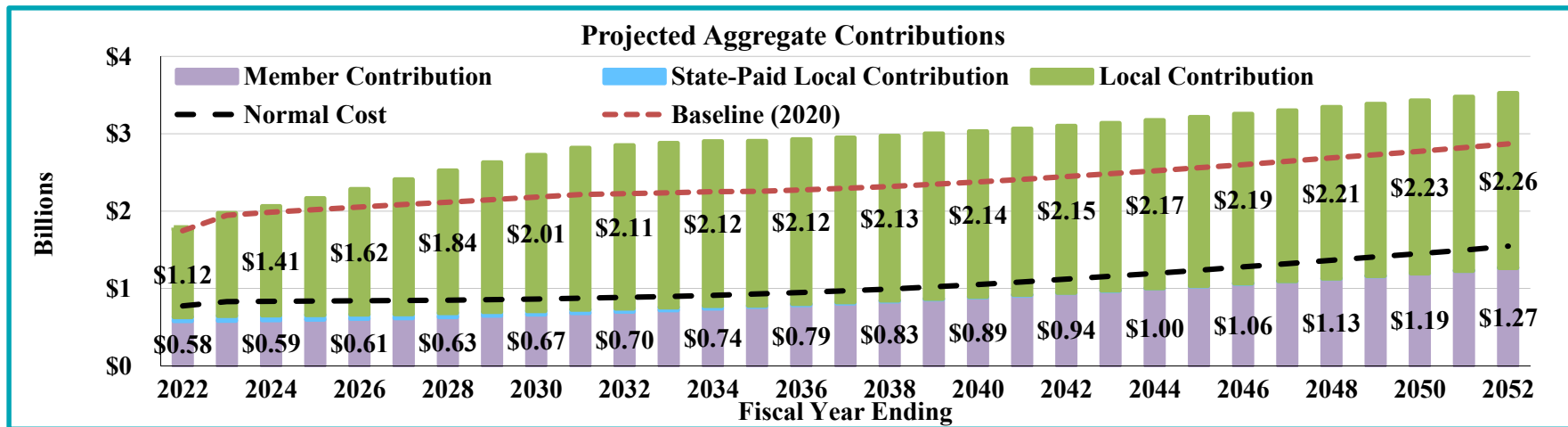
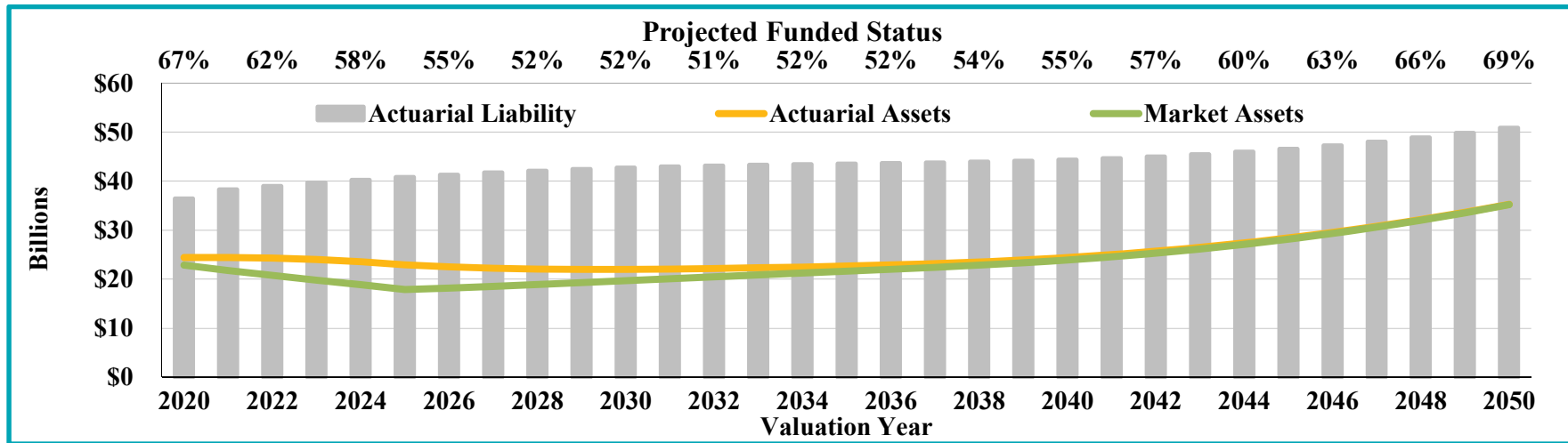


PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**Five-Year Significant Negative Scenario: -0.8% return FYE 2021-2025, 7.0% after**

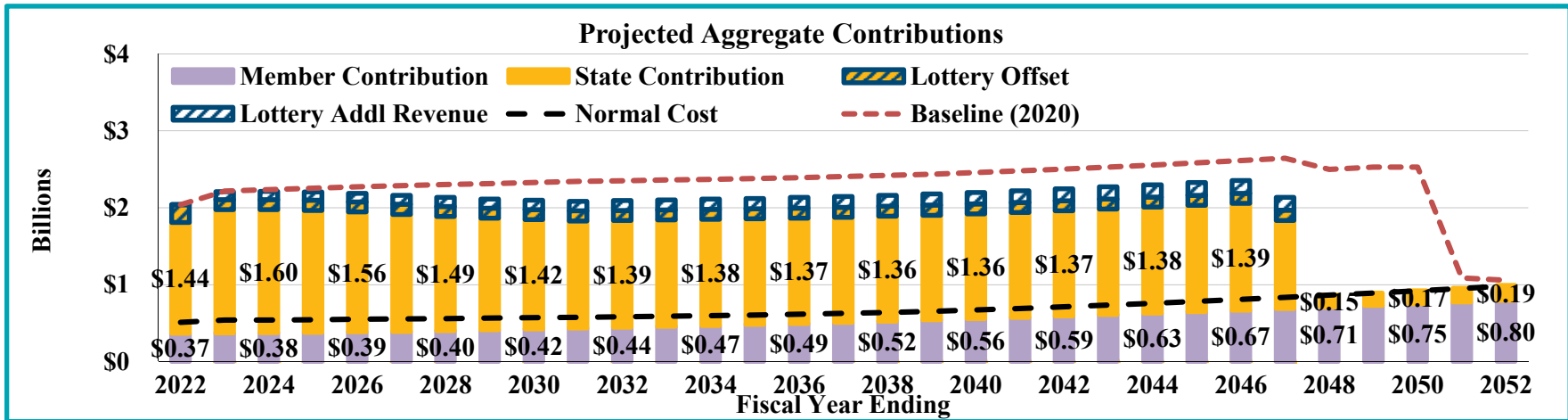
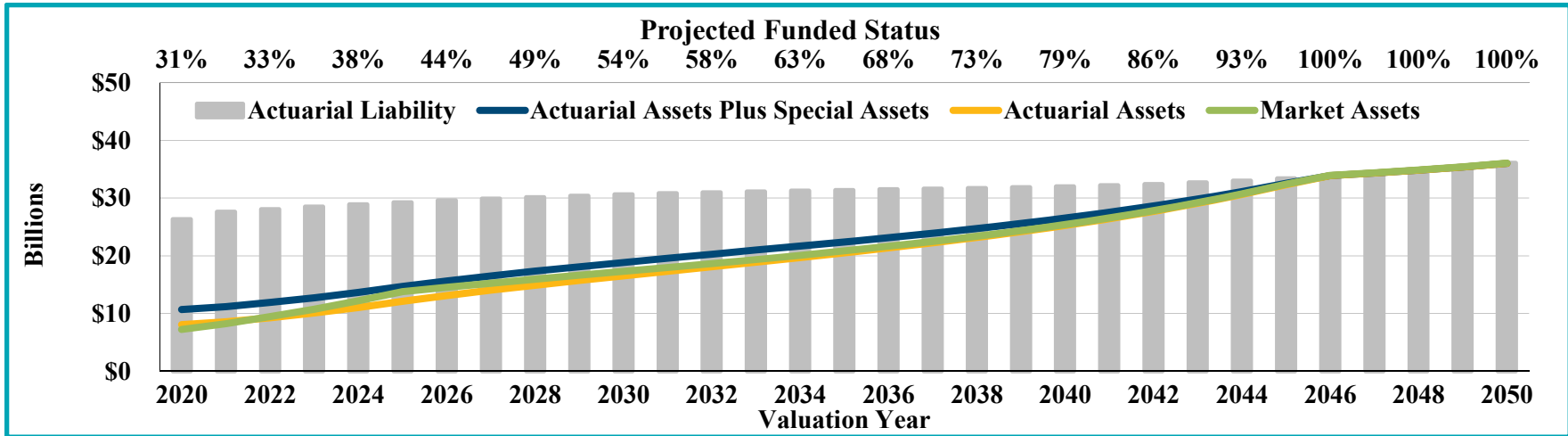
**Local Employers**



PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**Five-Year Significant Positive Scenario: 15.3% return FYE 2021-2025, 7.0% after**  
**State**

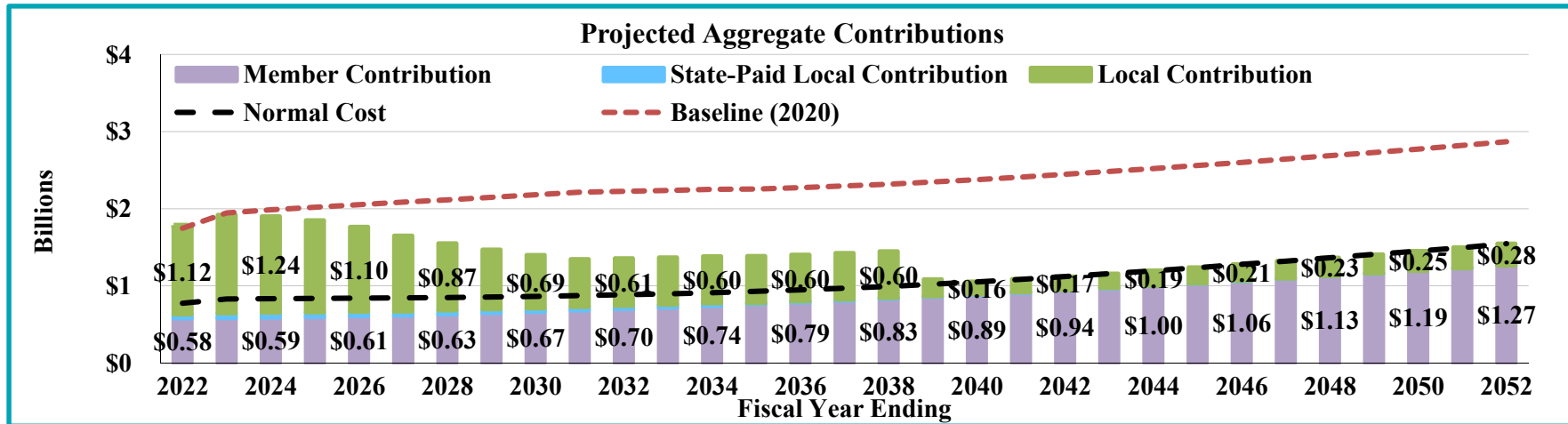
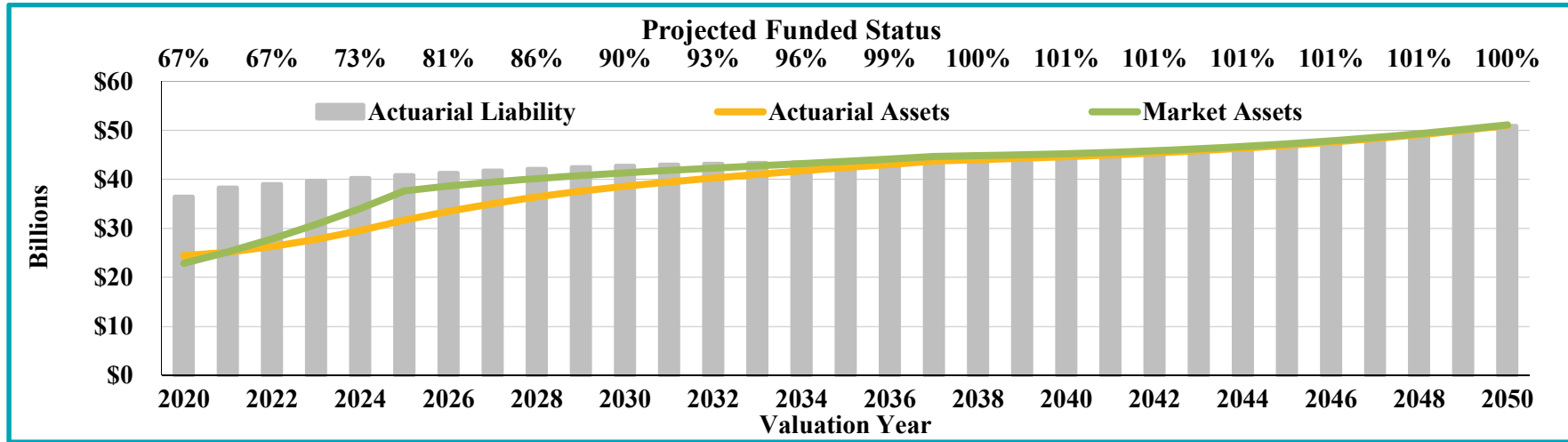


PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**Five-Year Significant Positive Scenario: 15.3% return FYE 2021-2025, 7.0% after**

**Local Employers**



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**SECTION II – ASSESSMENT AND DISCLOSURE OF RISK**

These scenarios show that actual future investment returns have a significant impact on future State and Local employer contribution amounts. In each of the scenarios, the State and Local employer contribution amounts increase in FYE 2023 as the valuation investment rate of return assumption decreases from 7.30% to 7.00% and the impact of the recent experience study on Local employers' contribution is phased in.

The following table summarizes the impact on the State and Local employer contributions in FYE 2034 for the various investment return scenarios.

<b>Table II-3 Impact on Contributions for FYE 2034 (dollar amounts in millions)</b>						
	<b>1-Yr Shock</b>		<b>5-Yr Moderate</b>		<b>5-Yr Significant</b>	
	<b>Neg</b>	<b>Pos</b>	<b>Neg</b>	<b>Pos</b>	<b>Neg</b>	<b>Pos</b>
<b><u>State</u></b>						
Amount	\$88	(\$104)	\$83	(\$93)	\$178	(\$257)
Percent	5%	-6%	5%	-6%	11%	-16%
<b><u>Local Employers</u></b>						
Amount	\$324	(\$381)	\$285	(\$315)	\$650	(\$871)
Percent	22%	-26%	19%	-21%	44%	-59%

The positive scenarios sometimes show the System achieving a 100% funded status during the 30-year projection period, which results in the contribution decreasing to equal the employer normal cost.

Local employer contributions are clearly more sensitive than State contributions to investment returns deviating from the assumption. This is caused by the funded status at the beginning of the projection period. The State is less well funded and, as a result, has less to gain or lose from positive or negative investment experience.

**The investment returns used in the projections above were selected solely to illustrate the impact of investment volatility on the pattern of future funded status and contribution amounts. They are not intended to be predictive of actual future contributions or funded status or even to represent a realistic pattern of investment returns.**

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION II – ASSESSMENT AND DISCLOSURE OF RISK**

**Assumption Change Risk – Sensitivity Testing**

As shown in Tables II-1 and II-2, assumption changes over the last decade have increased the State's UAL by approximately \$1,795.7 million and increased the Local employers' UAL by approximately \$2,205.9 million. The most significant changes were reductions in the discount rate, decreases in mortality rates and projections of mortality improvement. The reductions in discount rates have been largely driven by declines in interest rates that affect expectations of future investment returns. If there are further declines in interest rates or if there is a desire or need to reduce investment risk that reduces expected returns, the discount rate and expected returns may need to be reduced further. The charts on the following page show the impact on projected future funded status and contribution amounts if the discount rate and expected returns were reduced by 100 basis points to 6.00% beginning with the July 1, 2021 valuation.

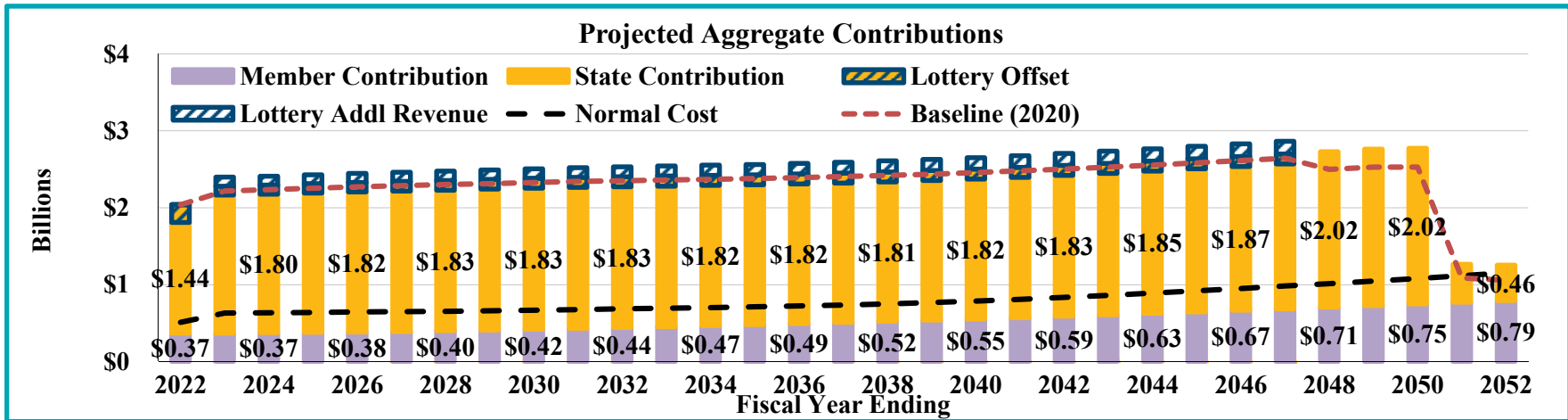
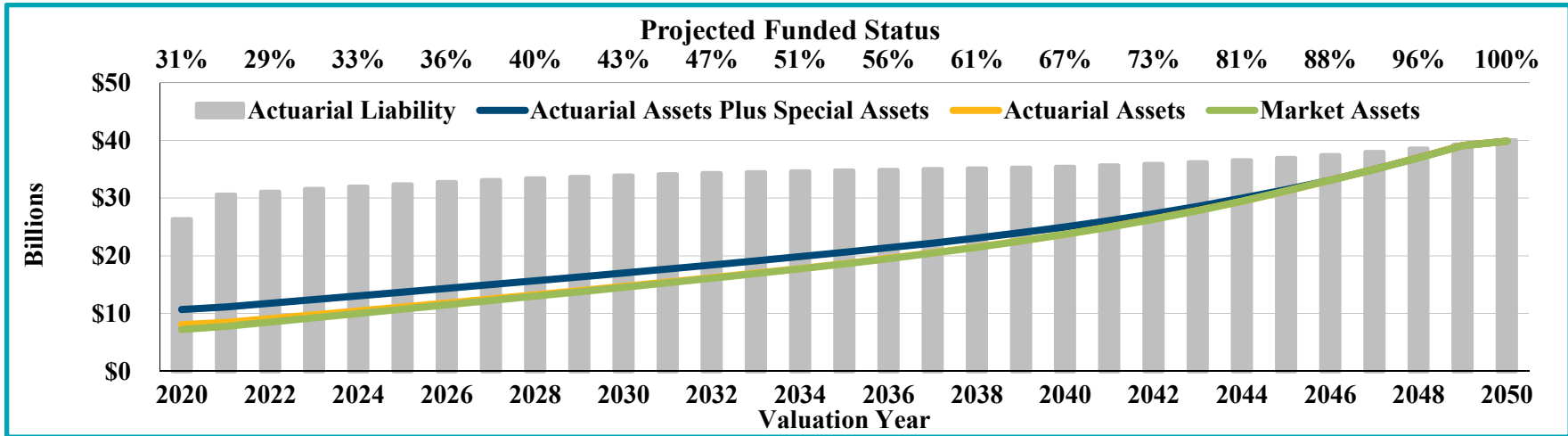
This scenario results in Statutory contributions that are about 11% higher for State and 24% higher for Local employers in FYE 2034 when compared to the baseline projection. Again, the contributions for Local employers are more sensitive to assumption changes because of the funded status at the time of the change.

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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**6.00% Discount Rate and Investment Return Assumption Effective July 1, 2021**

State

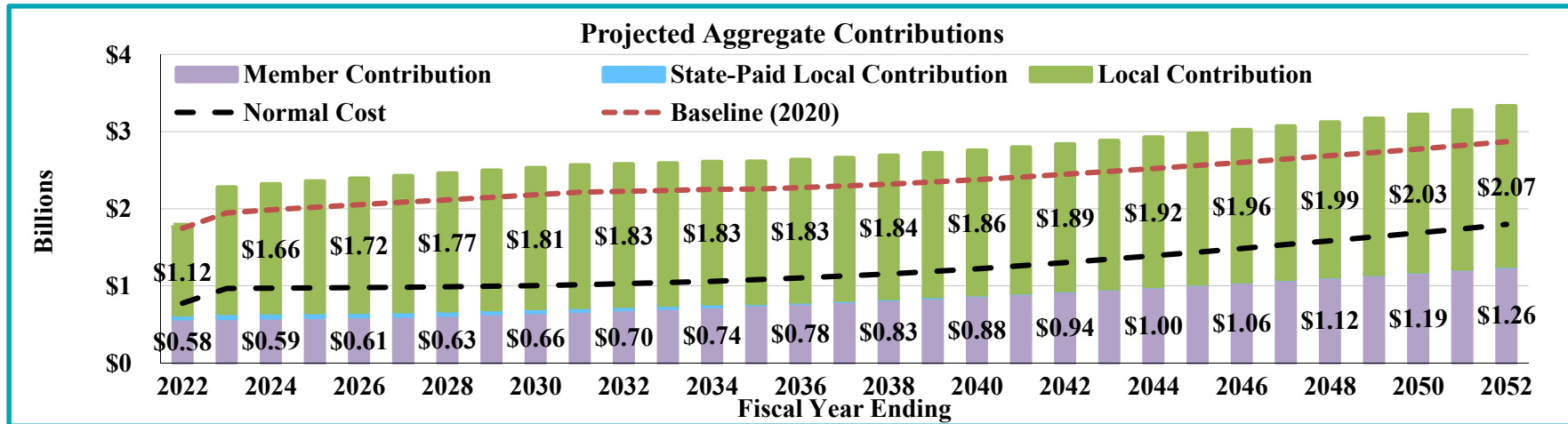
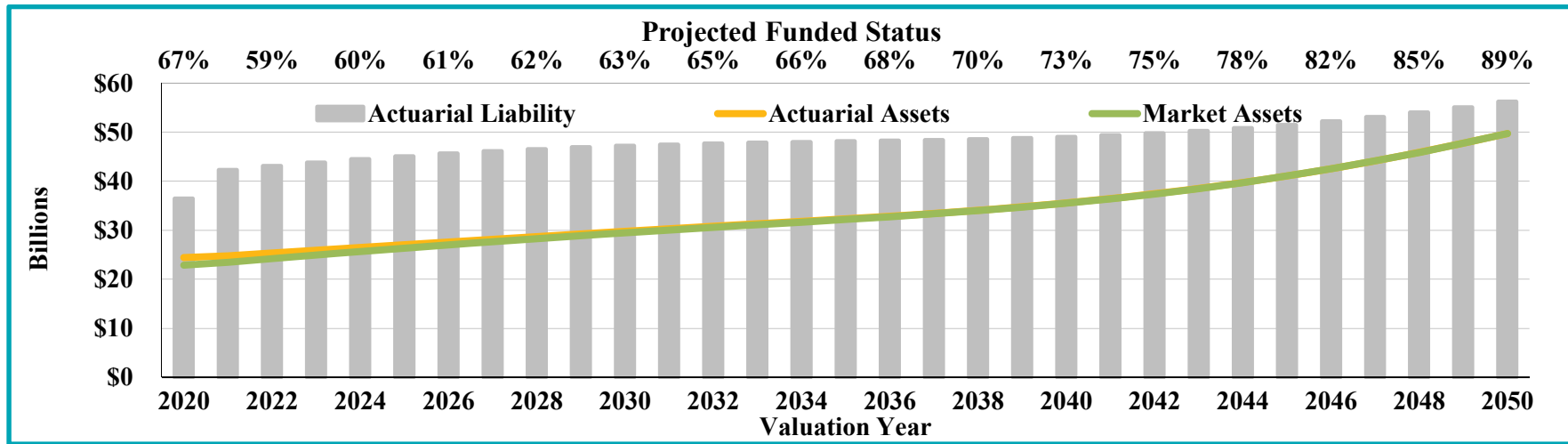


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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**6.00% Discount Rate and Investment Return Assumption Effective July 1, 2021**

**Local Employers**





## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

### Contribution Risk – Sensitivity Testing

The amortization method used to determine the Statutory contributions is designed to collect more than the tread water level and, therefore, gradually pay down the UAL. However, State appropriated contributions have consistently been less than the Statutory contributions and the tread water level, increasing the State's UAL by \$5,784.6 million over the last ten years. Over the same period, the Local employers' UAL decreased by \$27.8 million due to contributions greater or less than the tread water level. Local employers generally made their portion of the Statutory contributions, and while the State appropriated less than the required amount, the State-paid Local contributions were only a small portion of the Local employers' Statutory contributions. The baseline projections assume the State appropriates 100% of the Statutory contribution in FYE 2022 and each year thereafter. State contributions are projected to be greater than the tread water level starting in FYE 2022.

Contribution risk is the potential for actual future contributions to deviate from expected future contributions. The charts on the following pages illustrate the impact on projected future funded status and contribution amounts if the State appropriation remains at 78% of the Statutory contribution for each year in the future, rather than increasing to 100% of the Statutory contribution. In illustrating contribution risk sensitivity, we assume the State appropriation percent remains at the current level of 78%; however, we assume that Local employers will continue to contribute 100% of the Statutory contribution as they have done historically, with the exception of FYE 2022 when the impact of assumption changes from the recent experience study is phased-in.

The gold and green outlines in the bottom graphs show the full Statutory contributions for the State and Local employers, respectively, with the shaded portion showing the anticipated appropriated amount.

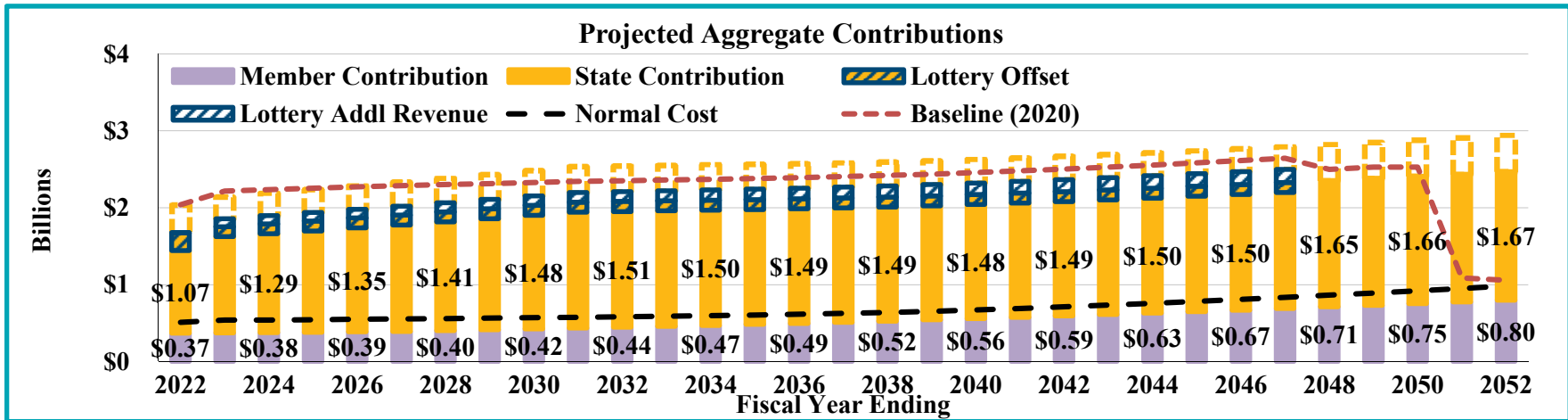
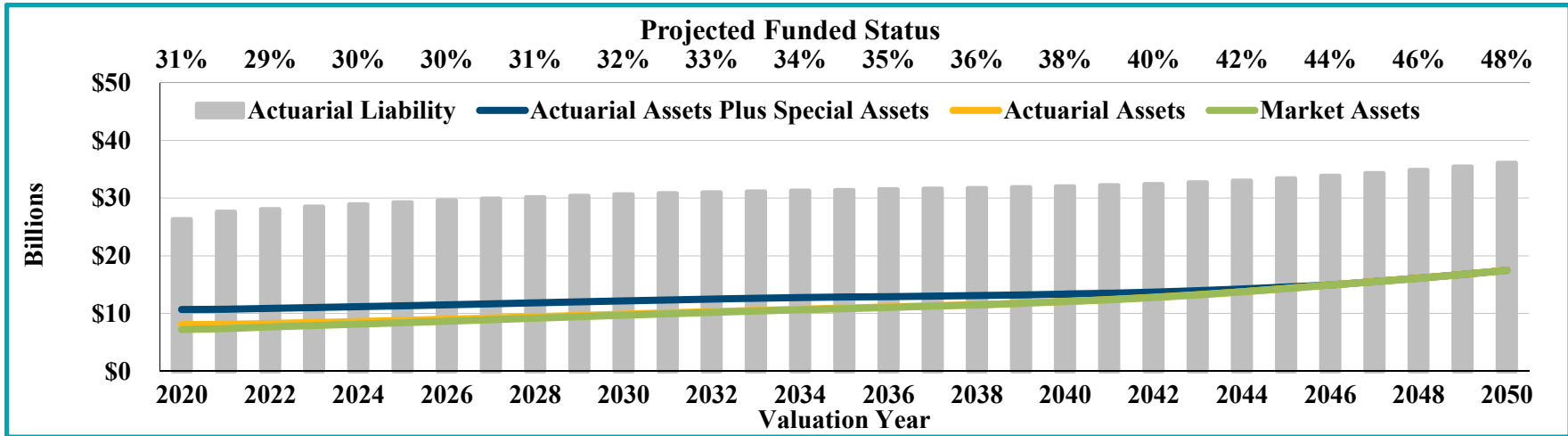
This scenario shows both the Statutory and appropriated State contributions gradually increasing over time. The State Statutory contributions quickly exceed the baseline. The appropriated State contributions are below the baseline initially and eventually grow to reach a similar level, but with a lower funded ratio. The funded ratio at the end of the projection period is 48% compared to 100% under the baseline projections for the State portion. The projection of the Local employers' portion of the System changes relatively little from the baseline because the State-paid Local obligation represents a relatively small portion of the total contributions for Local employers.

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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**State Appropriates 78% of Statutory Contribution for Fiscal Year Ending June 30, 2022 and Thereafter**

State

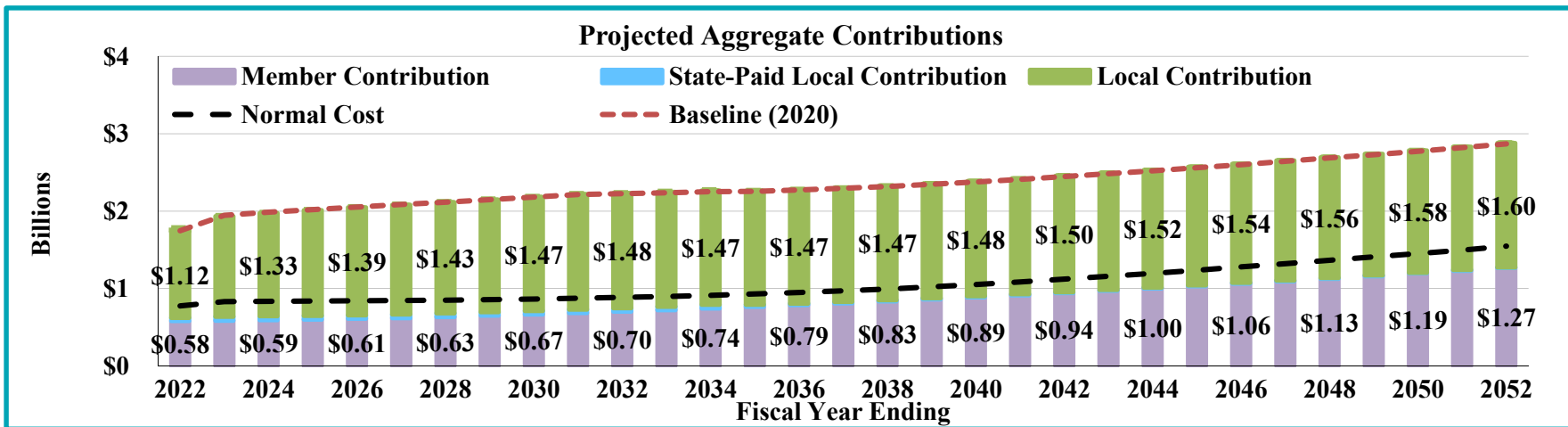
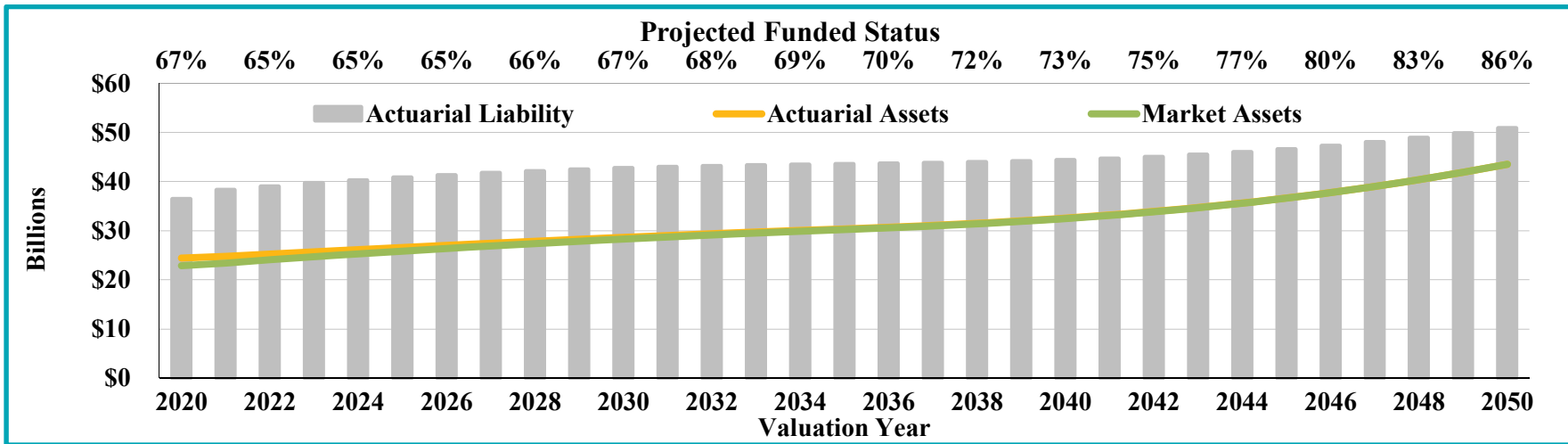


PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**State Appropriates 78% of Statutory Contribution for Fiscal Year Ending June 30, 2022 and Thereafter**

**Local Employers**



**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**SECTION II – ASSESSMENT AND DISCLOSURE OF RISK**

**More Detailed Assessment**

While a more detailed assessment is always valuable to enhance the understanding of the risks identified above, we believe the scenarios illustrated above cover the primary risks facing the System at this time. We would be happy to provide the Board with a more in-depth analysis at their request.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
**JULY 1, 2020 ACTUARIAL VALUATION**

**SECTION III – ASSETS**

The System 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 because 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 what is generally considered to be a reasonable range of the market value.

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

- Disclosure of assets at July 1, 2019 and July 1, 2020,
- Statement of cash flows during the year,
- Development of the actuarial value of assets,
- Disclosure of investment performance for the year,
- Development of the Special Asset Value (SAV), and
- Development of the Actuarial Balance Sheet.

### **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 III-1 on the following page presents the market value as of June 30, 2019 and June 30, 2020. Table III-2 presents the System's net cash flows from June 30, 2019 to June 30, 2020. Table III-3 presents the development of the Actuarial Value of Assets as of July 1, 2020. Tables III-4 and III-5 show the market and actuarial value of assets historical investment returns compared to the assumed return for each year, as well as the cumulative returns over various periods and durations of time.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
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**SECTION III – ASSETS**

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

	June 30, 2020	June 30, 2019
<b>Assets</b>		
Cash	\$ 13,137,086	\$ 5,767,776
Investment Holdings	27,555,991,594	28,619,508,316
Employers' Contributions Receivable - Chapter 19	23,228,193	29,002,501
Employers' Contributions Receivable - State	194,236,000	0
Employers' Contributions Receivable - NCGI State	4,592,575	6,848,636
Employers' Contributions Receivable - NCGI Local Employers	52,875,923	49,734,428
Employers' Contributions Receivable - Lottery	34,472,800	27,536,200
Employers' Contributions Receivable - Local Employers	1,053,905,647	928,080,694
Employers' Contributions Receivable - Local Employers ERI	27,711,497	37,184,186
Employers' Contributions Receivable - Retroactive Contributions	5,560,037	4,701,164
Employers' Contributions Receivable - Delayed Enrollments	978,919	1,024,028
Employers' Contributions Receivable - Delayed Appropriations	1,177,161	7,045,494
Members' Contributions Receivable	61,756,358	79,589,590
Accrued Interest on Investments	205,077	73,514
Accounts Receivable - Other	19,544,266	8,030,435
Loans Receivable	537,229,281	529,382,511
Securities Lending Collateral	520,573,937	368,264,027
<b>Total Assets</b>	<b>\$ 30,107,176,351</b>	<b>\$ 30,701,773,500</b>
<b>Liabilities</b>		
Pension Payroll Payable	\$ (308,580,106)	\$ (294,743,097)
Pension Adjustment Payroll Payable	(16,952,892)	(17,830,566)
Withholdings Payable	(34,106,910)	(32,045,038)
Death Benefits Payable	(13,294,120)	(8,854,142)
Securities Lending Collateral & Rebates Payable	(520,401,752)	(367,818,849)
Administrative Expenses Payable	(25,271,129)	0
Accounts Payable - Other	(143,200,140)	(132,504,142)
<b>Total Liabilities</b>	<b>\$ (1,061,807,049)</b>	<b>\$ (853,795,834)</b>
<b>Preliminary Market Value of Assets</b>	<b>\$ 29,045,369,302</b>	<b>\$ 29,847,977,666</b>
<b>Discounted Receivables</b>		
State Appropriations	\$ 993,680,899	\$ 744,742,236
Expected Lottery Revenue	220,457,278	217,448,119
<b>Adjustments to June 30, 2020 Financial Report</b>		
Discounting of Local Employers Appropriations Receivable	(53,586,077)	(47,507,180)
Discounting of Local Employers ERI Contributions Receivable	(1,897,094)	(2,599,297)
True-up of Present Value of Chapter 19, P.L. 2009 Contributions Receivable	20,057,207	19,089,330
Exclusion of Reserve for Non-Contributory Group Insurance	(82,268,987)	(75,387,557)
<b>Market Value of Assets</b>	<b>\$ 30,141,812,528</b>	<b>\$ 30,703,763,317</b>

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**SECTION III – ASSETS**

**System Cash Flows as of June 30, 2020**

<b>Table III-2 Changes in Market Values for FYE June 30, 2020</b>			
	<b>State</b>	<b>Local Employers</b>	<b>Total</b>
<b>Additions</b>			
Contributions			
Member Contributions	\$ 345,896,206	\$ 563,040,019	\$ 908,936,225
Member Transfer Contributions	4,979,200	282,938	5,262,138
State and Local Employers Appropriations	769,448,817	1,041,074,703	1,810,523,520
State Contributions on Behalf of Locals	0	8,117,299	8,117,299
State Lottery	213,353,000	0	213,353,000
NCGI Premium	32,015,380	52,874,860	84,890,240
Transfers from Other Systems	458,995	326,096	785,091
Delayed Enrollments	220,673	346,761	567,434
Delayed Appropriations	(5,431,030)	1,284,584	(4,146,446)
Retroactive Employer Contributions	0	5,318,876	5,318,876
Additional Employer Contributions	0	102,853	102,853
NCGI Adjustment	0	0	0
Total Contributions	<u>\$ 1,360,941,241</u>	<u>\$ 1,672,768,989</u>	<u>\$ 3,033,710,230</u>
Net Investment Income	58,438,298	397,832,939	456,271,237
Total Additions	<u>\$ 1,419,379,539</u>	<u>\$ 2,070,601,928</u>	<u>\$ 3,489,981,467</u>
<b>Deductions</b>			
Withdrawal of Member Contributions	\$ 46,762,379	\$ 79,890,241	\$ 126,652,620
Transfers to Other Systems - Member Contributions	6,443,494	11,453,934	17,897,428
Transfers to Other Systems - Employer Contributions	284,675	1,988,805	2,273,480
Adjustments to Member Account Loans	490,532	0	490,532
Retirement Allowances	1,701,157,967	2,161,751,908	3,862,909,875
Pension Adjustment Benefits	78,482,426	100,855,582	179,338,008
NGCI Premium	32,015,380	51,647,497	83,662,877
Administrative Expenses	5,895,744	13,469,267	19,365,011
Total Deductions	<u>\$ 1,871,532,597</u>	<u>\$ 2,421,057,234</u>	<u>\$ 4,292,589,831</u>
<b>Net Increase/(Decrease)</b>	<b>\$ (452,153,058)</b>	<b>\$ (350,455,306)</b>	<b>\$ (802,608,364)</b>
<b>Preliminary Market Value of Assets Beginning of Year</b>	<b>\$ 6,500,345,915</b>	<b>\$ 23,347,631,751</b>	<b>\$ 29,847,977,666</b>
<b>Preliminary Market Value of Assets End of Year</b>	<b>\$ 6,048,192,857</b>	<b>\$ 22,997,176,445</b>	<b>\$ 29,045,369,302</b>
<b>Discounted Receivables</b>			
State Appropriations	\$ 981,225,927	12,454,972	\$ 993,680,899
Expected Lottery Revenue	220,457,278	0	220,457,278
<b>Adjustments to June 30, 2020 Financial Report</b>			
Discounting of Local Employers Appropriations Receivable	0	(53,586,077)	(53,586,077)
Discounting of Local Employers ERI Contributions Receivable	0	(1,897,094)	(1,897,094)
True-up of Present Value of Chapter 19, P.L. 2009			
Contributions Receivable	0	20,057,207	20,057,207
Exclusion of Reserve for Non-Contributory Group Insurance	0	(82,268,987)	(82,268,987)
<b>Market Value of Assets End of Year</b>	<u><b>\$ 7,249,876,062</b></u>	<u><b>\$ 22,891,936,466</b></u>	<u><b>\$ 30,141,812,528</b></u>
<b>Approximate Return</b>	<b>0.95%</b>	<b>1.83%</b>	<b>1.64%</b>

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**SECTION III – ASSETS**

**Actuarial Value of Assets (AVA)**

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. This method is prescribed by N. J. Statute.

<b>Table III-3 Development of Actuarial Value of Assets as of June 30, 2020</b>			
	<b>State</b>	<b>Local Employers</b>	<b>Total</b>
1. Preliminary Actuarial Value of Assets as of July 1, 2019 <sup>1</sup>	\$ 7,063,171,363	\$ 24,004,265,747	\$ 31,067,437,110
2. Net Cash Flow excluding Investment Income <sup>2</sup>	(510,591,356)	(739,424,452)	(1,250,015,808)
3. Expected Investment Income <sup>3</sup>	<u>490,467,437</u>	<u>1,631,971,802</u>	<u>2,122,439,239</u>
4. Expected Actuarial Value of Assets as of July 1, 2020: [1 + 2 + 3]	\$ 7,043,047,444	\$ 24,896,813,097	\$ 31,939,860,541
5. Preliminary Market Value of Assets as of June 30, 2020 <sup>4</sup>	\$ 6,048,192,857	\$ 22,980,914,951	\$ 29,029,107,808
6. 20% of Difference from MVA [20% * (5 - 4)]	\$ (198,970,917)	\$ (383,179,629)	\$ (582,150,546)
7. Preliminary Actuarial Value of Assets as of July 1, 2020: [4 + 6]	\$ 6,844,076,527	\$ 24,513,633,468	\$ 31,357,709,995
8. Discounted Receivable Contributions			
State Appropriations	\$ 981,225,927	\$ 12,454,972	\$ 993,680,899
Expected Lottery Revenue	220,457,278	0	220,457,278
Chapter 19, P.L. 2009 Contributions for FYE 2022 and Later	<u>0</u>	<u>34,877,843</u>	<u>34,877,843</u>
Total	\$ 1,201,683,205	\$ 47,332,815	\$ 1,249,016,020
9. Adjustments			
Discounting of Local Employers Appropriations Receivable	\$ 0	\$ (53,586,077)	\$ (53,586,077)
Discounting of Chapter 19, P.L. 2009 Contributions Receivable for FYE 2021	0	(456,236)	(456,236)
Exclusion of Reserve for Non-Contributory Group Insurance	<u>0</u>	<u>(82,268,987)</u>	<u>(82,268,987)</u>
Total	\$ 0	\$ (136,311,300)	\$ (136,311,300)
10. Actuarial Value of Assets as of July 1, 2020: [7 + 8 + 9]	\$ 8,045,759,732	\$ 24,424,654,983	\$ 32,470,414,715
11. Rate of Return on Actuarial Value of Assets	4.34%	5.59%	5.30%
12. Ratio of Actuarial Value of Assets to Market Value of Assets	111.0%	106.7%	107.7%

<sup>1</sup> Includes Local appropriations receivable from June 30, 2019 Financial Report but excludes discounted State receivable contributions, present value of Chapter 19, P.L. 2009 contributions receivable and other adjustments.

<sup>2</sup> Amount for Local Employers includes expected Chapter 19, P.L. 2009 payments for FYE 2021 of \$8,863,793.

<sup>3</sup> Refer to Appendix B, Actuarial Methods, for details on the assumed timing of contributions.

<sup>4</sup> Amount for Local Employers includes adjustments to June 30, 2020 Financial Report for discounting of Local Employers ERI contributions receivable of \$(1,897,094) and true-up of Chapter 19, P.L. 2009 contributions receivable for FYE 2021 of \$(14,364,400).



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**SECTION III – ASSETS**

**Investment Performance**

In reviewing the investment performance for the System's assets in aggregate, the market value of assets rate of return was 1.64% for the year ending June 30, 2020. This is compared to an assumed return of 7.30% for the same period. On an actuarial value of assets basis, the return for FYE 2020 was 5.30%.

The calculated returns for State and Local employers' portions separately differ due to the size of cash flows relative to the beginning of year asset value, the timing of contributions, and the income allocation methodology. For the year ending June 30, 2020 the market value of assets rate of return was 0.95% and 1.83% for the State and Local employers' portions, respectively. On an actuarial value of assets basis, the return for FYE 2020 was 4.34% and 5.59% for the State and Local employers portions, respectively.

In Table III-4 we show the historical asset returns compared to the investment return assumption, beginning with the year ending on June 30, 2000. As of July 1, 1999, the actuarial value of assets was reset to equal the market value of assets.

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**SECTION III – ASSETS**

<b>Table III-4 Annual Rates of Return Total System</b>			
<b>Year Ended June 30</b>	<b>Investment Return Assumption</b>	<b>Market Value<sup>1</sup></b>	<b>Actuarial Value<sup>2</sup></b>
2000	8.75%	11.86%	9.29%
2001	8.75%	-9.80%	5.50%
2002	8.75%	-8.61%	3.07%
2003	8.75%	3.31%	2.93%
2004	8.75%	14.16%	4.44%
2005	8.25%	8.77%	4.74%
2006	8.25%	9.79%	5.78%
2007	8.25%	17.14%	7.96%
2008	8.25%	-2.61%	6.83%
2009	8.25%	-15.49%	3.24%
2010	8.25%	13.34%	3.16%
2011	8.25%	17.97%	5.26%
2012	7.95%	2.47%	4.58%
2013	7.90%	11.72%	5.52%
2014	7.90%	16.79%	7.60%
2015	7.90%	4.08%	5.94%
2016	7.90%	-1.15%	4.95%
2017	7.65%	12.71%	5.99%
2018	7.50%	9.17%	6.49%
2019	7.50%	6.33%	6.41%
2020	7.30%	1.64%	5.30%

<sup>1</sup>Beginning in 2017, the returns are from the System's Actuarial Valuation Report. Since the prior actuary did not calculate a market value return prior to 2017, earlier returns are from other sources. Returns for 2014 through 2016 are money-weighted returns for the Pension Funds from the DPB's Comprehensive Annual Financial Reports. Returns for 2000 through 2013 are returns for the Pension Funds from the New Jersey State Investment Council Annual Reports.

<sup>2</sup>The prior actuary did not report an actuarial value return in the year 2000. The return shown was calculated based on available information.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION III – ASSETS**

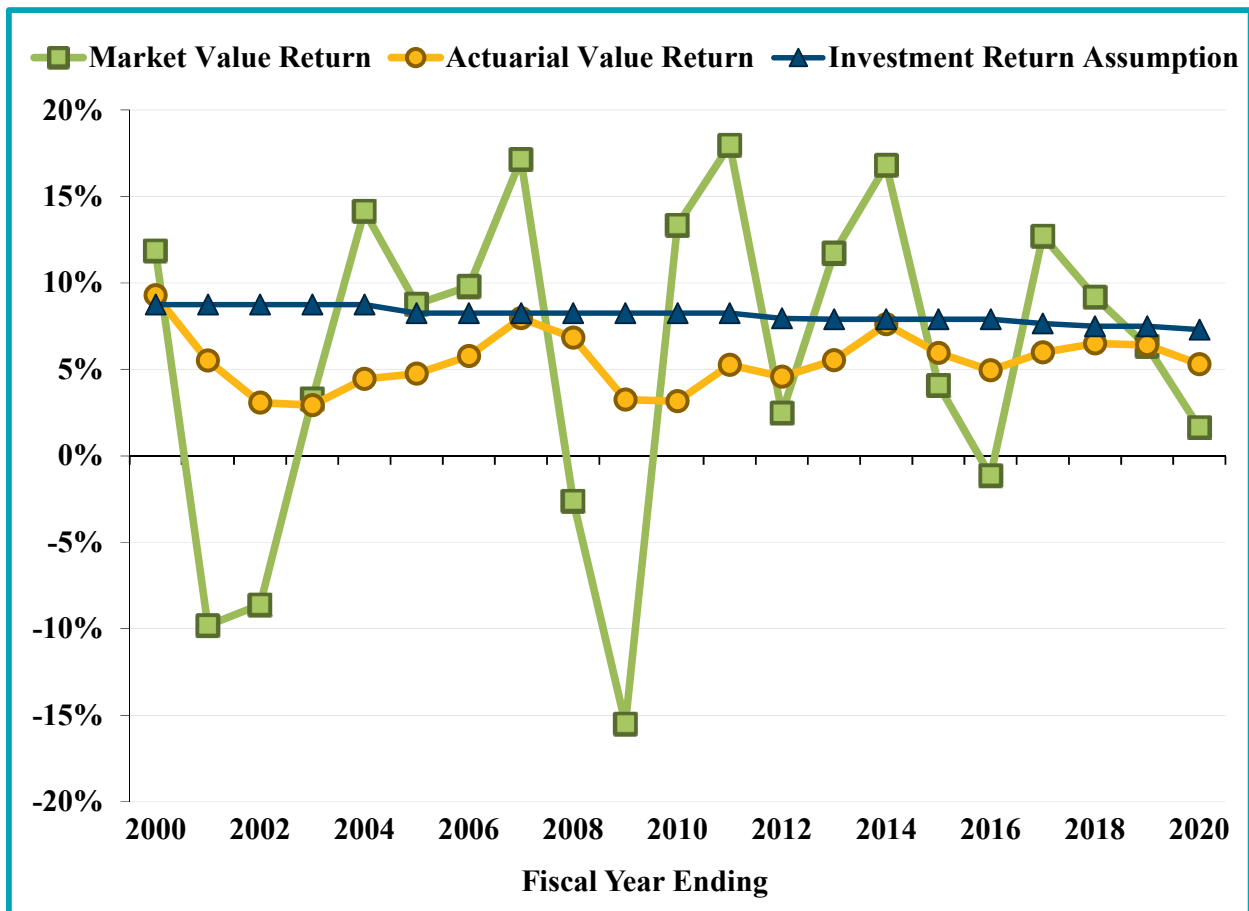
Additionally, we show the compound annualized rates of return for various periods since the July 1, 1999 AVA reset in the following table. On a cumulative basis, there are periods where the market value return significantly exceeds the actuarial value return. This is due to the recognition of market value losses from earlier years in the actuarial value. We present compound annualized rates of return over consecutive five-year periods to help illustrate this point.

<b>Table III-5 Compound Annualized Rates of Returns</b>			
<b>Period</b>	<b>Investment Return</b>		
	<b>Assumption</b>	<b>Market Value</b>	<b>Actuarial Value</b>
Since July 1, 1999	8.14%	5.47%	5.46%
20-Year	8.11%	5.16%	5.28%
15-Year	7.93%	6.55%	5.66%
10-Year	7.77%	7.99%	5.80%
5-Year	7.57%	5.62%	5.83%
<b>Consecutive Five-Year Periods</b>			
2000 to 2004	8.75%	1.69%	5.02%
2005 to 2009	8.25%	2.86%	5.70%
2010 to 2014	8.05%	12.32%	5.21%
2015 to 2019	7.69%	6.12%	5.96%
2020 (One-Year)	7.30%	1.64%	5.30%

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SECTION III – ASSETS

We present the annual rates of return from Table III-4 in the following graph. The market value returns (green) show significant volatility with years above and below the investment return assumption (blue). The largest deviations from expectations are losses in 2001 and 2002 and again in 2008 and 2009. The actuarial value returns (yellow) follow the direction of market value returns, but much more gradually as gains and losses are recognized over time. For nearly the entire period, the actuarial value returns fall short of the investment return assumption and result in AVA losses and UAL increases. When the actuarial return approaches the assumption, the MVA is closing in on the AVA with the possibility of AVA gains in the near future. However, both such instances (2007 and 2014) are followed by market value losses (large, sharp losses in 2008-2009 and small cumulative losses in 2015-2020).



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**SECTION III – ASSETS**

**Development of Special Asset Value (SAV)**

Under Chapter 98, P.L. 2017, the Lottery Enterprise Contribution Act, PERS receives 21.02% of the proceeds of the Lottery Enterprise for a term of 30 years. The value of the Lottery Enterprise is classified as a special asset, and is included in the State's actuarial value of assets used for the purpose of calculating the target funding ratio under Chapter 78, P.L. 2010. The special asset value is the present value of remaining lottery contributions to the retirement systems.

Table III-6 shows the development of the special asset value as of July 1, 2020. The depreciated value is a roll forward of the Lottery Enterprise Value from the appraisal date.

<b>Table III-6</b>	
<b>Development of Special Asset Value as of July 1, 2020</b>	
1. Lottery Enterprise Value as of Appraisal Date of June 30, 2017 <sup>1</sup>	\$ 13,535,103,380
2. Depreciated Value as of end of Valuation Year at June 30, 2021 <sup>1</sup>	\$ 13,486,010,814
3. Discounted Value as of July 1, 2020 at 7.30%	\$ 12,568,509,612
4. Allocation to PERS	21.02%
5. Special Asset Value as of July 1, 2020	\$ 2,641,900,720

<sup>1</sup> Provided by the Division of Pensions and Benefits

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION III – ASSETS**

**Actuarial Balance Sheet**

<b>Table III-7 Actuarial Balance Sheet as of July 1, 2020</b>			
	<b>State</b>	<b>Local Employers</b>	<b>Total</b>
<b>Assets</b>			
<u>Retirement Fund Reserve (RFR)</u>			
Credited to Fund with Distribution of Income	\$ 15,201,788,048	\$ 21,055,287,602	\$ 36,257,075,650
Add/(Deduct) reserve transferable from/(to) ECR <sup>1</sup>	1,314,180,330	563,102,820	1,877,283,150
Adjusted RFR <sup>2</sup>	<u>\$ 16,515,968,378</u>	<u>\$ 21,618,390,422</u> <sup>3</sup>	<u>\$ 38,134,358,800</u>
Members' Contributions Reserve (MCR) <sup>2</sup>	\$ 3,196,738,259	\$ 5,127,295,509	\$ 8,324,033,768
Accumulative Interest Reserve (AIR) with Distribution of Income <sup>2</sup>	\$ 3,233,486,155	\$ 4,730,365,645	\$ 7,963,851,800
<u>Employers' Contributions Reserve (ECR)</u>			
Credited to Fund with Distribution of Income	\$ (13,586,252,730)	\$ (6,546,356,728)	\$ (20,132,609,458)
Add/(Deduct) reserve transferable from/(to) RFR	(1,314,180,330)	(563,102,820)	(1,877,283,150)
Add/(Deduct) reserve transferable from/(to) BEF	0	45,962,677	45,962,677
Adjusted ECR <sup>2</sup>	<u>\$ (14,900,433,060)</u>	<u>\$ (7,063,496,871)</u>	<u>\$ (21,963,929,931)</u>
<u>Benefit Enhancement Fund (BEF)</u>			
Credited to Fund with Distribution of Income	\$ 0	\$ 58,062,955	\$ 58,062,955
Add/(Deduct) reserve transferable from/(to) ECR	0	(45,962,677)	(45,962,677)
Adjusted BEF <sup>2</sup>	<u>\$ 0</u>	<u>\$ 12,100,278</u>	<u>\$ 12,100,278</u>
Special Asset Value as of July 1, 2020	\$ 2,641,900,720	\$ 0	\$ 2,641,900,720
Present Value of Prospective Contributions by State and Local Employers to ECR	\$ 15,597,476,556	\$ 11,997,546,045	\$ 27,595,022,601
Assets Allocated to the BEF	<u>\$ 0</u>	<u>\$ (12,100,278)</u>	<u>\$ (12,100,278)</u>
<b>Total Assets</b>	<b>\$ 26,285,137,008</b>	<b>\$ 36,410,100,750</b>	<b>\$ 62,695,237,758</b>
<b>Liabilities</b>			
<u>Payable from RFR</u>			
Retirees, Disableds, and Beneficiaries currently receiving benefits	\$ 16,515,968,378	\$ 21,618,390,422 <sup>3</sup>	\$ 38,134,358,800
<u>Payable from MCR, AIR and ECR</u>			
Actives and Deferred Vesteds due a future benefit	\$ 9,769,168,630	\$ 14,791,710,328	\$ 24,560,878,958
<b>Total Liabilities</b>	<b>\$ 26,285,137,008</b>	<b>\$ 36,410,100,750</b>	<b>\$ 62,695,237,758</b>

<sup>1</sup> It is recommended that the RFR be put into balance each year by transferring assets from the ECR to the RFR so that the RFR will contain sufficient assets to cover the retiree and beneficiary liability.

<sup>2</sup> Actuarial Value of Assets equals RFR + MCR + AIR + ECR + BEF.

<sup>3</sup> Includes the present value of ERI payments of \$18,550,847.

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**SECTION IV – LIABILITIES**

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

- Disclosure of liabilities at July 1, 2019 and July 1, 2020,
- Active liabilities broken down by Tier, and
- The development of the actuarial gain and loss.

**Disclosure**

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

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION IV – LIABILITIES**

Table IV-1 shows the actuarial liability, unfunded actuarial liability and funded ratio as of July 1, 2020 for the System. The unfunded actuarial liability (UAL) and funded ratio based on the actuarial value of assets plus the special asset value (AVA + SAV) are used to compare against the “target funded ratio” and is different from the UAL used in determining Statutory contributions which is based on just the actuarial value of assets (AVA).

**Table IV-1  
Disclosure of Liabilities**

	State	Local Employers	Total
<b>Actuarial Liability</b>			
Contributing Actives	\$ 9,293,030,437	\$ 13,903,728,053	\$ 23,196,758,490
Non-Contributing Actives	447,231,093	825,609,297	1,272,840,390
Deferred Vesteds	28,907,100	62,372,978	91,280,078
Retirees	14,870,457,509	19,058,861,082	33,929,318,591
Disabled	971,028,701	1,407,004,701	2,378,033,402
Beneficiaries	674,482,168	1,152,524,639	1,827,006,807
<b>Total Actuarial Liability</b>	<b>\$ 26,285,137,008</b>	<b>\$ 36,410,100,750</b>	<b>\$ 62,695,237,758</b>
Actuarial Value of Assets	<u>\$ 8,045,759,732</u>	<u>\$ 24,424,654,983</u>	<u>\$ 32,470,414,715</u>
Unfunded Actuarial Liability/(Surplus)	\$ 18,239,377,276	\$ 11,985,445,767	\$ 30,224,823,043
Funded Ratio (AVA)	30.61%	67.08%	51.79%
Actuarial Value of Assets + Special Asset Value	<u>\$ 10,687,660,452</u>	<u>\$ 24,424,654,983</u>	<u>\$ 35,112,315,435</u>
Unfunded Actuarial Liability/(Surplus) (AVA + SAV)	\$ 15,597,476,556	\$ 11,985,445,767	\$ 27,582,922,323
	40.66%	67.08%	56.00%

<sup>1</sup> Includes the present value of ERI payments of \$18,550,847.



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**SECTION IV – LIABILITIES**

Table IV-2 and Table IV-3 show the number of members, total appropriation salary, actuarial liability, and gross normal cost of contributing active members by Tier for State and Local employers as of July 1, 2020.

<b>Table IV-2 Contributing Active Liabilities by Tier State</b>				
	<b>Number of Members</b>	<b>Appropriation Payroll<sup>1</sup></b>	<b>Actuarial Liability</b>	<b>Gross Normal Cost</b>
Tier 1	36,108	\$ 2,780,178,811	\$ 8,407,577,431	\$ 340,140,835
Tier 2	2,890	188,658,840	247,761,253	19,344,016
Tier 3	1,987	128,292,039	144,799,364	12,670,353
Tier 4	1,407	96,041,239	77,763,671	7,746,489
Tier 5	25,382	1,444,358,349	415,128,718	92,989,434
<b>Total</b>	<b>67,774</b>	<b>\$ 4,637,529,278</b>	<b>\$ 9,293,030,437</b>	<b>\$ 472,891,127</b>

<b>Table IV-3 Contributing Active Liabilities by Tier Local Employers</b>				
	<b>Number of Members</b>	<b>Appropriation Payroll<sup>1</sup></b>	<b>Actuarial Liability</b>	<b>Gross Normal Cost</b>
Tier 1	71,265	\$ 4,078,209,547	\$ 12,302,572,875	\$ 495,894,577
Tier 2	7,628	347,108,739	476,467,520	36,555,516
Tier 3	4,812	236,145,648	271,814,487	23,753,598
Tier 4	2,218	124,094,265	103,366,768	10,162,682
Tier 5	56,834	2,542,835,075	749,506,403	168,127,271
<b>Total</b>	<b>142,757</b>	<b>\$ 7,328,393,274</b>	<b>\$ 13,903,728,053</b>	<b>\$ 734,493,644</b>

<sup>1</sup> Tier 1 members limited to the 401(a)(17) pay limit. Other tiers limited to the Social Security Wage Base.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION IV – LIABILITIES**

Table IV-4 and Table IV-5 show the number of members, actuarial liability, and gross normal cost of non-contributing active members by Tier for State and Local employers as of July 1, 2020.

<b>Table IV-4 Non-Contributing Active Liabilities by Tier State</b>			
	<b>Number of Members</b>	<b>Actuarial Liability</b>	<b>Gross Normal Cost</b>
Tier 1	5,369	\$ 392,849,577	\$ 0
Tier 2	339	11,866,765	0
Tier 3	257	8,482,039	0
Tier 4	121	4,026,287	0
Tier 5	3,245	30,006,425	0
<b>Total</b>	<u>9,331</u>	<u>\$ 447,231,093</u>	<u>\$ 0</u>

<b>Table IV-5 Non-Contributing Active Liabilities by Tier Local Employers</b>			
	<b>Number of Members</b>	<b>Actuarial Liability</b>	<b>Gross Normal Cost</b>
Tier 1	15,391	\$ 716,836,707	\$ 0
Tier 2	1,265	24,525,290	0
Tier 3	779	14,387,732	0
Tier 4	247	5,307,526	0
Tier 5	9,232	64,552,042	0
<b>Total</b>	<u>26,914</u>	<u>\$ 825,609,297</u>	<u>\$ 0</u>

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION IV – LIABILITIES**

Tables IV-6 and IV-7 present the change in the actuarial liabilities, actuarial assets, and unfunded actuarial liability during the plan year for State and Local employers. 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 System.

For this purpose, we focus on the UAL without considering the SAV because this UAL is used to determine the Statutory contribution. The UAL is also prior to any adjustments for State-paid Local obligations.

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**SECTION IV – LIABILITIES**

<b>Table IV-6 Development of 2020 Experience (Gain)/Loss State</b>			
	<b>Actuarial Liability</b>	<b>Actuarial Value of Assets</b>	<b>Unfunded Actuarial Liability/(Surplus)</b>
1. Value as of July 1, 2019	\$ 25,666,760,996	\$ (8,017,468,579)	\$ 17,649,292,417
2. Additions			
Normal Cost	\$ 466,059,472	\$ 0	\$ 466,059,472
Statutory State Contributions	0	(1,606,422,031)	(1,606,422,031)
Expected Member Contributions	0	(347,425,640)	(347,425,640)
Total Additions	\$ 466,059,472	\$ (1,953,847,671)	\$ (1,487,788,199)
3. Deductions			
Benefit Payments	\$ (1,826,893,304)	\$ 1,826,893,304	\$ 0
Expected Administrative Expenses	0	0	0
Total Deductions	\$ (1,826,893,304)	\$ 1,826,893,304	\$ 0
4. Net Transfers from Other Systems			
State Contributions	\$ 174,320	\$ (174,320)	\$ 0
Member Contributions	(1,464,294)	1,464,294	0
Total Net Transfers	\$ (1,289,974)	\$ 1,289,974	\$ 0
5. Expected Interest	\$ 1,842,142,483	\$ (532,179,483)	\$ 1,309,963,000
6. Expected Value as of July 1, 2020: [1 + 2 + 3 + 4 + 5]	\$ 26,146,779,673	\$ (8,675,312,455)	\$ 17,471,467,218
7. Other Changes			
Appropriation Adjustment	\$ 0	\$ 353,723,982	\$ 353,723,982
Contribution Timing	0	51,881,467	51,881,467
Actual Lottery Revenue	0	11,887,749	11,887,749
Other Employer Contributions	0	5,397,185	5,397,185
Actual Member Contributions	0	1,584,275	1,584,275
Change in Methods/Assumptions	0	0	0
Change in Benefits/Policy	0	0	0
Total Other Changes	\$ 0	\$ 424,474,658	\$ 424,474,658
8. Expected value after changes: [6 + 7]	\$ 26,146,779,673	\$ (8,250,837,797)	\$ 17,895,941,876
9. Actual Value as of July 1, 2020	\$ 26,285,137,008	\$ (8,045,759,732)	\$ 18,239,377,276
10. Actuarial (Gain)/Loss: [9 - 8]	\$ 138,357,335	\$ 205,078,065	\$ 343,435,400

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
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**SECTION IV – LIABILITIES**

Table IV-7 Development of 2020 Experience (Gain)/Loss Local Employers			
	Actuarial Liability	Actuarial Value of Assets	Unfunded Actuarial Liability/(Surplus)
1. Value as of July 1, 2019	\$ 35,526,210,970	\$ (23,928,515,595)	\$ 11,597,695,375
2. Additions			
Normal Cost	\$ 730,190,493	\$ 0	\$ 730,190,493
Statutory Contributions	0	(1,134,541,283)	(1,134,541,283)
Expected Member Contributions	0	(554,796,989)	(554,796,989)
Total Additions	<u>\$ 730,190,493</u>	<u>\$ (1,689,338,272)</u>	<u>\$ (959,147,779)</u>
3. Deductions			
Benefit Payments	\$ (2,342,497,731)	\$ 2,342,497,731	\$ 0
Expected Administrative Expenses	0	0	0
Total Deductions	<u>\$ (2,342,497,731)</u>	<u>\$ 2,342,497,731</u>	<u>\$ 0</u>
4. Net Transfers from Other Systems			
State Contributions	\$ (1,662,709)	\$ 1,662,709	\$ 0
Member Contributions	(11,170,996)	11,170,996	0
Total Net Transfers	<u>\$ (12,833,705)</u>	<u>\$ 12,833,705</u>	<u>\$ 0</u>
5. Expected Interest	\$ 2,562,261,874	\$ (1,682,219,635)	\$ 880,042,239
6. Expected Value as of July 1, 2020: [1 + 2 + 3 + 4 + 5]	\$ 36,463,331,901	\$ (24,944,742,066)	\$ 11,518,589,835
7. Other Changes			
Appropriation Adjustment	\$ 0	\$ 80,586,492	\$ 80,586,492
Contribution Timing	0	54,144,283	54,144,283
Other Employer Contributions	0	(7,305,977)	(7,305,977)
Actual Member Contributions	0	(8,538,601)	(8,538,601)
ERI and Ch. 19 Receivables	0	(680,353)	(680,353)
Interest on NCGI Cash Flows	0	4,749,373	4,749,373
Change in Methods/Assumptions	0	0	0
Change in Benefits/Policy	0	0	0
Total Other Changes	<u>\$ 0</u>	<u>\$ 122,955,217</u>	<u>\$ 122,955,217</u>
8. Expected value after changes: [6 + 7]	\$ 36,463,331,901	\$ (24,821,786,849)	\$ 11,641,545,052
9. Actual Value as of July 1, 2020	\$ 36,410,100,750	\$ (24,424,654,983)	\$ 11,985,445,767
10. Actuarial (Gain)/Loss: [9 - 8]	\$ (53,231,151)	\$ 397,131,866	\$ 343,900,715

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**SECTION IV – LIABILITIES**

Table IV-8 shows the components of the Actuarial (gain)/loss for the State.

<b>Table IV-8 Actuarial (Gain)/Loss Analysis State</b>		
<b>Components</b>	<b>July 1, 2020</b>	<b>July 1, 2019</b>
<b>Actuarial Value of Assets</b>		
Investment Return	\$ 198,970,917	\$ 140,706,362
Administrative Expenses	6,107,148	6,836,124
Total	<u>\$ 205,078,065</u>	<u>\$ 147,542,486</u>
<b>Actuarial Liability</b>		
Salary Increases	\$ 74,576,397	\$ 280,900,892
New Entrants	14,435,689	13,107,378
Demographic Experience and Census Data Updates		
Contributing and Non-Contributing Actives	70,226,562	158,367,428
Inactives	<u>(22,217,542)</u>	<u>8,861,427</u>
Sub-Total	\$ 137,021,106	\$ 461,237,125
Impact of Net Transfers from Other Systems	1,336,229	87,873
Total	<u>\$ 138,357,335</u>	<u>\$ 461,324,998</u>
<b>Actuarial (Gain)/Loss</b>	<b>\$ 343,435,400</b>	<b>\$ 608,867,484</b>

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION IV – LIABILITIES**

Table IV-9 shows the components of the Actuarial (gain)/loss for Local employers.

<b>Table IV-9 Actuarial (Gain)/Loss Analysis Local Employers</b>		
<b>Components</b>	<b>July 1, 2020</b>	<b>July 1, 2019</b>
<b>Actuarial Value of Assets</b>		
Investment Return	\$ 383,179,629	\$ 169,848,852
Administrative Expenses	13,952,237	15,204,061
<b>Total</b>	<b>\$ 397,131,866</b>	<b>\$ 185,052,913</b>
<b>Actuarial Liability</b>		
Salary Increases	\$ 74,573,254	\$ 126,112,702
New Entrants	24,534,812	23,635,585
Demographic Experience and Census Data Updates		
Contributing and Non-Contributing Actives	(62,790,900)	45,323,615
Inactive	(102,842,202)	(200,405)
<b>Sub-Total</b>	<b>\$ (66,525,036)</b>	<b>\$ 194,871,497</b>
Impact of Net Transfers from Other Systems	13,293,885	12,307,951
<b>Total</b>	<b>\$ (53,231,151)</b>	<b>\$ 207,179,448</b>
<b>Actuarial (Gain)/Loss</b>	<b>\$ 343,900,715</b>	<b>\$ 392,232,361</b>

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
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**SECTION V – CONTRIBUTIONS**

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding 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 and Local employer funding requirements contain two components: the employer normal cost and an amortization of the unfunded actuarial liability (UAL). The UAL for this purpose does not include the special asset value. 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.

For PERS, 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. Refunds are valued as the Accumulated Deductions with interest as of the valuation date as provided by the Division of Pensions and Benefits. 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, 2019 valuation, the unfunded actuarial liability is amortized over a closed 30 year period as a level dollar amount. For the July 1, 2020 valuation, the amortization period has decreased to 29 years.

Under Chapter 98, P.L. 2017, the Lottery Enterprise Contribution Act, PERS receives 21.02% of the proceeds of the Lottery Enterprise for a term of 30 years. As of July 1, 2020 there are 26 years remaining. The State's pension contribution shall be reduced by the product of the allocable percentage for such retirement system, the adjustment percentage for such retirement system and the special asset adjustment.

The FYE 2021 Local employers' Statutory pension contribution increased by \$115,174,528 due to the assumption changes from the July 1, 2014 – June 30, 2018 Experience Study. As an alternative funding policy to allow employers to better manage the financial impact, the Board of Trustees adopted a phase-in of the cost impact by spreading the increase over a three year fixed period. Therefore, the FYE 2021 Local employers' net pension contribution reflected 1/3<sup>rd</sup> of the cost impact, or \$38,391,509. This resulted in a reduction in the Local employers' FYE 2021 net pension contribution of \$76,783,019 (\$115,174,528 - \$38,391,509) in the first year as 2/3<sup>rd</sup>s of the cost increase was deferred to the following two years. In FYE 2022, the Local employers' net pension contribution reflects 2/3rds of the cost impact, or \$76,783,019, plus an amortization of the deferred cost from the first year with interest. In FYE 2023, the Local employers' contribution will be the full cost impact, or \$115,174,528, plus an amortization of the deferred cost from the prior two years with interest. This will define the Statutory contribution amount from the assumption changes for all subsequent years.



**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION V – CONTRIBUTIONS**

The phase-in does not reduce the ultimate cost of the assumption changes, only the timing and the amount of contributions. The contribution shortfalls are incorporated in the ultimate cost following the phase-in period and reflect unpaid amounts in the first two years plus interest.

Table V-1 below shows the development of the Lottery Enterprise contribution offset. According to N.J. Statute the methodology for determining the adjustment percentage varies depending on the applicable fiscal year. The following table shows both calculations to illustrate how the adjustment percentage may change over time.

<b>Table V-1</b>	
<b>Development of Lottery Enterprise Contribution Offset</b>	
<b><u>For Fiscal Years Through 2022</u></b>	
1. Special Asset Adjustment for FY 2022	\$ 1,095,871,137
2. Allocable Percentage to PERS for Fiscal Years through 2022	21.02%
3. Adjustment Percentage	100.00%
4. Lottery Enterprise Contribution Offset as of June 30, 2021: [1 x 2 x 3]	\$ 230,352,113
<b><u>For Fiscal Years Beginning 2023</u></b>	
5. Special Asset Value Allocated to PERS as of July 1, 2020	\$ 2,641,900,720
6. 26-Year Level Dollar Amortization payable June 30, 2021	\$ 229,622,691
7. Initial Special Asset Value allocable to PERS as of July 1, 2016	\$ 2,642,897,102
8. Maximum Special Asset Adjustment: 30-Year Level-Dollar Amortization at 7.65%	\$ 227,053,417
9. Special Asset Adjustment as of June 30, 2021: [lesser of 6 and 8]	\$ 227,053,417
10. Adjustment Percentage	57.29%
11. Funded Ratio based on Actuarial Value + Special Asset Value for Total System	56.00%
12. Applicable Adjustment Percentage: [If 11. < 50%, 10. - 3 x (50% - 11.), otherwise 10.]	57.29%

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION V – CONTRIBUTIONS**

Table V-2 through Table V-5 show the development of the Statutory pension contributions for the State and Local employers.

Table V-2 Development of Unfunded Actuarial Liability						
	July 1, 2020 Valuation			July 1, 2019 Valuation		
	State	Local Employers <sup>1</sup>	Total	State	Local Employers <sup>1</sup>	Total
<b>1. Actuarial Liability</b>	\$ 26,285,137,008	\$ 36,410,100,750	\$ 62,695,237,758	\$ 25,666,760,996	\$ 35,526,210,970	\$ 61,192,971,966
<b>2. Actuarial Value of Assets<sup>2</sup></b>	\$ 8,045,759,732	\$ 24,424,654,983	\$ 32,470,414,715	\$ 8,017,468,579	\$ 23,928,515,595	\$ 31,945,984,174
<b>3. Benefit Enhancement Fund (BEF)<sup>3</sup></b>	\$ 0	\$ 12,100,278	\$ 12,100,278	\$ 0	\$ 54,012,051	\$ 54,012,051
<b>4. Unfunded Actuarial Liability including BEF</b>						
a. Basic <sup>4</sup>	\$ 18,215,054,527	\$ 11,871,195,603	\$ 30,086,250,130	\$ 17,624,444,537	\$ 11,523,605,424	\$ 29,148,049,961
b. Chapter 133, P.L. 2001 <sup>5</sup>	0	0	0	0	0	0
c. Chapter 366, P.L. 2001 <sup>6</sup>	20,155,223	126,350,442	146,505,665	20,491,229	128,102,002	148,593,231
d. Chapter 259, P.L. 2001	4,167,526	0	4,167,526	4,356,651	0	4,356,651
e. Total	<u>\$ 18,239,377,276</u>	<u>\$ 11,997,546,045</u>	<u>\$ 30,236,923,321</u>	<u>\$ 17,649,292,417</u>	<u>\$ 11,651,707,426</u>	<u>\$ 29,300,999,843</u>
<b>5. Adjustment to UAL including BEF for Phase-In of State-Paid Local Obligations</b>						
a. Chapter 133, P.L. 2001	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
b. Chapter 366, P.L. 2001	126,350,442	(126,350,442)	0	128,102,002	(128,102,002)	0
d. Total	<u>\$ 126,350,442</u>	<u>\$ (126,350,442)</u>	<u>\$ 0</u>	<u>\$ 128,102,002</u>	<u>\$ (128,102,002)</u>	<u>\$ 0</u>
<b>6. Net UAL including BEF [4 + 5]</b>	<b>\$ 18,365,727,718</b>	<b>\$ 11,871,195,603</b>	<b>\$ 30,236,923,321</b>	<b>\$ 17,777,394,419</b>	<b>\$ 11,523,605,424</b>	<b>\$ 29,300,999,843</b>

<sup>1</sup> Excludes UAL amounts due to Local employer ERI programs and Chapter 19, P.L. 2009 Local employer deferrals because receivables for these amounts are included in the AVA.

<sup>2</sup> AVA without Special Asset Value used to calculate the Statutory Contribution.

<sup>3</sup> BEF offsets future normal costs associated with Chapter 133, P.L. 2001.

<sup>4</sup> Includes UAL amounts due to State ERI programs.

<sup>5</sup> For State, the UAL related to the phase-in of Chapter 133, P.L. 2001 normal costs is not tracked and is included with the Basic UAL.

<sup>6</sup> Local amount recalculated in 2019 to reflect that State-paid Local contributions were first credited to the Local portion of the trust in FYE June 30, 2019.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION V – CONTRIBUTIONS**

Table V-3  
Development of Unfunded Actuarial Liability Contribution

	July 1, 2020 Valuation Fiscal Year Ending 2022 Payment			July 1, 2019 Valuation Fiscal Year Ending 2021 Payment		
	State	Local Employers <sup>1</sup>	Total	State	Local Employers <sup>1</sup>	Total
	<b>1. Amortization of UAL including BEF</b>					
a. Basic <sup>2</sup>	\$ 1,423,754,754	\$ 927,895,722	\$ 2,351,650,476	\$ 1,363,775,384	\$ 891,693,884	\$ 2,255,469,268
b. Chapter 133, P.L. 2001 <sup>3</sup>	0	0	0	0	0	0
c. Chapter 366, P.L. 2001 <sup>4</sup>	2,285,890	14,329,942	16,615,832	2,223,111	13,897,897	16,121,008
d. Chapter 259, P.L. 2001 <sup>4,5</sup>	472,657	0	472,657	472,657	0	472,657
e. Total	<u>\$ 1,426,513,301</u>	<u>\$ 942,225,664</u>	<u>\$ 2,368,738,965</u>	<u>\$ 1,366,471,152</u>	<u>\$ 905,591,781</u>	<u>\$ 2,272,062,933</u>
<b>2. Adjustment to UAL Contribution for State-Paid Local Obligations</b>						
a. Chapter 133, P.L. 2001	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
b. Chapter 366, P.L. 2001	<u>14,329,942</u>	<u>(14,329,942)</u>	<u>0</u>	<u>13,897,897</u>	<u>(13,897,897)</u>	<u>0</u>
c. Total	<u>\$ 14,329,942</u>	<u>\$ (14,329,942)</u>	<u>\$ 0</u>	<u>\$ 13,897,897</u>	<u>\$ (13,897,897)</u>	<u>\$ 0</u>
<b>3. UAL Contribution as of Valuation Date [1 + 2]</b>	\$ 1,440,843,243	\$ 927,895,722	\$ 2,368,738,965	\$ 1,380,369,049	\$ 891,693,884	\$ 2,272,062,933
<b>4. Interest to the Beginning of the Fiscal Year</b>	\$ 105,181,557	\$ 67,736,388	\$ 172,917,945	\$ 100,766,940	\$ 65,093,654	\$ 165,860,594
<b>5. UAL Contribution as of Beginning of Fiscal Year [3 + 4]</b>	<b>\$ 1,546,024,800</b>	<b>\$ 995,632,110</b>	<b>\$ 2,541,656,910</b>	<b>\$ 1,481,135,989</b>	<b>\$ 956,787,538</b>	<b>\$ 2,437,923,527</b>

<sup>1</sup> Excludes UAL amounts due to Local employer ERI programs and Chapter 19, P.L. 2009 Local employer deferrals because receivables for these amounts are included in the AVA.

<sup>2</sup> Includes UAL Amounts due to State ERI programs.

<sup>3</sup> For State, the UAL related to the phase-in of Chapter 133, P.L. 2001 normal costs is not tracked and is included with the Basic UAL.

<sup>4</sup> Amortized over closed 13 and 14 year periods in 2020 and 2019, respectively, as level dollar amounts.

<sup>5</sup> Payable by the Second Injury Fund (SIF).

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION V – CONTRIBUTIONS**

Table V-4  
Development of Normal Cost

	July 1, 2020 Valuation Fiscal Year Ending 2022 Payment			July 1, 2019 Valuation Fiscal Year Ending 2021 Payment		
	State	Local Employers	Total	State	Local Employers	Total
	<b>1. Gross Normal Cost, excluding NCGI Premium</b>					
a. Basic	\$ 444,515,901	\$ 690,231,855	\$ 1,134,747,756	\$ 437,162,038	\$ 684,510,148	\$ 1,121,672,186
b. Chapter 133, P.L. 2001	28,054,098	41,575,143	69,629,241	28,540,008	42,835,673	71,375,681
c. Chapter 366, P.L. 2001	255,789	2,686,646	2,942,435	302,117	2,844,672	3,146,789
d. Chapter 259, P.L. 2001 <sup>1</sup>	65,339	0	65,339	55,309	0	55,309
e. Total	\$ 472,891,127	\$ 734,493,644	\$ 1,207,384,771	\$ 466,059,472	\$ 730,190,493	\$ 1,196,249,965
<b>2. Expected Member Contributions<sup>2</sup></b>						
a. Basic	\$ (342,490,271)	\$ (541,215,644)	\$ (883,705,915)	\$ (335,218,838)	\$ (534,398,140)	\$ (869,616,978)
b. Chapter 366, P.L. 2001 <sup>3</sup>	(171,270)	(1,147,214)	(1,318,484)	(180,349)	(1,194,049)	(1,374,398)
c. Total	\$ (342,661,541)	\$ (542,362,858)	\$ (885,024,399)	\$ (335,399,187)	\$ (535,592,189)	\$ (870,991,376)
<b>3. Employer Normal Cost [1 + 2]</b>	\$ 130,229,586	\$ 192,130,786	\$ 322,360,372	\$ 130,660,285	\$ 194,598,304	\$ 325,258,589
<b>4. BEF Offset of Chapter 133, P.L. 2001</b>	\$ 0	\$ (12,100,278)	\$ (12,100,278)	\$ 0	\$ (42,835,673)	\$ (42,835,673)
<b>5. Portion of Local Normal Cost Payable by State</b>						
a. Chapter 133, P.L. 2001	\$ 29,474,865	\$ (29,474,865)	\$ 0	\$ 0	\$ 0	\$ 0
b. Chapter 366, P.L. 2001	1,539,432	(1,539,432)	0	1,650,623	(1,650,623)	0
c. Total	\$ 31,014,297	\$ (31,014,297)	\$ 0	\$ 1,650,623	\$ (1,650,623)	\$ 0
<b>6. Normal Cost Contribution as of Valuation Date [3 + 4 + 5]</b>	\$ 161,243,883	\$ 149,016,211	\$ 310,260,094	\$ 132,310,908	\$ 150,112,008	\$ 282,422,916
<b>7. Interest to the Beginning of the Fiscal Year</b>	\$ 11,770,805	\$ 10,878,184	\$ 22,648,989	\$ 9,658,695	\$ 10,958,176	\$ 20,616,871
<b>8. Normal Cost Contribution as of Beginning of Fiscal Year [6 + 7]</b>	\$ 173,014,688	\$ 159,894,395	\$ 332,909,083	\$ 141,969,603	\$ 161,070,184	\$ 303,039,787
<b>9. Non-Contributory Group Insurance Premium as of Beginning of Fiscal Year (one-year term cost)</b>	N/A	\$ 53,981,229	\$ 53,981,229	N/A	\$ 52,875,923	\$ 52,875,923

<sup>1</sup> Payable by the Second Injury Fund (SIF)

<sup>2</sup> Consistent with existing methodology, expected member contributions are calculated as appropriation payroll increased with a year of general payroll inflation (2% in 2019 and 2020), multiplied by the employee contribution rate and discounted from the middle of the year to the beginning of the year.

<sup>3</sup> The member contribution rate for Prosecutors Part members is 10%, 2.5% greater than the regular member contribution rate of 7.5%.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION V – CONTRIBUTIONS**

Table V-5  
Development of Statutory Pension Contributions

As of Beginning of Fiscal Year	July 1, 2020 Valuation Fiscal Year Ending 2022 Payment			July 1, 2019 Valuation Fiscal Year Ending 2021 Payment		
	State	Local Employers	Total	State	Local Employers	Total
<b>1. Normal Cost Contribution<sup>1</sup></b>						
a. Basic	\$ 109,473,502	\$ 159,894,395	\$ 269,367,897	\$ 109,385,053	\$ 161,070,184	\$ 270,455,237
b. Chapter 133, P.L. 2001	61,728,577	0	61,728,577	30,623,428	0	30,623,428
c. Chapter 366, P.L. 2001	1,742,500	0	1,742,500	1,901,775	0	1,901,775
d. Chapter 259, P.L. 2001 <sup>3</sup>	70,109	0	70,109	59,347	0	59,347
e. Total	\$ 173,014,688	\$ 159,894,395	\$ 332,909,083	\$ 141,969,603	\$ 161,070,184	\$ 303,039,787
<b>2. UAL Contribution<sup>1,2</sup></b>						
a. Basic <sup>4</sup>	\$ 1,527,688,851	\$ 995,632,110	\$ 2,523,320,961	\$ 1,463,330,987	\$ 956,787,538	\$ 2,420,118,525
b. Chapter 133, P.L. 2001	0	0	0	0	0	0
c. Chapter 366, P.L. 2001	17,828,788	0	17,828,788	17,297,841	0	17,297,841
d. Chapter 259, P.L. 2001 <sup>3</sup>	507,161	0	507,161	507,161	0	507,161
e. Total	\$ 1,546,024,800	\$ 995,632,110	\$ 2,541,656,910	\$ 1,481,135,989	\$ 956,787,538	\$ 2,437,923,527
<b>3. Total Statutory Pension Contribution: [1 + 2]</b>	\$ 1,719,039,488	\$ 1,155,526,505	\$ 2,874,565,993	\$ 1,623,105,592	\$ 1,117,857,722	\$ 2,740,963,314
<b>4. SIF Offset of Chapter 259, P.L. 2001</b>	\$ (577,270)	\$ 0	\$ (577,270)	\$ (566,508)	\$ 0	\$ (566,508)
<b>5. Lottery Enterprise Contribution Offset</b>	\$ (230,352,113)	\$ 0	\$ (230,352,113)	\$ (227,931,388)	\$ 0	\$ (227,931,388)
<b>6. Phase-in of Impact of Assumption Changes<sup>5</sup></b>	\$ 0	\$ (38,391,509)	\$ (38,391,509)	\$ 0	\$ (76,783,019)	\$ (76,783,019)
<b>7. Net Pension Contribution: [3 + 4 + 5 + 6]</b>	\$ 1,488,110,105	\$ 1,117,134,996	\$ 2,605,245,101	\$ 1,394,607,696	\$ 1,041,074,703	\$ 2,435,682,399
<b>8. Non-Contributory Group Insurance Premium</b>	N/A	\$ 53,981,229	\$ 53,981,229	N/A	\$ 52,875,923	\$ 52,875,923

<sup>1</sup> State amounts for Chapter 133, P.L. 2001 and Chapter 366, P.L. 2001 include contributions toward State-paid Local obligations, both amounts attributable to the current fiscal year and amounts that were not contributed in prior years due to the phase-in of contributions. The total State-paid Local obligations are \$48,654,369 and \$16,683,561 for the July 1, 2020 and July 1, 2019 valuations, respectively.

<sup>2</sup> Excludes UAL amounts due to Local employer ERI programs and Chapter 19, P.L. 2009 Local employer deferrals because receivables for these amounts are included in the AVA. Refer to Appendices E and F for additional information on these payments.

<sup>3</sup> Payable by the Second Injury Fund (SIF).

<sup>4</sup> Includes UAL Amounts due to State ERI programs.

<sup>5</sup> Assumption changes from the most recent experience study only, which increased the FYE 2021 Local employers' Statutory pension contribution by \$115,174,528.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION V – CONTRIBUTIONS**

Tables V-6 shows the State and Local employers' contributions as a percentage of appropriation payroll for FYE 2022 compared to FYE 2021. These rates are appropriate for evaluating the total cost of the System as well as the changes from the prior year. For a breakdown of contribution rates by chapter law for administration purposes, refer to Table V-7.

<b>Table V-6</b>						
<b>Contributions as a Percentage of Appropriation Payroll<sup>1</sup></b>						
	<b>July 1, 2020 Valuation</b>			<b>July 1, 2019 Valuation</b>		
	<b>Fiscal Year 2022 Payment</b>			<b>Fiscal Year 2021 Payment</b>		
	<b>State</b>	<b>Local Employers</b>	<b>Total</b>	<b>State</b>	<b>Local Employers</b>	<b>Total</b>
<b><u>Prior to Statutory State-Paid Local Adjustments and BEF Offset and Prior to SIF and Lottery Enterprise Contribution Offsets and Phase-in of Impact of Assumption Changes</u></b>						
Normal Cost Contribution Rate	3.013%	2.813%	2.891%	3.089%	2.886%	2.964%
UAL Contribution Rate	33.006%	13.796%	21.241%	32.302%	13.429%	20.704%
Gross Pension Contribution Rate	36.019%	16.609%	24.132%	35.391%	16.315%	23.668%
Non-Contributory Group Insurance Premium Rate	N/A	0.737%	N/A	N/A	0.731%	N/A
<b><u>After Statutory State-Paid Local Adjustments and BEF Offset and Prior to SIF and Lottery Enterprise Contribution Offsets and Phase-in of Impact of Assumption Changes</u></b>						
Normal Cost Contribution Rate	3.731%	2.182%	2.782%	3.128%	2.226%	2.574%
UAL Contribution Rate	33.337%	13.586%	21.241%	32.631%	13.222%	20.704%
Gross Pension Contribution Rate	37.068%	15.768%	24.023%	35.759%	15.448%	23.278%
Non-Contributory Group Insurance Premium Rate	N/A	0.737%	N/A	N/A	0.731%	N/A

<sup>1</sup>Excludes UAL amounts due to Local Employer ERI programs and Chapter 19, P.L. 2009 Local Employer deferrals because receivables for these amounts are included in the AVA.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION V – CONTRIBUTIONS**

Table V-7 shows the State and Local employer contributions as a percentage of appropriation payroll for FYE 2022 compared to FYE 2021. These contribution rates by chapter law are intended for administration purposes and may not be appropriate for other uses.

<b>Table V-7</b>				
<b>Contributions as a Percentage of Appropriation Payroll<sup>1</sup></b>				
	<b>July 1, 2020 Valuation</b>		<b>July 1, 2019 Valuation</b>	
	<b>Fiscal Year 2022 Payment</b>		<b>Fiscal Year 2021 Payment</b>	
	<b>State</b>	<b>Local Employers</b>	<b>State</b>	<b>Local Employers</b>
1. Normal Cost Rate				
a. Basic	2.361%	2.182%	2.410%	2.226%
b. Chapter 133, P.L. 2001	1.331%	0.000% <sup>2</sup>	0.675%	0.000% <sup>2</sup>
c. Total Normal Cost Rate	<u>3.692%</u>	<u>2.182%</u>	<u>3.085%</u>	<u>2.226%</u>
2. Unfunded Actuarial Liability (UAL) Contribution				
a. Basic	32.942%	13.586%	32.239%	13.222%
b. Chapter 133, P.L. 2001	0.000%	0.000%	0.000%	0.000%
c. Total UAL Contribution	<u>32.942%</u>	<u>13.586%</u>	<u>32.239%</u>	<u>13.222%</u>
3. Gross Contribution for Fiscal Year 2022: [1 + 2]	36.634%	15.768%	35.324%	15.448%
4. Phase-in of Impact of Assumption Changes	0.000%	-0.524%	0.000%	-1.061%
<b>5. Contribution Net of Phase-in for Fiscal Year 2022: [3 + 4]</b>	<b>36.634%</b>	<b>15.244%</b>	<b>35.324%</b>	<b>14.387%</b>
6. State Non-Contributory Group Insurance Premium Fund	N/A	0.737%	N/A	0.731%

<sup>1</sup> Rates exclude contributions required under Chapter 366, P.L. 2001 and Chapter 259, P.L. 2001 as well as ERI and Chapter 19, P.L. 2009 payments.

<sup>2</sup> Required contributions for Local employers are payable by assets from the Benefit Enhancement Fund. If BEF assets are insufficient, the State will cover any shortfall. The Local employers Chapter 133, P.L. 2001 rates would have been 0.609% and 0.635% for the July 1, 2020 and the July 1, 2019 valuations, respectively.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION V – CONTRIBUTIONS**

Table V-8 shows the Statutory contribution payable by the State broken down by various divisions.

<b>Table V-8</b>						
<b>Fiscal Year 2022 Statutory Contributions Payable by the State</b>						
	State	Disability Insurance Services	All Other Units of Division of Employment Security	State Colleges	Total Excluding Second Injury Fund	Second Injury Fund
Member Count	52,525	237	1,438	13,574	67,774	
Appropriation Payroll	\$ 3,770,851,766	\$ 14,363,820	\$ 105,222,297	\$ 747,091,395	\$ 4,637,529,278	
<b>Normal Cost Contribution</b>						
Basic	\$ 89,014,716	\$ 339,072	\$ 2,483,877	\$ 17,635,837	\$ 109,473,502	
Chapter 133, P.L. 2001	61,728,577	0	0	0	61,728,577	
Chapter 366, P.L. 2001	1,742,500	0	0	0	1,742,500	
Sub-Total	<u>\$ 152,485,793</u>	<u>\$ 339,072</u>	<u>\$ 2,483,877</u>	<u>\$ 17,635,837</u>	<u>\$ 172,944,579</u>	
Chapter 259, P.L. 2001						\$ 70,109
<b>UAL Contribution</b>						
Basic excluding ERI amounts	\$ 1,119,103,294	\$ 4,783,018	\$ 35,038,044	\$ 222,781,180	\$ 1,381,705,536	
Chapter 23, P.L. 2002	109,872,440	0	0	9,428,112	119,300,552	
Chapter 21, P.L. 2008	26,682,763	0	0	0	26,682,763	
Chapter 133, P.L. 2001	0	0	0	0	0	
Chapter 366, P.L. 2001	17,828,788	0	0	0	17,828,788	
Sub-Total	<u>\$ 1,273,487,285</u>	<u>\$ 4,783,018</u>	<u>\$ 35,038,044</u>	<u>\$ 232,209,292</u>	<u>\$ 1,545,517,639</u>	
Chapter 259, P.L. 2001						\$ 507,161
<b>Statutory Pension Contribution</b>	\$ 1,425,973,078	\$ 5,122,090	\$ 37,521,921	\$ 249,845,129	\$ 1,718,462,218	\$ 577,270
<b>Lottery Contribution Offset</b>						
Chapter 98, P.L. 2017	\$ (107,969,819)	\$ 0	\$ 0	\$ (122,382,294)	\$ (230,352,113)	\$ 0
<b>Net Pension Contribution</b>	\$ 1,318,003,259	\$ 5,122,090	\$ 37,521,921	\$ 127,462,835	\$ 1,488,110,105	\$ 577,270



**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**SECTION V – CONTRIBUTIONS**

Table V-9 shows the Statutory contribution attributable to various state colleges.

Table V-9 Fiscal Year 2022 Statutory Contributions for State Colleges										
Location Number	Location Name	Member Count	Appropriation Payroll	Basic	UAL Contribution		Statutory Pension Contribution	Lottery Contribution Offset <sup>1</sup>	Net Pension Contribution	
				Normal Cost Contribution	Basic	Chapter 23, P.L. 2002				
401	State Library Affiliated <sup>2</sup>	79	\$ 5,499,441	\$ 129,820	\$ 1,831,263	\$ 0	\$ 1,961,083	\$ (157,464)	\$ 1,803,619	
410	Rowan University	1,036	55,047,741	1,299,457	16,400,925	814,140	18,514,522	(9,072,645)	9,441,877	
411	New Jersey City University	447	25,107,828	592,695	7,480,627	563,826	8,637,148	(4,138,125)	4,499,023	
412	Kean University	386	20,202,371	476,897	6,019,095	497,015	6,993,007	(3,329,636)	3,663,371	
413	William Patterson University of NJ	514	26,718,195	630,710	7,960,419	347,270	8,938,399	(4,403,536)	4,534,863	
414	Monclair State University	600	31,153,393	735,407	9,281,842	220,786	10,238,035	(5,134,519)	5,103,516	
415	The College of New Jersey	495	26,797,230	632,575	7,983,967	620,759	9,237,301	(4,416,562)	4,820,739	
420	Ramapo College of New Jersey	282	17,755,489	419,136	5,290,071	181,787	5,890,994	(2,926,355)	2,964,639	
421	Stockton University	654	37,621,354	888,090	11,208,907	477,698	12,574,695	(6,200,531)	6,374,164	
430	Thomas Edison State University	82	6,165,524	145,543	1,836,956	144,183	2,126,682	(1,016,165)	1,110,517	
497 & 498	Rutgers University	6,077	320,833,071	7,573,584	95,589,009	5,286,636	108,449,229	(52,877,823)	55,571,406	
901	University Hospital	2,563	153,226,313	3,617,060	45,652,250	0	49,269,310	(25,253,861)	24,015,449	
32700 & 55530	New Jersey Institute of Technology	359	20,963,445	494,863	6,245,849	274,012	7,014,724	(3,455,072)	3,559,652	
<b>Total</b>		<b>13,574</b>	<b>\$ 747,091,395</b>	<b>\$ 17,635,837</b>	<b>\$ 222,781,180</b>	<b>\$ 9,428,112</b>	<b>\$ 249,845,129</b>	<b>\$(122,382,294)</b>	<b>\$ 127,462,835</b>	

<sup>1</sup> 53.06% of the total Lottery Enterprise Contribution offset for FYE 2022 is allocated to each State College location based on the location's 2020 appropriation payroll.

The percentage allocation to State Colleges was determined using 2020 contributing active and retiree headcounts for locations deemed to be eligible for funding under the Lottery Enterprise.

<sup>2</sup> The allocation of the Lottery Enterprise Contribution offset to State Library Affiliated is based on the 46.94% allocated to non-State College locations.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM 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, 2020. 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 to A-3: Contributing Active Member Data by Tier
- A-4: Non-Contributing Active Member Data by Tier
- A-5: Inactive Member Data by Status
- A-6: Reconciliation of Plan Membership
- A-7 through A-10: Contributing Active Member Data by Age and Service
- A-11 through A-14: Inactive Member Data by Age and Status

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX A – MEMBERSHIP INFORMATION**

<b>Table A-1 Contributing Active Member Data by Tier State</b>							
	<b>July 1, 2020</b>	<b>July 1, 2019</b>	<b>% Change</b>		<b>July 1, 2020</b>	<b>July 1, 2019</b>	<b>% Change</b>
<b><u>Tier 1</u></b>				<b><u>Tier 2</u></b>			
Count	36,108	38,990	-7.4%	Count	2,890	2,996	-3.5%
Average Age	53.6	53.1	0.8%	Average Age	48.9	48.2	1.4%
Average Service	21.6	21.0	3.1%	Average Service	12.2	11.2	8.6%
Average Appropriation Pay	\$ 76,996	\$ 74,341	3.6%	Average Appropriation Pay	\$ 65,280	\$ 62,324	4.7%
Total Appropriation Payroll	\$ 2,780,178,811	\$ 2,898,545,242	-4.1%	Total Appropriation Payroll	\$ 188,658,840	\$ 186,722,274	1.0%
<b><u>Tier 3</u></b>				<b><u>Tier 4</u></b>			
Count	1,987	2,103	-5.5%	Count	1,407	1,446	-2.7%
Average Age	48.0	47.2	1.6%	Average Age	46.6	45.8	1.7%
Average Service	10.8	9.8	10.0%	Average Service	9.5	8.5	11.5%
Average Appropriation Pay	\$ 64,566	\$ 61,349	5.2%	Average Appropriation Pay	\$ 68,260	\$ 64,760	5.4%
Total Appropriation Payroll	\$ 128,292,039	\$ 129,017,106	-0.6%	Total Appropriation Payroll	\$ 96,041,239	\$ 93,642,863	2.6%
<b><u>Tier 5</u></b>				<b><u>Total</u></b>			
Count	25,382	22,371	13.5%	Count	67,774	67,906	-0.2%
Average Age	40.3	39.9	1.1%	Average Age	48.1	48.2	-0.2%
Average Service	3.8	3.4	11.5%	Average Service	14.0	14.2	-1.2%
Average Appropriation Pay	\$ 56,905	\$ 55,033	3.4%	Average Appropriation Pay	\$ 68,426	\$ 66,843	2.4%
Total Appropriation Payroll	\$ 1,444,358,349	\$ 1,231,142,103	17.3%	Total Appropriation Payroll	\$ 4,637,529,278	\$ 4,539,069,588	2.2%

Reflects all records for multiple members, which are members employed by more than one PERS-participating employer at the same time.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX A – MEMBERSHIP INFORMATION**

<b>Table A-2 Contributing Active Member Data by Tier Local Employers</b>							
	July 1, 2020	July 1, 2019	%		July 1, 2020	July 1, 2019	%
			Change				Change
<b><u>Tier 1</u></b>				<b><u>Tier 2</u></b>			
Count	71,265	78,294	-9.0%	Count	7,628	8,146	-6.4%
Average Age	56.9	56.4	0.8%	Average Age	52.8	52.2	1.1%
Average Service	21.3	20.5	3.7%	Average Service	12.3	11.3	8.8%
Average Appropriation Pay	\$ 57,226	\$ 55,025	4.0%	Average Appropriation Pay	\$ 45,505	\$ 42,840	6.2%
Total Appropriation Payroll	\$ 4,078,209,547	\$ 4,308,137,621	-5.3%	Total Appropriation Payroll	\$ 347,108,739	\$ 348,972,336	-0.5%
<b><u>Tier 3</u></b>				<b><u>Tier 4</u></b>			
Count	4,812	5,219	-7.8%	Count	2,218	2,307	-3.9%
Average Age	51.4	50.8	1.0%	Average Age	49.1	48.0	2.3%
Average Service	10.8	9.8	10.3%	Average Service	9.7	8.6	11.7%
Average Appropriation Pay	\$ 49,074	\$ 46,090	6.5%	Average Appropriation Pay	\$ 55,949	\$ 53,421	4.7%
Total Appropriation Payroll	\$ 236,145,648	\$ 240,544,795	-1.8%	Total Appropriation Payroll	\$ 124,094,265	\$ 123,241,992	0.7%
<b><u>Tier 5</u></b>				<b><u>Total</u></b>			
Count	56,834	51,321	10.7%	Count	142,757	145,287	-1.7%
Average Age	42.9	42.4	1.2%	Average Age	50.8	50.9	-0.2%
Average Service	3.8	3.4	12.2%	Average Service	13.3	13.4	-0.5%
Average Appropriation Pay	\$ 44,741	\$ 43,163	3.7%	Average Appropriation Pay	\$ 51,335	\$ 49,805	3.1%
Total Appropriation Payroll	\$ 2,542,835,075	\$ 2,215,183,342	14.8%	Total Appropriation Payroll	\$ 7,328,393,274	\$ 7,236,080,086	1.3%

Reflects all records for multiple members, which are members employed by more than one PERS-participating employer at the same time.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX A – MEMBERSHIP INFORMATION**

<b>Table A-3 Contributing Active Member Data by Tier Total</b>							
	July 1, 2020	July 1, 2019	%		July 1, 2020	July 1, 2019	%
			Change				Change
<b><u>Tier 1</u></b>				<b><u>Tier 2</u></b>			
Count	107,373	117,284	-8.5%	Count	10,518	11,142	-5.6%
Average Age	55.8	55.3	0.8%	Average Age	51.7	51.1	1.1%
Average Service	21.4	20.7	3.5%	Average Service	12.3	11.3	8.8%
Average Appropriation Pay	\$ 63,874	\$ 61,446	4.0%	Average Appropriation Pay	\$ 50,938	\$ 48,079	5.9%
Total Appropriation Payroll	\$ 6,858,388,358	\$ 7,206,682,863	-4.8%	Total Appropriation Payroll	\$ 535,767,579	\$ 535,694,610	0.0%
<b><u>Tier 3</u></b>				<b><u>Tier 4</u></b>			
Count	6,799	7,322	-7.1%	Count	3,625	3,753	-3.4%
Average Age	50.4	49.8	1.1%	Average Age	48.1	47.1	2.1%
Average Service	10.8	9.8	10.2%	Average Service	9.6	8.6	11.7%
Average Appropriation Pay	\$ 53,602	\$ 50,473	6.2%	Average Appropriation Pay	\$ 60,727	\$ 57,790	5.1%
Total Appropriation Payroll	\$ 364,437,687	\$ 369,561,901	-1.4%	Total Appropriation Payroll	\$ 220,135,504	\$ 216,884,855	1.5%
<b><u>Tier 5</u></b>				<b><u>Total</u></b>			
Count	82,216	73,692	11.6%	Count	210,531	213,193	-1.2%
Average Age	42.1	41.6	1.1%	Average Age	49.9	50.0	-0.3%
Average Service	3.8	3.4	12.0%	Average Service	13.5	13.6	-0.7%
Average Appropriation Pay	\$ 48,497	\$ 46,767	3.7%	Average Appropriation Pay	\$ 56,837	\$ 55,232	2.9%
Total Appropriation Payroll	\$ 3,987,193,424	\$ 3,446,325,445	15.7%	Total Appropriation Payroll	\$ 11,965,922,552	\$ 11,775,149,674	1.6%

Reflects all records for multiple members, which are members employed by more than one PERS-participating employer at the same time.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX A – MEMBERSHIP INFORMATION**

Table A-4 Non-Contributing Active Member Data by Tier						
	State		Local Employers		Total	
	July 1, 2020	July 1, 2019	July 1, 2020	July 1, 2019	July 1, 2020	July 1, 2019
<b><u>Tier 1</u></b>						
Count	5,369	5,503	15,391	15,540	20,760	21,043
Average Age	58.8	58.3	62.3	61.7	61.4	60.8
Accumulated Deductions with Interest	\$ 358,212,648	\$ 349,854,537	\$ 646,686,499	\$ 630,969,439	\$ 1,004,899,147	\$ 980,823,976
<b><u>Tier 2</u></b>						
Count	339	347	1,265	1,355	1,604	1,702
Average Age	52.6	51.3	56.2	54.0	55.4	53.4
Accumulated Deductions with Interest	\$ 11,585,223	\$ 10,040,180	\$ 23,643,341	\$ 20,633,720	\$ 35,228,564	\$ 30,673,900
<b><u>Tier 3</u></b>						
Count	257	250	779	886	1,036	1,136
Average Age	49.2	47.5	54.7	50.8	53.3	50.0
Accumulated Deductions with Interest	\$ 8,275,043	\$ 6,481,556	\$ 13,906,873	\$ 12,699,440	\$ 22,181,916	\$ 19,180,996
<b><u>Tier 4</u></b>						
Count	121	145	247	270	368	415
Average Age	47.2	44.7	49.5	48.7	48.8	47.3
Accumulated Deductions with Interest	\$ 3,960,771	\$ 4,511,657	\$ 5,117,441	\$ 4,794,225	\$ 9,078,212	\$ 9,305,882
<b><u>Tier 5</u></b>						
Count	3,245	3,010	9,232	8,546	12,477	11,556
Average Age	37.5	36.7	39.0	38.3	38.6	37.9
Accumulated Deductions with Interest	\$ 29,675,394	\$ 24,578,352	\$ 63,770,152	\$ 52,343,828	\$ 93,445,546	\$ 76,922,180
<b><u>Total</u></b>						
Count	9,331	9,255	26,914	26,597	36,245	35,852
Average Age	50.7	50.5	53.6	53.3	52.9	52.6
Accumulated Deductions with Interest	\$ 411,709,079	\$ 395,466,282	\$ 753,124,306	\$ 721,440,652	\$ 1,164,833,385	\$ 1,116,906,934

Accumulated Deductions with interest as reported by the DPB

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX A – MEMBERSHIP INFORMATION**

**Table A-5  
Inactive Member Data by Status**

	July 1, 2020			July 1, 2019		
	State	Local Employers	Total	State	Local Employers	Total
<b>Retirees</b>						
Count	50,974	103,974	154,948	50,115	102,657	152,772
Annual Retirement Allowances	\$ 1,532,335,609	\$ 2,019,070,867	\$ 3,551,406,476	\$ 1,481,473,890	\$ 1,944,875,018	\$ 3,426,348,908
Average Retirement Allowance	\$ 30,061	\$ 19,419	\$ 22,920	\$ 29,561	\$ 18,945	\$ 22,428
<b>Beneficiaries</b>						
Count	4,714	11,193	15,907	4,593	10,951	15,544
Annual Retirement Allowances	\$ 84,045,216	\$ 147,409,696	\$ 231,454,912	\$ 79,876,720	\$ 142,112,121	\$ 221,988,841
Average Retirement Allowance	\$ 17,829	\$ 13,170	\$ 14,551	\$ 17,391	\$ 12,977	\$ 14,281
<b>Ordinary Disability</b>						
Count	4,581	7,971	12,552	4,623	8,172	12,795
Annual Retirement Allowances	\$ 93,954,271	\$ 137,285,451	\$ 231,239,722	\$ 93,964,621	\$ 139,748,274	\$ 233,712,895
Average Retirement Allowance	\$ 20,510	\$ 17,223	\$ 18,423	\$ 20,325	\$ 17,101	\$ 18,266
<b>Accidental Disability</b>						
Count	514	854	1,368	518	863	1,381
Annual Retirement Allowances	\$ 16,083,781	\$ 24,633,270	\$ 40,717,051	\$ 15,851,463	\$ 24,649,345	\$ 40,500,808
Average Retirement Allowance	\$ 31,291	\$ 28,845	\$ 29,764	\$ 30,601	\$ 28,562	\$ 29,327
<b>In-Pay Total</b>						
Count	<b>60,783</b>	<b>123,992</b>	<b>184,775</b>	<b>59,849</b>	<b>122,643</b>	<b>182,492</b>
Annual Retirement Allowances	<b>\$ 1,726,418,877</b>	<b>\$ 2,328,399,284</b>	<b>\$ 4,054,818,161</b>	<b>\$ 1,671,166,694</b>	<b>\$ 2,251,384,758</b>	<b>\$ 3,922,551,452</b>
Average Retirement Allowance	<b>\$ 28,403</b>	<b>\$ 18,779</b>	<b>\$ 21,945</b>	<b>\$ 27,923</b>	<b>\$ 18,357</b>	<b>\$ 21,494</b>
<b>Deferred Vested Members</b>						
Count	213	664	877	229	713	942
Annual Retirement Allowances	\$ 3,560,016	\$ 7,292,832	\$ 10,852,848	\$ 3,763,620	\$ 7,817,544	\$ 11,581,164
Average Retirement Allowance	\$ 16,714	\$ 10,983	\$ 12,375	\$ 16,435	\$ 10,964	\$ 12,294

QDRO benefits included with member records for valuation purposes.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
**JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX A – MEMBERSHIP INFORMATION**

<b>Table A-6</b>							
<b>Reconciliation of Plan Membership from July 1, 2019 to July 1, 2020</b>							
	<b>Contributing Actives</b>	<b>Non-Contrib. Actives</b>	<b>Deferred Vested</b>	<b>Retired</b>	<b>Disabled</b>	<b>Beneficiaries</b>	<b>Total</b>
1. July 1, 2019	<b>213,193</b>	<b>35,852</b>	<b>942</b>	<b>152,772</b>	<b>14,176</b>	<b>15,544</b>	<b>432,479</b>
2. Additions							
a. New entrants	15,000	1,082					16,082
b. Data updates	189	37		25		220	471
c. Total	<u>15,189</u>	<u>1,119</u>	<u>0</u>	<u>25</u>	<u>0</u>	<u>220</u>	<u>16,553</u>
3. Reductions							
a. Withdrawal/Certain Period End	(2,726)	(6,232)	(4)			(18)	(8,980)
b. Died without beneficiary	(328)	(214)	(2)	(5,234)	(554)	(1,000)	(7,332)
c. Data updates	(106)	(95)		(6)			(207)
d. Total	<u>(3,160)</u>	<u>(6,541)</u>	<u>(6)</u>	<u>(5,240)</u>	<u>(554)</u>	<u>(1,018)</u>	<u>(16,519)</u>
4. Changes in Status							
a. Contributing Actives	(8,590)	8,590					0
b. Non-Contributing Actives	1,598	(1,598)					0
c. Deferred Vested	(39)	(99)	138				0
d. Retired	(7,409)	(859)	(197)	8,382	(1)		(84)
e. Disabled	(215)	(204)		(3)	421		(1)
f. Died with beneficiary	(36)	(15)		(988)	(122)	1,161	0
g. Total	<u>(14,691)</u>	<u>5,815</u>	<u>(59)</u>	<u>7,391</u>	<u>298</u>	<u>1,161</u>	<u>(85)</u>
5. July 1, 2020	<b>210,531</b>	<b>36,245</b>	<b>877</b>	<b>154,948</b>	<b>13,920</b>	<b>15,907</b>	<b>432,428</b>

QDRO benefits included with member records for valuation purposes.

Reflects all records for multiple members, which are members employed by more than one PERS-participating employer at the same time. The decreases due to Changes in Status occur when active records for multiple members are combined into a single retiree record.



**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX A – MEMBERSHIP INFORMATION**

<b>Table A-7</b>									
<b>Counts by Age and Service Distribution of Contributing Active Members</b>									
<b>State</b>									
<b>Attained Age</b>	<b>Years of Service</b>								<b>Total</b>
	<b>Under 1</b>	<b>1 to 4</b>	<b>5 to 9</b>	<b>10 to 14</b>	<b>15 to 19</b>	<b>20 to 24</b>	<b>25 to 29</b>	<b>30 &amp; up</b>	
	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>
Under 30	1,745	3,465	426	8	0	0	0	0	5,644
30 to 34	604	2,703	1,914	537	33	0	0	0	5,791
35 to 39	416	1,806	1,765	2,323	1,214	28	0	0	7,552
40 to 44	347	1,421	1,212	1,757	3,176	600	16	0	8,529
45 to 49	277	1,178	1,018	1,392	2,431	1,527	482	80	8,385
50 to 54	261	1,117	930	1,310	2,157	1,426	1,339	1,452	9,992
55 & up	356	1,808	1,881	3,016	5,000	3,210	2,001	4,609	21,881
<b>Total</b>	<b>4,006</b>	<b>13,498</b>	<b>9,146</b>	<b>10,343</b>	<b>14,011</b>	<b>6,791</b>	<b>3,838</b>	<b>6,141</b>	<b>67,774</b>

<b>Table A-8</b>									
<b>Average Appropriation Pay by Age and Service Distribution of Contributing Active Members</b>									
<b>State</b>									
<b>Attained Age</b>	<b>Years of Service</b>								<b>Total</b>
	<b>Under 1</b>	<b>1 to 4</b>	<b>5 to 9</b>	<b>10 to 14</b>	<b>15 to 19</b>	<b>20 to 24</b>	<b>25 to 29</b>	<b>30 &amp; up</b>	
	<b>Comp.</b>	<b>Comp.</b>	<b>Comp.</b>	<b>Comp.</b>	<b>Comp.</b>	<b>Comp.</b>	<b>Comp.</b>	<b>Comp.</b>	<b>Comp.</b>
Under 30	\$ 46,122	\$ 50,568	\$ 56,631	\$ 50,023	\$ 0	\$ 0	\$ 0	\$ 0	\$ 49,650
30 to 34	49,434	54,695	64,482	59,537	57,421	0	0	0	57,845
35 to 39	50,664	56,634	67,780	72,260	70,640	66,949	0	0	66,007
40 to 44	52,541	57,365	66,901	70,808	79,753	76,534	64,197	0	70,991
45 to 49	52,468	54,310	64,634	68,375	77,054	84,093	75,859	76,348	71,304
50 to 54	53,663	54,684	63,543	65,615	72,678	81,433	86,857	81,241	72,787
55 & up	53,129	57,078	62,716	61,847	69,770	75,747	79,758	90,035	72,811
<b>Total</b>	<b>\$ 49,202</b>	<b>\$ 54,461</b>	<b>\$ 64,631</b>	<b>\$ 66,935</b>	<b>\$ 73,791</b>	<b>\$ 78,851</b>	<b>\$ 81,680</b>	<b>\$ 87,777</b>	<b>\$ 68,426</b>

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX A – MEMBERSHIP INFORMATION**

<b>Table A-9 Counts by Age and Service Distribution of Contributing Active Members Local Employers</b>									
<b>Attained Age</b>	<b>Years of Service</b>								<b>Total No.</b>
	Under 1 No.	1 to 4 No.	5 to 9 No.	10 to 14 No.	15 to 19 No.	20 to 24 No.	25 to 29 No.	30 & up No.	
Under 30	2,347	7,660	1,295	37	0	0	0	0	11,339
30 to 34	854	4,559	3,068	1,146	102	0	0	0	9,729
35 to 39	699	3,414	2,535	2,555	1,570	81	0	0	10,854
40 to 44	651	3,305	2,123	2,214	2,695	1,038	57	0	12,083
45 to 49	677	3,574	2,448	2,642	2,983	2,128	997	159	15,608
50 to 54	640	3,719	2,997	3,936	4,080	2,597	1,961	1,729	21,659
55 & up	816	5,735	5,794	10,613	14,594	11,061	5,787	7,085	61,485
<b>Total</b>	<b>6,684</b>	<b>31,966</b>	<b>20,260</b>	<b>23,143</b>	<b>26,024</b>	<b>16,905</b>	<b>8,802</b>	<b>8,973</b>	<b>142,757</b>

<b>Table A-10 Average Appropriation Pay by Age and Service Distribution of Contributing Active Members Local Employers</b>									
<b>Attained Age</b>	<b>Years of Service</b>								<b>Total Comp.</b>
	Under 1 Comp.	1 to 4 Comp.	5 to 9 Comp.	10 to 14 Comp.	15 to 19 Comp.	20 to 24 Comp.	25 to 29 Comp.	30 & up Comp.	
Under 30	\$ 36,846	\$ 40,538	\$ 49,854	\$ 44,300	\$ 0	\$ 0	\$ 0	\$ 0	\$ 40,850
30 to 34	40,399	43,879	52,809	53,710	55,235	0	0	0	47,667
35 to 39	40,229	44,773	54,229	58,165	60,243	64,750	0	0	52,228
40 to 44	41,300	43,034	53,760	56,428	62,607	67,096	69,278	0	53,836
45 to 49	39,689	42,047	50,224	51,276	60,379	68,594	72,554	76,212	54,209
50 to 54	40,263	41,849	48,887	46,678	53,816	65,026	74,211	77,604	54,471
55 & up	42,567	42,569	47,939	42,599	46,724	52,584	61,830	74,538	51,365
<b>Total</b>	<b>\$ 39,401</b>	<b>\$ 42,411</b>	<b>\$ 50,612</b>	<b>\$ 47,878</b>	<b>\$ 51,895</b>	<b>\$ 57,460</b>	<b>\$ 65,851</b>	<b>\$ 75,159</b>	<b>\$ 51,335</b>

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX A – MEMBERSHIP INFORMATION**

**Table A-11  
Counts by Age and Status of Inactive Members  
State**

<b>Attained Age</b>	<b>Status</b>				<b>Total</b>
	<b>Retirees</b>	<b>Beneficiaries</b>	<b>Ordinary Disability</b>	<b>Accidental Disability</b>	
Under 45	1	127	79	12	219
45 to 49	38	82	169	23	312
50 to 54	508	127	322	52	1,009
55 to 59	2,971	224	642	87	3,924
60 to 64	7,096	323	826	93	8,338
65 to 69	10,958	549	843	92	12,442
70 to 74	11,802	791	753	76	13,422
75 to 79	7,833	737	556	38	9,164
80 to 84	4,804	660	265	16	5,745
85 & up	4,963	1,094	126	25	6,208
<b>Total</b>	<b>50,974</b>	<b>4,714</b>	<b>4,581</b>	<b>514</b>	<b>60,783</b>

**Table A-12  
Average Retirement Allowances by Age and Status of Inactive Members  
State**

<b>Attained Age</b>	<b>Status</b>				<b>Total</b>
	<b>Retirees</b>	<b>Beneficiaries</b>	<b>Ordinary Disability</b>	<b>Accidental Disability</b>	
Under 45	\$ 12,901	\$ 10,587	\$ 22,580	\$ 37,054	\$ 16,374
45 to 49	21,685	13,998	22,537	31,654	20,861
50 to 54	30,243	13,001	22,172	31,401	25,557
55 to 59	40,020	16,646	21,581	33,582	35,526
60 to 64	36,826	18,218	21,093	31,272	34,484
65 to 69	33,882	20,219	20,556	31,787	32,361
70 to 74	30,831	21,987	20,265	31,589	29,721
75 to 79	26,372	19,095	18,989	33,138	25,367
80 to 84	22,035	17,124	17,359	21,663	21,254
85 & up	17,800	15,011	17,447	20,692	17,313
<b>Total</b>	<b>\$ 30,061</b>	<b>\$ 17,829</b>	<b>\$ 20,510</b>	<b>\$ 31,291</b>	<b>\$ 28,403</b>

QDRO benefits included with member records for valuation purposes.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX A – MEMBERSHIP INFORMATION**

**Table A-13  
Counts by Age and Status of Inactive Members  
Local**

<b>Attained Age</b>	<b>Status</b>				<b>Total</b>
	<b>Retirees</b>	<b>Beneficiaries</b>	<b>Ordinary Disability</b>	<b>Accidental Disability</b>	
Under 45	1	184	71	24	280
45 to 49	75	136	182	34	427
50 to 54	687	241	488	83	1,499
55 to 59	3,446	471	1,030	136	5,083
60 to 64	11,564	837	1,477	155	14,033
65 to 69	20,579	1,148	1,464	142	23,333
70 to 74	23,451	1,616	1,365	114	26,546
75 to 79	18,022	1,918	1,019	100	21,059
80 to 84	12,450	1,822	605	38	14,915
85 & up	13,699	2,820	270	28	16,817
<b>Total</b>	<b>103,974</b>	<b>11,193</b>	<b>7,971</b>	<b>854</b>	<b>123,992</b>

**Table A-14  
Average Retirement Allowances by Age and Status of Inactive Members  
Local**

<b>Attained Age</b>	<b>Status</b>				<b>Total</b>
	<b>Retirees</b>	<b>Beneficiaries</b>	<b>Ordinary Disability</b>	<b>Accidental Disability</b>	
Under 45	\$ 16,282	\$ 7,663	\$ 19,453	\$ 26,629	\$ 12,309
45 to 49	23,482	8,810	20,214	29,455	17,892
50 to 54	31,685	11,001	19,927	32,680	24,587
55 to 59	35,751	12,483	18,912	33,627	30,126
60 to 64	26,092	15,089	17,806	30,458	24,612
65 to 69	22,510	15,806	17,620	28,504	21,909
70 to 74	19,769	14,140	16,572	27,455	19,295
75 to 79	16,619	13,852	15,341	24,173	16,341
80 to 84	14,612	13,099	15,279	24,572	14,480
85 & up	11,851	11,422	12,705	16,336	11,800
<b>Total</b>	<b>\$ 19,419</b>	<b>\$ 13,170</b>	<b>\$ 17,223</b>	<b>\$ 28,845</b>	<b>\$ 18,779</b>

QDRO benefits included with member records for valuation purposes.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**A. Actuarial Assumptions**

- |   |   |
|---|---|
| <b>1. Investment Rate of Return</b>                         | 7.30% per annum, compounded annually.   |
| <b>2. Administrative Expenses</b>                           | No explicit assumption is made for administrative expenses for funding purposes per the funding methodology prescribed by NJ State Statute. |
| <b>3. Interest Crediting Rate on Accumulated Deductions</b> | 7.30% per annum, compounded annually. Interest credits are assumed to end upon termination.   |
| <b>4. Cost-of-Living Adjustments (COLAs)</b>                | No future COLAs are assumed. Previously granted COLAs are included in the data.   |

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

- 5. Salary Increases**                      Salary increases vary by years of service and time period. Annual salary increases are shown below.

Salary Increases		
Years of Service	Period Ending June 30, 2026	Ultimate Period
0	6.00%	7.00%
1	6.00	7.00
2	5.75	6.75
3	5.50	6.50
4	5.00	6.00
5	4.75	5.75
6	4.50	5.50
7	4.25	5.25
8	4.00	5.00
9	3.80	4.80
10	3.60	4.60
11	3.40	4.40
12	3.20	4.20
13	3.00	4.00
14	2.90	3.90
15	2.80	3.80
16	2.70	3.70
17-21	2.60	3.60
22	2.50	3.50
23-25	2.40	3.40
26	2.30	3.30
27	2.20	3.20
28	2.10	3.10
29+	2.00	3.00

Salary increases are assumed to occur on July 1.

- 6. 401(a)(17) Pay Limit**                      \$285,000 in 2020 increasing 2.75% per annum, compounded annually.
- 7. Social Security Wage Base**                      \$137,700 in 2020 increasing 3.25% per annum, compounded annually.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**8. Termination**

Termination rates are shown separately for members electing a refund of contributions and members electing a deferred annuity.

Termination rates for members electing a refund of contributions are as follows:

<b>Termination Rates for Members Electing a Refund</b>				
<b>Service</b>	<b>State</b>		<b>Local Employers'</b>	
	<b>Less than 31 Years Old</b>	<b>31 Years or Older</b>	<b>Less than 31 Years Old</b>	<b>31 Years or Older</b>
0	23.00%	11.00%	21.00%	12.00%
1	23.00	11.00	21.00	12.00
2	12.00	8.00	16.00	9.00
3	11.00	7.00	15.00	8.00
4	10.50	6.00	13.00	7.00
5	10.00	6.00	12.00	7.00
6	7.50	6.00	10.00	6.50
7	7.50	5.00	9.00	5.50
8	7.50	4.50	9.00	5.00
9	7.50	3.50	6.50	4.00
10	1.70	1.70	1.70	1.70
11	1.50	1.50	1.50	1.50
12	1.10	1.10	1.40	1.40
13	1.10	1.10	1.20	1.20
14	0.70	0.70	1.10	1.10
15	0.60	0.60	0.90	0.90
16	0.60	0.60	0.80	0.80
17	0.60	0.60	0.70	0.70
18	0.50	0.50	0.60	0.60
19	0.50	0.50	0.60	0.60
20	0.50	0.50	0.50	0.50
21	0.50	0.50	0.50	0.50
22	0.40	0.40	0.50	0.50
23	0.40	0.40	0.40	0.40
24-29	0.30	0.30	0.30	0.30

No termination is assumed after attainment of retirement eligibility.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

Termination rates for members electing a deferred annuity are as follows:

<b>Termination Rates for Members Electing a Deferred Annuity</b>		
<b>Service</b>	<b>State</b>	<b>Local Employers</b>
< 10	N/A	N/A
10	1.60%	1.80%
11	1.60	1.80
12	1.20	1.70
13	1.20	1.60
14	1.00	1.50
15	0.90	1.40
16	0.90	1.30
17	0.80	1.20
18	0.80	1.10
19	0.80	1.00
20	0.80	1.00
21	0.70	0.90
22	0.50	0.80
23	0.50	0.80
24	0.40	0.70

No termination is assumed after attainment of retirement eligibility.



**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**9. Disability**

Ordinary disability rates are as follows:

Ordinary Disability Rates					
Age	State	Local Employers	Age	State	Local Employers
25	0.100%	0.200%	50	0.380%	0.390%
26	0.110	0.200	51	0.395	0.405
27	0.120	0.200	52	0.410	0.420
28	0.130	0.200	53	0.425	0.435
29	0.140	0.200	54	0.440	0.450
30	0.150	0.205	55	0.455	0.460
31	0.160	0.210	56	0.470	0.470
32	0.170	0.215	57	0.485	0.480
33	0.180	0.220	58	0.500	0.490
34	0.190	0.225	59	0.515	0.500
35	0.205	0.230	60	0.530	0.510
36	0.220	0.235	61	0.545	0.520
37	0.235	0.240	62	0.560	0.530
38	0.250	0.245	63	0.575	0.540
39	0.265	0.250	64	0.590	0.550
40	0.275	0.260	65	0.605	0.560
41	0.285	0.270	66	0.620	0.570
42	0.295	0.280	67	0.635	0.580
43	0.305	0.290	68	0.650	0.590
44	0.315	0.300	69	0.665	0.600
45	0.325	0.315	70	0.675	0.615
46	0.335	0.330	71	0.685	0.630
47	0.345	0.345	72	0.695	0.645
48	0.355	0.360	73	0.705	0.660
49	0.365	0.375	74	0.715	0.675

Accidental disability rates are assumed to be 0.02% for all State members and 0.03% for all Local employers' members.

Ordinary disability rates apply upon attainment of 10 years of service and continue through the ultimate retirement age.

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

Tier 4 and Tier 5 members are not eligible for the Ordinary or Accidental Disability benefits but the disability rates still apply. Such members terminating under the disability decrement are assumed to separate from service and elect a Deferred Retirement benefit.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**10. Mortality**

Pre-Retirement Mortality: The Pub-2010 General Below-Median Income Employee mortality table [*PubG-2010(B) Employee*] as published by the Society of Actuaries with an 82.2% adjustment for males and 101.4% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2018.

All pre-retirement deaths are assumed to be ordinary deaths.

Healthy Retirees and Beneficiaries (Healthy Annuitants): The Pub-2010 General Below-Median Income Healthy Retiree mortality table [*PubG-2010(B) Healthy Retiree*] as published by the Society of Actuaries with a 91.4% adjustment for males and 99.7% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2018.

Disabled Retirees (Disabled Annuitants): The Pub-2010 Non-Safety Disabled Retiree mortality table [*PubNS-2010 Disabled Retiree*] as published by the Society of Actuaries with a 127.7% adjustment for males and 117.2% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2018.

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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**11. Retirement**

Retirement rates for State Tier 1-4 members are as follows:

State Tiers 1-4 Retirement Rates			
Age	Less Than 25 Years of Service	25 Years of Service	26 or More Years of Service
< 49	N/A	3.50%	2.00%
49	N/A	3.50	2.00
50	N/A	3.50	3.50
51	N/A	3.50	3.50
52	N/A	6.00	4.25
53	N/A	6.00	5.50
54	N/A	7.00	6.75
55	N/A	17.50	18.00
56	N/A	17.50	15.00
57	N/A	17.50	14.00
58	N/A	20.00	14.00
59	N/A	20.00	14.00
60	5.00	20.00	17.00
61	5.00	30.00	17.00
62	8.00	36.50	27.00
63	8.00	36.50	24.00
64	8.00	36.50	21.00
65	12.00	44.00	25.00
66	17.00	55.00	30.00
67	16.00	50.00	26.00
68	15.00	47.00	23.00
69	15.00	47.00	23.00
70	15.00	47.00	26.00
71	15.00	47.00	23.00
72	15.00	47.00	21.00
73	15.00	47.00	21.00
74	15.00	47.00	21.00
75	100.00	100.00	100.00

Rates apply upon retirement eligibility by tier.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

Retirement rates for Local employers Tier 1-4 members are as follows:

<b>Local Employers' Tiers 1-4 Retirement Rates</b>			
<b>Age</b>	<b>Less Than 25 Years of Service</b>	<b>25 Years of Service</b>	<b>26 or More Years of Service</b>
< 49	N/A	3.00%	2.25%
49	N/A	3.00	3.00
50	N/A	3.50	3.50
51	N/A	4.25	3.75
52	N/A	4.75	3.75
53	N/A	7.00	5.00
54	N/A	7.00	6.00
55	N/A	15.00	15.00
56	N/A	17.00	13.00
57	N/A	18.00	12.00
58	N/A	18.00	12.00
59	N/A	18.00	12.00
60	4.50	18.00	14.00
61	4.50	18.00	14.00
62	7.50	34.00	25.00
63	7.50	34.00	22.00
64	7.50	34.00	20.00
65	11.00	35.00	20.00
66	15.00	43.00	26.00
67	14.00	40.00	26.00
68	13.00	40.00	22.00
69	13.00	37.00	22.00
70	13.00	37.00	24.00
71	13.00	37.00	24.00
72	13.00	37.00	20.00
73	13.00	37.00	20.00
74	13.00	37.00	20.00
75	100.00	100.00	100.00

Rates apply upon retirement eligibility by tier.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

Retirement rates for State Tier 5 members are as follows:

State Tier 5 Retirement Rates					
Age	Less Than 25 Years of Service	25 Years of Service	26 to 29 Years of Service	30 Years of Service	31 or More Years of Service
< 49	N/A	N/A	N/A	3.50%	2.00%
49	N/A	N/A	N/A	3.50	2.00
50	N/A	N/A	N/A	3.50	3.50
51	N/A	N/A	N/A	3.50	3.50
52	N/A	N/A	N/A	6.00	4.25
53	N/A	N/A	N/A	6.00	5.50
54	N/A	N/A	N/A	7.00	6.75
55	N/A	N/A	N/A	17.50	18.00
56	N/A	N/A	N/A	17.50	15.00
57	N/A	N/A	N/A	17.50	14.00
58	N/A	N/A	N/A	20.00	14.00
59	N/A	N/A	N/A	20.00	14.00
60	N/A	N/A	N/A	20.00	17.00
61	N/A	N/A	N/A	30.00	17.00
62	N/A	N/A	N/A	36.50	27.00
63	N/A	N/A	N/A	36.50	24.00
64	N/A	N/A	N/A	36.50	21.00
65	12.00	44.00	44.00	44.00	25.00
66	17.00	55.00	30.00	30.00	30.00
67	16.00	50.00	26.00	26.00	26.00
68	15.00	47.00	23.00	23.00	23.00
69	15.00	47.00	23.00	23.00	23.00
70	15.00	47.00	26.00	26.00	26.00
71	15.00	47.00	23.00	23.00	23.00
72	15.00	47.00	21.00	21.00	21.00
73	15.00	47.00	21.00	21.00	21.00
74	15.00	47.00	21.00	21.00	21.00
75	100.00	100.00	100.00	100.00	100.00

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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

Retirement rates for Local employers Tier 5 members are as follows:

Local Employers' Tier 5 Retirement Rates					
Age	Less Than 25 Years of Service	25 Years of Service	26 to 29 Years of Service	30 Years of Service	31 or More Years of Service
< 49	N/A	N/A	N/A	3.00%	2.25%
49	N/A	N/A	N/A	3.00	3.00
50	N/A	N/A	N/A	3.50	3.50
51	N/A	N/A	N/A	4.25	3.75
52	N/A	N/A	N/A	4.75	3.75
53	N/A	N/A	N/A	7.00	5.00
54	N/A	N/A	N/A	7.00	6.00
55	N/A	N/A	N/A	15.00	15.00
56	N/A	N/A	N/A	17.00	13.00
57	N/A	N/A	N/A	18.00	12.00
58	N/A	N/A	N/A	18.00	12.00
59	N/A	N/A	N/A	18.00	12.00
60	N/A	N/A	N/A	18.00	14.00
61	N/A	N/A	N/A	18.00	14.00
62	N/A	N/A	N/A	34.00	25.00
63	N/A	N/A	N/A	34.00	22.00
64	N/A	N/A	N/A	34.00	20.00
65	11.00	35.00	35.00	35.00	20.00
66	15.00	43.00	26.00	26.00	26.00
67	14.00	40.00	26.00	26.00	26.00
68	13.00	40.00	22.00	22.00	22.00
69	13.00	37.00	22.00	22.00	22.00
70	13.00	37.00	24.00	24.00	24.00
71	13.00	37.00	24.00	24.00	24.00
72	13.00	37.00	20.00	20.00	20.00
73	13.00	37.00	20.00	20.00	20.00
74	13.00	37.00	20.00	20.00	20.00
75	100.00	100.00	100.00	100.00	100.00

Retirement rates for members of Prosecutors Part (Chapter 366, P.L. 2001) are as follows:

- Members with less than 25 years of service: 6.0% for all ages,
- Members with 25 years of service: 50.0% for all ages,
- Members with 26 or more years of service: 25.0% for all ages.

Rates apply upon retirement eligibility. 100% retirement is assumed at age 70.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

- 12. Family Composition Assumptions** For members not currently in receipt, 100% 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 optional form of payment 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.
- 13. Form of Payment** Current active members are assumed to elect the Maximum Option.
- 14. Non-Contributory Group Insurance Benefit Form of Payment** All benefits are assumed to be paid as lump sums.
- 15. Data** All non-contributing members are included in the valuation with a liability based on the reported Accumulated Deductions with interest (Annuity Savings Fund or ASF), adjusted to include interest through the valuation date.
- Per discussions with DPB, the statuses for active records in Locations 4 – 7 (General Assembly and Senate) are based on changes in service instead of the contribution code.
- For current beneficiaries with incomplete information, reasonable assumptions were made based on information available in prior years.
- Inactive participants receiving benefits according to the 2019 data but omitted from the 2020 data are assumed to have died without a beneficiary.
- Tier 4 and 5 members on long-term disability appeared on the active data for the first time in 2019. The number of members on long-term disability is immaterial for valuation purposes. Therefore, we valued these members as regular contributing and non-contributing members while we gain clarity on what happens with these members.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

- 16. Rationale for Assumptions** The demographic and economic assumptions used in this report, except for the investment return assumption, reflect the results of the July 1, 2014 – June 30, 2018 Experience Study, which was approved by the Board of Trustees on February 19, 2020. The investment return assumption was recommended by the State Treasurer.
- 17. Changes in Assumptions since Last Valuation** None.



**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**B. Projection Assumptions**

- |                                     |   |
|-------------------------------------|---|
| <b>1. Investment Rate of Return</b> | <ul style="list-style-type: none"><li>• July 1, 2021 and later valuations: 7.00% per annum, compounded annually.</li></ul>  |
| <b>2. Appropriation Percentages</b> | The State is assumed to appropriate 100% of the Statutory contribution in FYE 2022 and each year thereafter.  |
| <b>3. Administrative Expenses</b>   | The actual administrative expenses paid in FYE 2020 are assumed to increase by 2.75% per annum, compounded annually.  |
| <b>4. New Entrants</b>              | <ul style="list-style-type: none"><li>• Contributing active population assumed to remain at 2020 levels.</li><li>• Assumed to join mid-year.</li><li>• Age/sex distributions based on the last three years of new hires.</li><li>• Salary based on salary for most recent hires reported on 2020 data.</li><li>• New entrant salary assumed to increase with the salary increase rates applicable for members with 29 or more years of service.</li></ul>   |
| <b>5. Demographic Assumptions</b>   | Same as those used for valuation purposes.  |
| <b>6. Projection Basis</b>          | <p>This report includes projections of future assets, liabilities, funded status and contributions for the purpose of assisting the Board of Trustees with the management of the System.</p> <p>The projections are based on the same census data and financial information as of July 1, 2020 which has been used for the actuarial valuation. The projections assume continuation of the plan provisions and actuarial assumptions in effect as of July 1, 2020 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.</p> <p>The projections assume that all future assumptions are met except where indicated with respect to future investment returns and demographic assumptions. The future outcomes become increasingly uncertain over time, and therefore the general trends and not the absolute values should be considered in the review of these projections.</p> |

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

## **C. Actuarial Methods**

The actuarial methods used for determining State and Local employers' 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 linearly allocated to periods prior to the valuation year based on service. Refunds are valued as the reported Accumulated Deductions with interests of the valuation date. 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.

Certain portions of the normal cost and unfunded actuarial liabilities attributable to Local employers are payable by the State and/or over different periods in accordance with the NJ State Statutes.

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.

The non-contributory group life insurance benefit is funded separately through a term cost.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**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, benefit payments and administrative expenses, and an assumed rate of return on the previous year's assets and 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. Contributions**

Chapter 83, P.L. 2016 requires the State to make pension contributions on a quarterly basis in each fiscal year according to the following schedule: at least 25 percent by September 30, at least 50 percent by December 31, at least 75 percent by March 31, and at least 100 percent by June 30. As such, contributions are assumed to be made on a quarterly basis with the first contribution 15 months after the associated valuation date.

Local employers' contributions are expected to be paid on April 1st, 21 months after the associated valuation date.

The Board of Trustees adopted a three-year phase-in of the Local employers' contribution increase due to the assumption changes from the July 1, 2014 – June 30, 2018 Experience Study, first effective in the July 1, 2019 valuation and the associated FYE 2021 contribution. The impact will be fully phased-in by the FYE 2023 contribution.

Chapter 98, P.L. 2017, the Lottery Enterprise Contribution Act, allows PERS to receive 21.02% of the proceeds of the Lottery Enterprise, based upon its members' past or present employment in schools and institutions in the State for a term of 30 years. Revenues from Chapter 98, P.L. 2017, the Lottery Enterprise Contribution Act, are assumed to be contributed to the trust on a monthly basis. The State's pension contribution is reduced by the product of the allocable percentage for the PERS, the adjustment percentage, and the special asset adjustment.

Contributions payable in the fiscal year starting on the valuation date are included in the actuarial value of assets as receivable contributions, discounted by the applicable valuation interest rate.

Legislation has provided for additional benefits and/or funding requirements which are included in this valuation and are described as follows.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
**JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

Early Retirement Incentive Programs

Local employers which elected to participate in various early retirement incentive programs authorized by NJ Statute make contributions to cover the cost of these programs over amortization periods elected by the employer to the extent permitted by NJ Statute.

Chapter 133, P.L. 2001

Chapter 133, P.L. 2001 increased the accrual rate from 1/60 to 1/55. In addition, it lowered the age required for a veteran benefit equal to 1/55 of highest 12-month Compensation for each Year of Service from 60 to 55.

Chapter 133, P.L. 2001 also established the Benefit Enhancement Fund (BEF) to fund the additional annual employer normal contribution due to the Statute's increased benefits. (Chapter 353, P.L. 2001 extended this coverage to this Statute's additional annual employer normal contribution.) If the assets in the BEF are insufficient to cover the normal contribution for the increased benefits for a valuation period, the State will pay such amount for both the State and Local employers.

Chapter 259, P.L. 2001

Chapter 259, P.L. 2001 established the Workers' Compensation Judges Part of the System with special retirement benefits for Workers' Compensation Judges. See Appendix C for details.

In accordance with the provisions of Chapter 259, P.L. 2001, the additional contributions for these special retirement benefits will be funded by transfers from the Second Injury Fund.

Chapter 366, P.L. 2001

Chapter 366, P.L. 2001 established the Prosecutors Part of the System with special retirement benefits for Prosecutors. See Appendix C for details.

Chapter 366, P.L. 2001 also requires the State be liable for any increase in pension costs to a County that results from the enrollment of Prosecutors in the Prosecutors Part. Any increase in the unfunded actuarial liability arising from the benefits established for the Prosecutors Part are to be amortized over a closed 30 year period.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
**JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

Chapter 19, P.L. 2009

Chapter 19, P.L. 2009 provided that the State Treasurer will reduce for Local employers the normal and accrued liability contributions to 50 percent of the amount certified for fiscal year 2009. The remaining 50% of the contribution (unfunded liability) will be paid by the Local employers in level annual payments over a period of 15 years with the first payment due in the fiscal year ending June 30, 2012. The unfunded liability will be adjusted by the rate of return on the actuarial value of assets. The legislation also provided that a Local employer may pay 100 percent of the contribution for the fiscal year 2009. Such an employer will be credited with the full payment and any such amounts will not be included in their unfunded liability. In addition, certain Local employers who were eligible to defer 50% of their fiscal year 2009 pension contributions but instead paid 100% of the fiscal year 2009 pension contributions were permitted to defer 50% of their 2010 fiscal year pension contributions. The unfunded liability will be paid by these Local employers over a period of 15 years with the first payment due in the fiscal year ending June 30, 2012. The unfunded liability will be adjusted by the rate of return on the actuarial value of assets.

**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 Since Last Valuation**

None.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

This summary of Plan provisions provides an overview of the major provisions of the PERS used in the actuarial valuation. It is not intended to replace the more precise language of the NJ State Statutes, Title 43, Chapter 15A, and if there is any difference between the description of the plan herein and the actual language in the NJ State Statutes, the NJ State Statutes will govern. This valuation is prepared based on plan provisions in effect as of July 1, 2020 and does not reflect the impact of any changes in the benefits that may have been approved after the valuation date.

**1. Eligibility for Membership**

Employees of the State or any county, municipality, school district, or public agency employed on a regular basis in a position covered by Social Security and not required to be a member of any other State or local government retirement system. Certain exceptions apply.

- a) Class B (or Tier 1) Member: Any member hired prior to July 1, 2007.
- b) Class D (or Tier 2) Member: Any member hired on or after July 1, 2007 and before November 2, 2008.
- c) Class E (or Tier 3) Member: Any member hired after November 1, 2008 and before May 22, 2010.
- d) Class F (or Tier 4) Member: Any member hired after May 21, 2010 and before June 28, 2011.
- e) Class G (or Tier 5) Member: Any member hired on or after June 28, 2011.

**2. Plan Year**

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

**3. Years of Service**

A year of service for each year an employee is a Member of the Retirement System plus service, if any, covered by a prior service liability. Tier 4 and Tier 5 Members must be scheduled to work at least 35 hours per week for the State or 32 hours per week for a Local employer. Tier 3, 4 and 5 Members must have an annual salary of \$7,500 (indexed for inflation) and other members must have an annual salary of \$1,500.

**4. Compensation**

Base salary upon which contributions by a Member to the Annuity Savings Fund were based. Chapter 113, P.L. 1997 provides that Compensation cannot exceed the compensation limitation of Section 401(a)(17) of the Internal Revenue Code. Chapter 103, P.L. 2007 provides that for a Tier 2, 3, 4 or 5 Member, Compensation cannot exceed the annual maximum wage contribution base for Social Security, pursuant to the Federal Insurance Contribution Act.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

**5. Final Compensation**

The average annual compensation upon which contributions by a Member are made for the three consecutive years of service immediately preceding retirement, or the highest three fiscal years of service, if greater. Chapter 1, P. L. 2010 provides that for a Tier 4 or Tier 5 Member, Final Compensation is the average annual compensation upon which contributions by a Member are made for the five consecutive years of service immediately preceding retirement, or the highest five fiscal years of service, if greater.

**6. Final Year Compensation**

The compensation upon which contributions by a Member to the Annuity Savings Fund are based in the last year of service.

**7. Accumulated Deductions**

The sum of all amounts deducted from the compensation of a Member or contributed by the Member or on the Member's behalf without interest.

**8. Interest Credits on Accumulated Deductions**

Members receive interest credits while contributing and for the first two years of inactivity. The rate depends on the type of benefit. Prior to July 1, 2018, members received interest credits for the entire period of inactivity until retirement or death.

**9. Member Contributions**

Each Member contributes a percentage of Compensation. Effective October 1, 2011, Chapter 78, P.L. 2011 set the member contribution rate at 6.5% and increased it by 1/7<sup>th</sup> of 1 % each July thereafter until it attained an ultimate rate of 7.5% on July 1, 2018.

For members who are eligible to retire under the Prosecutors Part as provided by Chapter 366, P.L. 2001, Chapter 78, P.L. 2011 set the member contribution rate at 10.0%, effective October 1, 2011.

**10. Benefits**

- a) **Service Retirement**: For a Tier 1 or Tier 2 Member, age 60. For a Tier 3 or Tier 4 Member, age 62. For a Tier 5 Member, age 65.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of:

- (1) For a Tier 1, 2 or 3 Member, 1/55 of Final Compensation for each Year of Service.
- (2) For a Tier 4 or 5 Member, 1/60 of Final Compensation for each Year of Service.

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

- b) **Early Retirement:** Prior to eligibility for Service Retirement. For a Tier 1, 2, 3 or 4 Member, 25 Years of Service. For a Tier 5 Member, 30 Years of Service.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of:

- (1) For a Tier 1 Member, the Service Retirement benefit reduced by 1/4 of one percent for each month the retirement date precedes age 55.
- (2) For a Tier 2 Member, the Service Retirement benefit reduced by 1/12 of one percent for each month the retirement date precedes age 60 through age 55 and by 1/4 of one percent for each month the retirement date precedes age 55.
- (3) For a Tier 3 or 4 Member, the Service Retirement benefit reduced by 1/12 of one percent for each month the retirement date precedes age 62 through age 55 and by 1/4 of one percent for each month the retirement date precedes age 55.
- (4) For a Tier 5 Member, the Service Retirement benefit reduced by 1/4 of one percent for each month the retirement date precedes age 65.

- c) **Veteran Retirement:** Age 55 with 25 Years of Service or Age 60 with 20 Years of Service for a qualified military veteran who retires directly from active service.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of the greater of:

- (1) 54.5% of highest 12-month Compensation, or
- (2) For a member who is at least age 55 with 35 Years of Service, 1/55 of highest 12-month Compensation for each Year of Service.

Veterans may receive a Service Retirement benefit if greater.

- d) **Deferred Retirement:** Termination of service prior to eligibility for Service Retirement with 10 Years of Service.

Benefit is either:

- (1) A refund of Accumulated Deductions plus, if the member has completed three Years of Service, interest accumulated at 2.0% per annum; or
- (2) A deferred life annuity, commencing at age 60 for a Tier 1 or Tier 2 Member, age 62 for a Tier 3 or Tier 4 Member or age 65 for a Tier 5 Member, comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of the Service Retirement benefit based on Final Compensation and Years of Service at date of termination.

For Members who die during the deferral period, the benefit is a return of Accumulated Deductions with credited interest.



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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

- e) **Non-Vested Termination:** Termination of service prior to eligibility for Service Retirement and less than 10 Years of Service.

Benefit is a refund of Accumulated Deductions plus, if the member has completed three Years of Service, interest accumulated at 2.0% per annum.

- f) **Death Benefits**

- (1) **Ordinary Death Before Retirement:** Death of an active contributing Member. Benefit is equal to:

- a. Lump sum payment equal to 150% of Final Year Compensation, also known as the non-contributory group life insurance benefit, plus
- b. Accumulated Deductions with credited interest.

- (2) **Accidental Death Before Retirement:** Death of an active Member resulting from injuries received from an accident during performance of duty and not a result of willful negligence. Benefit is equal to:

- a. Lump sum payment equal to 150% of Final Year Compensation, also known as the non-contributory group life insurance benefit, plus
- b. Spouse life annuity of 50% of Final Year 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 Year Compensation payable to one (two, three or more) dependent child(ren). If there is no surviving spouse or dependent child(ren), 25% (40%) of Final Year 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 Deductions with credited interest.

- (3) **Death After Retirement:** Death of a retired Member. Benefit is equal to:

- a. Lump sum payment equal to 3/16 of Final Year Compensation for a Member retired under Service, Early, Veteran or Deferred Retirement with 10 Years of Service. For a Member receiving a Disability benefit, lump sum payment of 150% of Final Year Compensation if death occurs prior to age 60 and 3/16 of Final Compensation if death occurs after age 60. This benefit is also known as the non-contributory group life insurance benefit, plus
- b. Any survivor benefit due under the Member's optional form of payment election. Previously granted COLAs also apply to life annuities.

Members are also eligible for a voluntary, employee-paid life insurance policy, known as the contributory group life insurance policy. This benefit is not paid through the System and is not considered for valuation purposes.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

**g) Disability Retirement**

- (1) Ordinary Disability Retirement: 10 Years of Service and totally and permanently incapacitated from the performance of normal or assigned duties. Only available to Tier 1, 2 and 3 Members.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of:

- a. 1.64% of Final Compensation for each Year of Service; or
- b. 43.6% of Final Compensation.

- (2) Accidental Disability Retirement: Total and permanent incapacitation as a direct result of a traumatic event occurring during and as a result of the performance of regular or assigned duties. Under certain conditions for law enforcement officers or emergency medical technicians, regular or assigned duties may include the World Trade Center (WTC) rescue, recovery, or cleanup operations between September 11, 2001 and October 11, 2001. 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. Only available to Tier 1, 2 and 3 Members.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of 72.7% of Compensation at the date of injury.

The pension portion of the benefit will be offset for any periodic Workers' Compensation benefits.

Tier 4 and Tier 5 Members are eligible for long-term disability coverage. This benefit is not paid through the System and is not considered for valuation purposes. Both Member and employer contributions to the System continue while on long-term disability, with the policy covering the Member portion. The long-term disability benefit equals 60% of Final Year Compensation and may be offset for other periodic benefits, such as Workers' Compensation, short-term disability or Social Security. The long-term disability benefit may continue through the earlier of age 70 or commencement of a retirement benefit under the System.

**11. Benefits for Special Employee Groups**

Certain members qualify for enrollment into special employee groups. Such members receive the greater of the special benefits described below or the regular PERS benefit described above. For benefit types not explicitly mentioned, the regular PERS benefit applies.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY**  
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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

a) **Law Enforcement Officers (LEOs):**

Members employed in eligible job titles as well as individuals who do not meet the age or medical requirements for entry into the Police and Firemen's Retirement System (PFRS).

(1) **Service and Special Retirement**

Mandatory retirement at age 65. Veterans with less than 20 Years of Service at age 65 must retire upon attainment of 20 Years of Service or age 70, whichever is earlier. Voluntary retirement prior to those ages.

a. **Service Retirement:** Age 55 after 20 Years of LEO Service.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of 2% of Final Compensation for each Year of LEO Service up to 25 years plus 1% of Final Compensation for each Year of LEO Service over 25 years.

The Member is also eligible for a regular PERS benefit based on any non-LEO service.

b. **Special Retirement:** 25 Years of LEO Service.

Benefit is the Service Retirement benefit plus 5% of Final Compensation with a maximum of 70% of Final Compensation.

(2) **Ordinary Disability Retirement:** 5 Years of LEO Service.

Benefit is the regular PERS Ordinary Disability benefit.

(3) **Death Benefits:**

Benefit is the regular PERS Death benefit except, upon Accidental Disability Retirement, the minimum lump sum payment is \$5,000.

b) **Legislative Retirement System (LRS):**

Members of the State Legislature. Chapter 92, P.L. 2007 closed LRS to new members enrolled on or after July 1, 2007.

(1) **Special Legislative Retirement:** Age 60.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of 3% of Final Compensation for each Year of Legislative Service with a maximum of two-thirds of Final Compensation.

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The Member is also eligible for a regular PERS benefit based on any non-legislative service.

- (2) Deferred Retirement: Termination of service prior to eligibility for Service or Special Legislative Retirement with 8 Years of Legislative Service.

Benefit is either:

- a. A refund of Accumulated Deductions plus, if the Member has completed three Years of Service, interest accumulated at 2.0% per annum; or
- b. A deferred life annuity, commencing at age 60, comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of the Service or Special Legislative Retirement benefit based on Final Compensation and Years of Service at date of termination.

c) **Prosecutors Part (Chapter 366, P.L. 2001):**

Covers prosecutors as well as members employed in certain other related job titles. Chapter 1. P.L. 2010 closed the Prosecutors Part to new members enrolled on or after May 22, 2010.

(1) Service and Special Retirement

Mandatory retirement at age 70. Voluntary retirement prior to that age.

In addition to the benefits described below, the member is eligible for a regular PERS benefit based on any non-Prosecutors Part service.

- a. Service Retirement: For a Prosecutors Part Member enrolled as of January 7, 2002, age 55 or 20 Years of Prosecutors Part Service. For a Prosecutors Part Member enrolled after January 7, 2002, age 55.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of the greater of:

- i. 2% of Final Year Compensation for each Year of Prosecutors Part Service up to 30 years plus 1% of Final Year Compensation for each Year of Prosecutors Part Service over 30 years.
- ii. 50% of Final Year Compensation for Prosecutors Part Members with 20 or more Years of Prosecutors Part Service.
- iii. 1/60 of Final Year Compensation for each Year of Prosecutors Part Service.

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b. Special Retirement: 25 Years of Prosecutors Part Service.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of 65% of Final Year Compensation plus 1% of Final Year Compensation for each Year of Prosecutors Part Service in excess of 25 years with a maximum of 70% of Final Compensation.

(2) Deferred Retirement: Termination of service prior to eligibility for Service or Special Retirement with 10 Years of Prosecutors Part Service.

Benefit is either:

- a. A refund of Accumulated Deductions plus, if the Member has completed three Years of Service, interest accumulated at 2.0% per annum; or
- b. A deferred life annuity, commencing at age 55, comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of 2% of Final Year Compensation for each Year of Prosecutors Part Service.

(3) Death Benefits:

Benefit is the regular PERS Death benefit except, upon Service, Special or Deferred Prosecutors Part Retirement with 10 Years of Prosecutors Part Service, the lump sum payment equals 50% of Final Year Compensation.

d) **Workers Compensation Judges Part (WCJ) (Chapter 259, P.L. 2001)**:

Member employed in an eligible job title by the Division of Workers' Compensation. Chapter 92, P.L. 2007 closed the Workers Compensation Judges Part to new members enrolled on or after July 1, 2007.

(1) Service Retirement:

Mandatory retirement age 70. Voluntary retirement prior to that age.

- a. Age 70 and 10 Years of WCJ Service; or  
Age 65 and 15 Years of WCJ Service; or  
Age 60 and 20 Years of WCJ Service.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of 75% of contractual Compensation at the date of retirement.

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- b. Age 65, 5 consecutive Years of WCJ Service and 15 Years of Aggregate PERS Service; or  
Age 60, 5 consecutive Years of WCJ Service and 20 Years of Aggregate PERS Service.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of 50% of contractual Compensation at the date of retirement.

- c. Age 60, 5 consecutive Years of WCJ Service and 15 Years of Aggregate PERS Service.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of 2% of contractual Compensation at the date of retirement for each Year of Aggregate PERS Service up to 25 years plus 1% of contractual Compensation at the date of retirement for each Year of Aggregate PERS Service over 25 years.

- d. Age 60.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of 2% of contractual Compensation at the date of retirement for each Year of WCJ Service up to 25 years plus 1% of contractual Compensation at the date of retirement for each Year of Aggregate PERS Service over 25 years.

- (2) Early Retirement: Prior to eligibility for Service Retirement and 5 consecutive Years of WCJ Service and 25 Years of Aggregate PERS Service.

Benefit is an annual retirement allowance comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of 2% of contractual Compensation at the date of retirement for each Year of Aggregate PERS Service up to 25 years plus 1% of contractual Compensation at the date of retirement for each Year of Aggregate PERS Service over 25 years, actuarially reduced for commencement prior to age 60.

- (3) Deferred Retirement: Termination of service prior to eligibility for Service Retirement with 5 consecutive Years of WCJ Service and 10 Years of Aggregate PERS Service.

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Benefit is either:

- a. A refund of Accumulated Deductions plus, if the Member has completed three years of service, interest accumulated at 2.0% per annum; or
- b. A deferred life annuity, commencing at age 60, comprised of a member annuity plus an employer pension which together will provide a total retirement allowance of 2% of contractual Compensation at the date of retirement for each Year of Aggregate PERS Service up to 25 years plus 1% of contractual Compensation at the date of retirement for each Year of Aggregate PERS Service over 25 years.

(4) Death Benefits

- a. Before Retirement: Death of an active WCJ Member. Benefit is equal to:
  - i. Lump sum equal to 150% of contractual Compensation at the date of death, plus
  - ii. Spousal life annuity of 25% of contractual Compensation at the date of death payable until spouse's remarriage plus 10% (15%) to one (two or more) dependent child(ren). If there is no surviving spouse, or upon death or remarriage, a total of 15% (20%, 30%) of contractual Compensation at the date of death payable to one (two, three or more) dependent child(ren). If there is no surviving spouse or dependent child(ren), 20% (30%) of contractual Compensation at the date of death 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 Deductions with interest.
- b. After Retirement: Death of a retired WCJ Member. Benefit is equal to:
  - i. Lump sum equal to 25% of contractual Compensation at the date of death for a Member retired under Service or Early WCJ Retirement with 10 Years of Aggregate PERS Service. For a Member receiving a Disability benefit, lump sum payment of 150% of contractual Compensation at the date of death if death occurs prior to age 60 and 25% of contractual Compensation at the date of death if death occurs after age 60, plus
  - ii. Any survivor benefit due under the Member's optional form of payment election. Previously granted COLAs also apply to life annuities.



**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

**12. Optional Forms of Payment**

The member may elect the following forms of payment.

- a) Maximum Option: Single life annuity with a return of the balance of the Accumulated Deductions with credited interest.
- b) Option 1: Single life annuity with a return of the balance of the initial reserve.
- c) Option 2: 100% joint and survivor annuity.
- d) Option 3: 50% joint and survivor annuity.
- e) Option 4: Other percentage joint and survivor annuity.
- f) Option A: 100% pop-up joint and survivor annuity.
- g) Option B: 75% pop-up joint and survivor annuity.
- h) Option C: 50% pop-up joint and survivor annuity.
- i) Option D: 25% pop-up joint and survivor annuity.

**13. Cost-of-Living Adjustments**

Also known as Pension Adjustments. Provided annually to retirees and survivors after 24 months of retirement prior to July 1, 2011. Chapter 78, P.L. 2011 eliminated future adjustments effective July 1, 2011. Adjustments may be reinstated in the future subject to certain conditions outlined in Chapter 78, P.L. 2011.

**14. 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 for PERS law enforcement officers or emergency medical technicians 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.

Chapter 54, P.L. 2020 amends eligibility for accidental disability and accidental death benefits for PERS law enforcement officers, firefighters, or emergency medical responders 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.



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The information on the following tables for State and Local employers 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 D – HISTORICAL DATA AND REQUIRED EXHIBITS**

**Table D-1  
Historical Summary of Assets and Liabilities  
State**

Valuation Date July 1,	Market Value of Assets	Actuarial Value of Assets		Funded Ratio	
		with Special Asset Value <sup>1</sup>	Actuarial Liability	Market Value	Actuarial Value
2020	\$ 7,249,876,062	\$ 10,687,660,452	\$ 26,285,137,008	27.6%	40.7%
2019	7,454,643,131	10,669,315,506	25,666,760,996	29.0%	41.6%
2018	7,533,286,615	10,710,534,806	23,745,716,631	31.7%	45.1%
2017	7,520,536,539	10,861,669,626	23,324,861,385	32.2%	46.6%
2016	7,370,865,995	11,109,798,893	22,411,751,124	32.9%	49.6%
2015	8,218,735,979	8,868,254,006	21,635,507,298	38.0%	41.0%
2014	8,778,291,546	9,128,235,998	20,842,690,918	42.1%	43.8%
2013	8,639,556,532	9,614,698,050	19,993,957,432	43.2%	48.1%
2012	8,389,963,954	9,774,698,097	19,383,584,639	43.3%	50.4%
2011	9,089,849,561	10,062,648,618	18,290,829,021	49.7%	55.0%

<sup>1</sup> Includes Special Asset Value beginning with July 1, 2016 valuation

**Table D-2  
Historical Summary of Employer Contributions<sup>1</sup>  
State**

Fiscal Year Ending June 30,	Statutory Contribution /		Lottery Revenue	Contribution Deficiency/ (Excess)	Percentage of Contribution Covered
	Actuarially Determined Contribution	Actual State Appropriation			
2021 <sup>2</sup>	\$ 1,622,539,084	\$ 1,037,649,098	\$ 228,362,244	\$ 356,527,742	78.0%
2020	1,432,190,871	776,970,874	213,353,000	441,866,997	69.1%
2019	1,406,859,836	627,377,884	232,271,000	547,210,952	61.1%
2018	1,324,313,829	451,752,000	205,155,662	667,406,167	49.6%
2017	1,263,740,460	506,499,652	0	757,240,808	40.1%
2016	1,182,038,756	355,290,348	0	826,748,408	30.1%
2015	1,058,157,699	195,153,000	0	863,004,699	18.4%
2014	993,064,820	141,154,573	0	851,910,247	14.2%
2013	924,432,941	264,123,697	0	660,309,244	28.6%
2012	874,346,428	124,906,634	0	749,439,794	14.3%

<sup>1</sup> Excludes contributions from NCGI and contributions payable from the Second Injury Fund for Chapter 259, P.L. 2001

<sup>2</sup> Reflects the State's planned contribution of 78% of the Statutory contribution and expected lottery revenue

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS**

**Table D-3  
Historical Summary of Assets and Liabilities  
Local Employers**

Valuation Date July 1,	Market Value of Assets	Actuarial Value of Assets	Actuarial Liability	Funded Ratio	
				Market Value	Actuarial Value
2020	\$ 22,891,936,466	\$ 24,424,654,983	\$ 36,410,100,750	62.9%	67.1%
2019	23,249,120,186	23,928,515,595	35,526,210,970	65.4%	67.4%
2018	22,645,367,115	23,264,877,618	33,103,627,533	68.4%	70.3%
2017	21,470,284,400	22,522,697,150	32,238,416,280	66.6%	69.9%
2016	19,756,262,137	21,900,421,798	30,673,935,604	64.4%	71.4%
2015	20,557,496,076	21,495,828,937	29,431,895,200	69.8%	73.0%
2014	20,250,197,472	20,766,663,796	28,255,077,220	71.7%	73.5%
2013	18,120,795,876	19,978,598,632	27,005,782,517	67.1%	74.0%
2012	16,785,718,484	19,376,646,934	26,009,038,341	64.5%	74.5%
2011	16,636,380,039	18,997,383,783	24,679,095,575	67.4%	77.0%

**Table D-4  
Historical Summary of Employer Contributions<sup>1</sup>  
Local Employers**

Fiscal Year Ending June 30,	Statutory Contribution /		Contribution Deficiency/ (Excess)	Percentage of Contribution Covered
	Actuarially Determined Contribution	Actual Local Appropriation		
2021	\$ 1,136,379,268	\$ 1,059,596,249	\$ 76,783,019	93.2%
2020	943,133,465	943,131,078	2,387	100.0%
2019	970,120,667	970,150,173	(29,506)	100.0%
2018	901,781,034	901,868,890	(87,856)	100.0%
2017	866,468,492	866,468,492	0	100.0%
2016	836,545,013	836,545,013	0	100.0%
2015	789,965,173	789,965,173	0	100.0%
2014	757,369,252	757,254,449	114,803	100.0%
2013	761,229,852	761,229,852	0	100.0%
2012	797,707,909	797,707,909	0	100.0%

<sup>1</sup> Excludes contributions from NCGI and includes ERIs and Chapter 19, P.L. 2009 payments

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

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

<b>Table D-5</b>								
<b>Schedule Retirees and Beneficiaries Added to and Removed From Rolls</b>								
<b>State</b>								
<b>Valuation Date</b> <b>July 1,</b>	<b>Added to Rolls</b>		<b>Removed from Rolls</b>		<b>Rolls at End of Year</b>		<b>Average Annual Allowance<sup>1</sup></b>	<b>% Increase in Average Annual Allowance<sup>1</sup></b>
	<b>Number</b>	<b>Annual Allowance</b>	<b>Number<sup>1</sup></b>	<b>Annual Allowance</b>	<b>Number<sup>1</sup></b>	<b>Annual Allowance</b>		
2020	3,127	\$ 99,862,605	2,193	\$ 45,081,368	60,783	\$ 1,726,418,877	\$ 28,403	1.72%
2019	3,232	103,191,557	1,939	40,171,452	59,849	1,671,166,694	27,923	1.70%
2018	3,217	102,255,260	2,281	45,351,461	58,556	1,607,733,796	27,456	1.25%
2017	3,267	104,489,121	1,479	29,655,761	57,174	1,550,464,743	27,118	1.83%
2016	3,515	109,122,538	2,203	40,303,068	55,386	1,474,917,885	26,630	2.45%
2015	4,114	124,446,887	1,754	32,905,541	54,074	1,405,596,194	25,994	2.33%
2014	3,183	93,940,693	1,696	30,809,304	51,714	1,313,713,988	25,403	2.06%
2013	2,864	82,357,835	1,685	29,723,562	50,227	1,250,142,686	24,890	1.96%
2012	3,192	92,356,665	1,734	29,433,960	49,048	1,197,305,307	24,411	2.52%
2011	4,365	135,383,063	1,782	28,241,754	47,590	1,133,192,150	23,812	5.36%

<sup>1</sup> Beginning with the 2018 valuation, multiple members with benefits in receipt from both State and Local employers are included in State headcounts. This change resulted in 446 more records on the rolls as of July 1, 2018. The annual allowance for these records was included for all years.

<b>Table D-6</b>								
<b>Schedule Retirees and Beneficiaries Added to and Removed From Rolls</b>								
<b>Local Employers</b>								
<b>Valuation Date</b> <b>July 1,</b>	<b>Added to Rolls</b>		<b>Removed from Rolls</b>		<b>Rolls at End of Year</b>		<b>Average Annual Allowance</b>	<b>% Increase in Average Annual Allowance</b>
	<b>Number</b>	<b>Annual Allowance</b>	<b>Number</b>	<b>Annual Allowance</b>	<b>Number</b>	<b>Annual Allowance</b>		
2020	7,078	\$ 157,358,396	5,729	\$ 81,347,000	123,992	\$ 2,328,399,284	\$ 18,779	2.30%
2019	7,199	158,384,725	4,748	65,855,298	122,643	2,251,384,758	18,357	2.24%
2018	7,272	151,992,839	5,537	76,519,975	120,192	2,157,906,233	17,954	2.17%
2017	7,444	155,525,527	3,725	50,460,932	118,457	2,081,607,680	17,573	2.04%
2016	7,856	159,065,854	5,681	72,658,490	114,738	1,975,865,848	17,221	2.65%
2015	7,870	149,903,333	4,309	54,707,095	112,563	1,888,507,678	16,777	2.02%
2014	7,003	137,416,194	4,288	52,540,322	109,002	1,792,563,653	16,445	2.40%
2013	6,911	123,953,479	4,169	49,483,971	106,287	1,706,902,310	16,059	1.90%
2012	7,334	137,596,316	4,284	49,626,477	103,545	1,631,782,901	15,759	2.70%
2011	9,296	195,153,024	4,529	48,064,677	100,495	1,541,951,837	15,344	6.25%

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

**Table D-7  
Schedule Retirees and Beneficiaries Added to and Removed From Rolls  
Total**

Valuation Date July 1,	Added to Rolls		Removed from Rolls		Rolls at End of Year		Average Annual Allowance <sup>1</sup>	% Increase in Average Annual Allowance <sup>1</sup>
	Number	Annual Allowance	Number <sup>1</sup>	Annual Allowance	Number <sup>1</sup>	Annual Allowance		
2020	10,205	\$ 257,221,002	7,922	\$ 126,428,368	184,775	\$ 4,054,818,161	\$ 21,945	2.09%
2019	10,431	261,576,282	6,687	106,026,750	182,492	3,922,551,452	21,494	2.03%
2018	10,489	254,248,099	7,818	121,871,436	178,748	3,765,640,029	21,067	1.87%
2017	10,711	260,014,648	5,204	80,116,693	175,631	3,632,072,423	20,680	1.95%
2016	11,371	268,188,392	7,884	112,961,558	170,124	3,450,783,733	20,284	2.61%
2015	11,984	274,350,220	6,063	87,612,636	166,637	3,294,103,872	19,768	2.28%
2014	10,186	231,356,887	5,984	83,349,626	160,716	3,106,277,641	19,328	2.30%
2013	9,775	206,311,314	5,854	79,207,533	156,514	2,957,044,996	18,893	1.90%
2012	10,526	229,952,981	6,018	79,060,437	152,593	2,829,088,208	18,540	2.63%
2011	13,661	330,536,087	6,311	76,306,431	148,085	2,675,143,987	18,065	5.95%

<sup>1</sup> Beginning with the 2018 valuation, multiple members with benefits in receipt from both State and Local employers are included in State headcounts. This change resulted in 446 more records on the rolls as of July 1, 2018. The annual allowance for these records was included for all years.

**Table D-8  
Schedule of Active Member Valuation Data  
State**

Valuation Date July 1,	Number of Contributing Active Members <sup>1</sup>	Annual Compensation <sup>2</sup>	Annual Average Compensation	% Increase in Average Annual Compensation	Number of Participating Employers <sup>3</sup>
2020	67,774	\$ 4,637,529,278	\$ 68,426	2.37%	283
2019	67,906	4,539,069,588	66,843	5.80%	286
2018	68,593	4,333,772,974	63,181	-0.45%	283
2017	68,156	4,325,784,579	63,469	-0.49%	N/A
2016	68,502	4,369,066,658	63,780	0.02%	N/A
2015	69,687	4,443,605,376	63,765	2.39%	N/A
2014	72,952	4,543,384,095	62,279	1.64%	N/A
2013	74,365	4,556,719,103	61,275	1.02%	N/A
2012	75,355	4,570,958,470	60,659	1.48%	N/A
2011	77,109	4,608,926,826	59,772	6.44%	N/A

<sup>1</sup> Beginning with the 2018 valuation, reflects all records for multiple members

<sup>2</sup> Limited annual compensation

<sup>3</sup> Number of locations reporting contributing active members. For GASB reporting purposes, the State may be considered the participating employer for multiple locations.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS**

**Table D-9  
Schedule of Active Member Valuation Data  
Local Employers**

Valuation Date July 1,	Number of Contributing Active Members <sup>1</sup>	Annual Compensation <sup>2</sup>	Annual Average Compensation	% Increase in Average Annual Compensation	Number of Participating Employers <sup>3</sup>
2020	142,757	\$ 7,328,393,274	\$ 51,335	3.07%	1,663
2019	145,287	7,236,080,086	49,805	2.76%	1,664
2018	146,615	7,106,248,788	48,469	1.66%	1,670
2017	147,283	7,022,322,604	47,679	2.61%	N/A
2016	149,077	6,927,278,654	46,468	2.76%	N/A
2015	152,070	6,876,593,371	45,220	2.33%	N/A
2014	156,101	6,898,049,131	44,190	2.75%	N/A
2013	160,253	6,891,812,162	43,006	2.78%	N/A
2012	164,005	6,862,133,165	41,841	2.74%	N/A
2011	171,881	7,000,115,900	40,727	2.98%	N/A

<sup>1</sup> Beginning with the 2018 valuation, reflects all records for multiple members

<sup>2</sup> Limited annual compensation

<sup>3</sup> Number of locations reporting contributing active members

**Table D-10  
Schedule of Active Member Valuation Data  
Total**

Valuation Date July 1,	Number of Contributing Active Members <sup>1</sup>	Annual Compensation <sup>2</sup>	Annual Average Compensation	% Increase in Average Annual Compensation	Number of Participating Employers <sup>3</sup>
2020	210,531	\$ 11,965,922,552	\$ 56,837	2.91%	1,946
2019	213,193	11,775,149,674	55,232	3.90%	1,950
2018	215,208	11,440,021,762	53,158	0.92%	1,953
2017	215,439	11,348,107,183	52,674	1.46%	N/A
2016	217,579	11,296,345,312	51,918	1.70%	N/A
2015	221,757	11,320,198,747	51,048	2.20%	N/A
2014	229,053	11,441,433,226	49,951	2.37%	N/A
2013	234,618	11,448,531,265	48,796	2.16%	N/A
2012	239,360	11,433,091,635	47,765	2.45%	N/A
2011	248,990	11,609,042,726	46,625	4.61%	N/A

<sup>1</sup> Beginning with the 2018 valuation, reflects all records for multiple members

<sup>2</sup> Limited annual compensation

<sup>3</sup> Number of locations reporting contributing active members. For GASB reporting purposes, the State may be considered the participating employer for multiple locations.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS**

**Table D-11  
Schedule of Funding Progress  
State**

Valuation Date July 1,	Actuarial Value of Assets <sup>1</sup> (a)	Actuarial Accrued Liability (b)	(Surplus)/Unfunded		Covered Payroll <sup>2</sup> (d)	(Surplus)/Unfunded Actuarial Accrued Liability as % of Covered Payroll (c) / (d)
			Actuarial Accrued Liability (c) = (b) - (a)	Funded Ratio (a) / (b)		
2020	\$ 8,045,759,732	\$ 26,285,137,008	\$ 18,239,377,276	30.61%	\$ 4,637,529,278	393.30%
2019	8,017,468,579	25,666,760,996	17,649,292,417	31.24%	4,539,069,588	388.83%
2018	8,057,092,909	23,745,716,631	15,688,623,722	33.93%	4,333,772,974	362.01%
2017	8,208,333,488	23,324,861,385	15,116,527,897	35.19%	4,325,784,579	349.45%
2016	8,466,901,791	22,411,751,124	13,944,849,333	37.78%	4,369,066,658	319.17%
2015	8,868,254,006	21,635,507,298	12,767,253,292	40.99%	4,443,605,376	287.32%
2014	9,128,235,998	20,842,690,918	11,714,454,920	43.80%	4,543,384,095	257.84%
2013	9,614,698,050	19,993,957,432	10,379,259,382	48.09%	4,556,719,103	227.78%
2012	9,774,698,097	19,383,584,639	9,608,886,542	50.43%	4,570,958,470	210.22%
2011	10,062,648,618	18,290,829,021	8,228,180,403	55.01%	4,608,926,826	178.53%

<sup>1</sup> Includes receivable amounts. Excludes Special Asset Value.

<sup>2</sup> Limited annual compensation for contributing actives

**Table D-12  
Schedule of Funding Progress  
Local Employers**

Valuation Date July 1,	Actuarial Value of Assets <sup>1</sup> (a)	Actuarial Accrued Liability (b)	(Surplus)/Unfunded		Covered Payroll <sup>2</sup> (d)	(Surplus)/Unfunded Actuarial Accrued Liability as % of Covered Payroll (c) / (d)
			Actuarial Accrued Liability (c) = (b) - (a)	Funded Ratio (a) / (b)		
2020	\$ 24,424,654,983	\$ 36,410,100,750	\$ 11,985,445,767	67.08%	\$ 7,328,393,274	163.55%
2019	23,928,515,595	35,526,210,970	11,597,695,375	67.35%	7,236,080,086	160.28%
2018	23,264,877,618	33,103,627,533	9,838,749,915	70.28%	7,106,248,788	138.45%
2017	22,522,697,150	32,238,416,280	9,715,719,130	69.86%	7,022,322,604	138.35%
2016	21,900,421,798	30,673,935,604	8,773,513,806	71.40%	6,927,278,654	126.65%
2015	21,495,828,937	29,431,895,200	7,936,066,263	73.04%	6,876,593,371	115.41%
2014	20,766,663,796	28,255,077,220	7,488,413,424	73.50%	6,898,049,131	108.56%
2013	19,978,598,632	27,005,782,517	7,027,183,885	73.98%	6,891,812,162	101.96%
2012	19,376,646,934	26,009,038,341	6,632,391,407	74.50%	6,862,133,165	96.65%
2011	18,997,383,783	24,679,095,575	5,681,711,792	76.98%	7,000,115,900	81.17%

<sup>1</sup> Includes receivable amounts. Excludes Special Asset Value.

<sup>2</sup> Limited annual compensation for contributing actives

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS**

**Table D-13  
Schedule of Funding Progress  
Total**

Valuation Date July 1,	Actuarial Value of Assets <sup>1</sup> (a)	Actuarial Accrued Liability (b)	(Surplus)/Unfunded		Covered Payroll <sup>2</sup> (d)	(Surplus)/Unfunded Actuarial Accrued
			Actuarial Accrued Liability (c) = (b) - (a)	Funded Ratio (a) / (b)		Liability as % of Covered Payroll (c) / (d)
2020	\$ 32,470,414,715	\$ 62,695,237,758	\$ 30,224,823,043	51.79%	\$ 11,965,922,552	252.59%
2019	31,945,984,174	61,192,971,966	29,246,987,792	52.21%	11,775,149,674	248.38%
2018	31,321,970,527	56,849,344,164	25,527,373,637	55.10%	11,440,021,762	223.14%
2017	30,731,030,638	55,563,277,665	24,832,247,027	55.31%	11,348,107,183	218.82%
2016	30,367,323,589	53,085,686,728	22,718,363,139	57.20%	11,296,345,312	201.11%
2015	30,364,082,943	51,067,402,498	20,703,319,555	59.46%	11,320,198,747	182.89%
2014	29,894,899,794	49,097,768,138	19,202,868,344	60.89%	11,441,433,226	167.84%
2013	29,593,296,682	46,999,739,949	17,406,443,267	62.96%	11,448,531,265	152.04%
2012	29,151,345,031	45,392,622,980	16,241,277,949	64.22%	11,433,091,635	142.05%
2011	29,060,032,401	42,969,924,596	13,909,892,195	67.63%	11,609,042,726	119.82%

<sup>1</sup> Includes receivable amounts. Excludes Special Asset Value.

<sup>2</sup> Limited annual compensation for contributing actives

**Table D-14  
Schedule of Funded Liabilities by Type (Solvency Test)  
State**

Valuation Date July 1,	Actuarial Accrued Liability for			Actuarial Value of Assets <sup>2</sup>	Portion of Actuarial Accrued Liabilities Covered by Actuarial Value of Assets		
	Contributing & Non-Contributing Active Member Contributions (1)	Retirees, Beneficiaries & Deferred Vested <sup>1</sup> (2)	Contributing & Non-Contributing Active Member Benefits Financed by Employer <sup>1</sup> (3)		(1)	(2)	(3)
2020	\$ 6,381,123,395	\$ 16,544,875,478	\$ 3,359,138,135	\$ 8,045,759,732	100.00%	10.06%	0.00%
2019	6,152,782,465	16,087,603,025	3,426,375,506	8,017,468,579	100.00%	11.59%	0.00%
2018	5,953,378,763	15,070,236,164	2,722,101,704	8,057,092,909	100.00%	13.96%	0.00%
2017	5,727,517,176	14,487,785,677	3,109,558,532	8,208,333,488	100.00%	17.12%	0.00%
2016	5,504,706,131	13,686,116,692	3,220,928,301	8,466,901,791	100.00%	21.64%	0.00%
2015	5,302,732,138	12,797,013,628	3,535,761,532	8,868,254,006	100.00%	27.86%	0.00%
2014	5,169,631,309	11,857,858,226	3,815,201,383	9,128,235,998	100.00%	33.38%	0.00%
2013	4,885,643,785	11,293,634,256	3,814,679,391	9,614,698,050	100.00%	41.87%	0.00%
2012	4,562,712,648	10,849,987,028	3,970,884,963	9,774,698,097	100.00%	48.04%	0.00%
2011	4,295,868,689	10,055,639,293	3,939,321,039	10,062,648,618	100.00%	57.35%	0.00%

<sup>1</sup> Prior to July 1, 2018, actuarial accrued liability for deferred vesteds included under (3) instead of (2)

<sup>2</sup> Includes receivable amounts. Excludes Special Asset Value.



**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS**

**Table D-15  
Schedule of Funded Liabilities by Type (Solvency Test)  
Local Employers**

**Actuarial Accrued Liability for**

Valuation Date July 1,	Actuarial Accrued Liability for			Actuarial Value of Assets <sup>2</sup>	Portion of Actuarial Accrued Liabilities Covered by Actuarial Value of Assets		
	Contributing & Non-Contributing Active Member Contributions (1)	Retirees, Beneficiaries & Deferred Vested <sup>1</sup> (2)	Contributing & Non-Contributing Active Member Benefits Financed by Employer <sup>1</sup> (3)		(1)	(2)	(3)
2020	\$ 9,574,866,049	\$ 21,680,763,400	\$ 5,154,471,301	\$ 24,424,654,983	100.00%	68.49%	0.00%
2019	9,234,762,976	20,983,426,083	5,308,021,911	23,928,515,595	100.00%	70.03%	0.00%
2018	8,934,728,567	19,552,684,545	4,616,214,421	23,264,877,618	100.00%	73.29%	0.00%
2017	8,542,088,646	18,737,855,865	4,958,471,769	22,522,697,150	100.00%	74.61%	0.00%
2016	8,168,141,804	17,622,616,344	4,883,177,456	21,900,421,798	100.00%	77.92%	0.00%
2015	7,829,248,004	16,502,540,582	5,100,106,614	21,495,828,937	100.00%	82.82%	0.00%
2014	7,477,372,802	15,523,266,419	5,254,437,999	20,766,663,796	100.00%	85.61%	0.00%
2013	7,060,416,742	14,775,793,049	5,169,572,726	19,978,598,632	100.00%	87.43%	0.00%
2012	6,614,992,298	14,150,003,241	5,244,042,802	19,376,646,934	100.00%	90.19%	0.00%
2011	6,244,282,760	13,077,334,135	5,357,478,680	18,997,383,783	100.00%	97.52%	0.00%

<sup>1</sup> Prior to July 1, 2018, actuarial accrued liability for deferred vesteds included under (3) instead of (2)

<sup>2</sup> Includes receivable amounts. Excludes Special Asset Value.

**Table D-16  
Schedule of Funded Liabilities by Type (Solvency Test)  
Total**

**Actuarial Accrued Liability for**

Valuation Date July 1,	Actuarial Accrued Liability for			Actuarial Value of Assets <sup>2</sup>	Portion of Actuarial Accrued Liabilities Covered by Actuarial Value of Assets		
	Contributing & Non-Contributing Active Member Contributions (1)	Retirees, Beneficiaries & Deferred Vested <sup>1</sup> (2)	Contributing & Non-Contributing Active Member Benefits Financed by Employer <sup>1</sup> (3)		(1)	(2)	(3)
2020	\$ 15,955,989,444	\$ 38,225,638,878	\$ 8,513,609,436	\$ 32,470,414,715	100.00%	43.20%	0.00%
2019	15,387,545,441	37,071,029,108	8,734,397,417	31,945,984,174	100.00%	44.67%	0.00%
2018	14,888,107,330	34,622,920,709	7,338,316,125	31,321,970,527	100.00%	47.47%	0.00%
2017	14,269,605,822	33,225,641,542	8,068,030,301	30,731,030,638	100.00%	49.54%	0.00%
2016	13,672,847,935	31,308,733,036	8,104,105,757	30,367,323,589	100.00%	53.32%	0.00%
2015	13,131,980,142	29,299,554,210	8,635,868,146	30,364,082,943	100.00%	58.81%	0.00%
2014	12,647,004,111	27,381,124,645	9,069,639,382	29,894,899,794	100.00%	62.99%	0.00%
2013	11,946,060,527	26,069,427,305	8,984,252,117	29,593,296,682	100.00%	67.69%	0.00%
2012	11,177,704,946	24,999,990,269	9,214,927,765	29,151,345,031	100.00%	71.89%	0.00%
2011	10,540,151,449	23,132,973,428	9,296,799,719	29,060,032,401	100.00%	80.06%	0.00%

<sup>1</sup> Prior to July 1, 2018, actuarial accrued liability for deferred vesteds included under (3) instead of (2)

<sup>2</sup> Includes receivable amounts. Excludes Special Asset Value.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS**

**Table D-17  
Analysis of Financial Experience  
Change in Unfunded Actuarial Accrued Liability  
State**

Valuation Date July 1,	Actuarial Value Of Assets Investment (Gain)/Loss	Actuarial Accrued Liability (Gain)/Loss	Assumption & Method Changes	Plan/Policy Changes	Contributions <sup>1</sup>	Change in Unfunded Actuarial Accrued Liability
2020	\$ 198,970,917	\$ 138,357,335	\$ 0	\$ 0	\$ 252,756,607	\$ 590,084,859
2019	140,706,362	461,324,998	1,081,742,399	(6,603,404)	283,498,340	1,960,668,695
2018	130,951,573	93,268,738	(112,274,899)	0	460,150,413	572,095,825
2017	171,949,238	103,170,590	328,696,298	0	567,862,438	1,171,678,564
2016	274,008,949	21,165,025	199,010,114	0	683,411,953	1,177,596,041
2015	162,379,506	164,489,294	53,217,646	0	672,711,926	1,052,798,372
2014	87,486,113	95,327,747	10,733,967	0	1,141,647,711	1,335,195,538
2013	243,785,379	47,279,664	0	0	479,307,797	770,372,840
2012	346,183,536	84,362,752	389,696,094	0	560,463,757	1,380,706,139
2011	243,199,764	281,342,822	(155,073,784)	0	682,788,481	1,052,257,283

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

**Table D-18  
Analysis of Financial Experience  
Change in Unfunded Actuarial Accrued Liability  
Local Employers**

Valuation Date July 1,	Actuarial Value Of Assets Investment (Gain)/Loss	Actuarial Accrued Liability (Gain)/Loss	Assumption & Method Changes	Plan/Policy Changes	Contributions <sup>1</sup>	Change in Unfunded Actuarial Accrued Liability
2020	\$ 383,179,629	\$ (53,231,151)	\$ 0	\$ 0	\$ 57,801,914	\$ 387,750,392
2019	169,848,852	207,179,448	1,392,592,722	(6,437,745)	(4,237,817)	1,758,945,460
2018	154,877,626	161,064,936	(176,743,018)	0	(16,168,759)	123,030,785
2017	263,103,187	249,175,903	439,168,994	0	(9,242,760)	942,205,324
2016	536,039,915	28,949,988	251,983,145	0	20,474,495	837,447,543
2015	234,583,215	90,076,858	152,550,941	0	(29,558,175)	447,652,839
2014	129,116,581	303,918,905	12,554,678	0	15,639,375	461,229,539
2013	464,450,689	(49,533,766)	0	0	(20,124,445)	394,792,478
2012	647,732,112	35,826,555	337,149,938	0	(70,028,990)	950,679,615
2011	590,250,936	(169,526,692)	(203,334,001)	0	27,615,875	245,006,118

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

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS**

Table D-19 Analysis of Financial Experience Change in Unfunded Actuarial Accrued Liability Total							
Valuation Date July 1,	Actuarial Value Of Assets Investment (Gain)/Loss	Actuarial Accrued Liability (Gain)/Loss	Assumption & Method Changes	Plan/Policy Changes	Contributions <sup>1</sup>	Change in Unfunded Actuarial Accrued Liability	
2020	\$ 582,150,546	\$ 85,126,184	\$ 0	\$ 0	\$ 310,558,521	\$ 977,835,251	
2019	310,555,214	668,504,446	2,474,335,121	(13,041,149)	279,260,523	3,719,614,155	
2018	285,829,199	254,333,674	(289,017,917)	0	443,981,654	695,126,610	
2017	435,052,425	352,346,493	767,865,292	0	558,619,678	2,113,883,888	
2016	810,048,864	50,115,013	450,993,259	0	703,886,448	2,015,043,584	
2015	396,962,721	254,566,152	205,768,587	0	643,153,751	1,500,451,211	
2014	216,602,694	399,246,652	23,288,645	0	1,157,287,086	1,796,425,077	
2013	708,236,068	(2,254,102)	0	0	459,183,352	1,165,165,318	
2012	993,915,648	120,189,307	726,846,032	0	490,434,767	2,331,385,754	
2011	833,450,700	111,816,130	(358,407,785)	0	710,404,356	1,297,263,401	

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

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX E – EARLY RETIREMENT INCENTIVE PROGRAMS**

<b>Table E-1 State ERI Contribution Schedule</b>			
<b>Location Number</b>	<b>Location Name</b>	<b>Fiscal Year 2022 Payment</b>	<b>Present Value as of 7/1/2020</b>
<b>Chapter 23, P.L. 2002</b>			
410	ROWAN UNIVERSITY	\$ 814,140	\$ 9,707,219
411	NEW JERSEY CITY UNIVERSITY	563,826	6,722,655
412	KEAN UNIVERSITY	497,015	5,926,047
413	WILLIAM PATTERSON UNIVERSITY OF NJ	347,270	4,140,592
414	MONCLAIR STATE UNIVERSITY	220,786	2,632,491
415	THE COLLEGE OF NEW JERSEY	620,759	7,401,484
420	RAMAPO COLLEGE OF NEW JERSEY	181,787	2,167,493
421	STOCKTON UNIVERSITY	477,698	5,695,722
430	THOMAS EDISON STATE UNIVERSITY	144,183	1,719,128
498	RUTGERS UNIVERSITY	5,286,636	63,034,016
32700	NEW JERSEY INSTITUTE OF TECHNOLOGY	274,012	3,267,119
	ALL OTHER STATE LOCATIONS	<u>109,872,440</u>	<u>1,310,039,335</u>
	<b>Sub-Total</b>	<b>\$ 119,300,552</b>	<b>\$ 1,422,453,301</b>
	<b>Chapter 21, P.L. 2008</b>	<b>\$ 26,682,763</b>	<b>\$ 318,145,926</b>
	<b>Total</b>	<b>\$ 145,983,315</b>	<b>\$ 1,740,599,227</b>

Consistent with established methodology, payment amounts calculated using a payment date 12 months after the valuation date.

Present values as of July 1, 2020 exclude expected payments for fiscal year ending 2021.

State ERI amounts are not used in determining the Statutory contribution. They are used only in allocating the Statutory contribution to State locations.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX E – EARLY RETIREMENT INCENTIVE PROGRAMS**

<b>Table E-2 Local Employers ERI 2 Contribution Schedule</b>			
<b>Location Number</b>	<b>Location Name</b>	<b>Fiscal Year 2022 Payment</b>	<b>Present Value as of 7/1/2020</b>
10071	BURLINGTON CO BD OF SOCIAL SERV	\$ 49,116	\$ 445,451
10171	MERCER CO BD OF SOCIAL SERVICE	106,125	962,490
20100	LAVALLETTE BOROUGH	14,637	132,752
20114	LINDEN CTY FREE PUBLIC LIBRARY	14,544	131,905
20264	MONTCLAIR PUBLIC LIBRARY	36,834	334,059
20320	PALMYRA BOROUGH	22,632	205,263
20720	WASHINGTON BOROUGH	9,462	85,817
21303	WEST NEW YORK BD OF ED	3,504	27,875
21480	EATONTOWN BOROUGH	22,943	208,083
21663	BEVERLY CITY BD OF ED	905	7,199
22030	VERONA TOWNSHIP	15,761	142,947
22540	BOUND BROOK BOROUGH	9,112	82,644
30130	TRENTON HOUSING AUTHORITY	100,454	911,059
30160	ATLANTIC CITY HOUSING AUTHORITY	54,182	491,401
30230	ASBURY PK HOUSING AUTHORITY	1,720	15,598
30250	NEW BRUNSWICK HOUSING AUTHORITY	3,263	29,595
30420	BURLINGTON COUNTY BRIDGE COMM	19,824	179,793
30510	PATERSON HOUSING AUTHORITY	4,937	44,778
30560	MIDDLESEX CO UTILITIES AUTH	158,756	1,439,832
30770	PATERSON PARKING AUTHORITY	3,210	29,117
30900	GLOUCESTER TWP M U A	13,191	119,631
31190	BRIDGETON CITY HOUSING AUTH	1,623	14,721
31250	JERSEY CITY MUNICIPAL UT. AUTH	3,404	30,875
31260	LINDEN CITY HOUSING AUTHORITY	18,106	174,426
31370	MERCER CO IMPROVEMENT AUTHORITY	14,478	131,305
31580	MOUNT LAUREL TWP MUN UTIL AUTH	1,720	15,598
31680	OCEAN GROVE BD OF FIRE COMM	14,435	130,917
31720	NJ SPORTS & EXPOSITION AUTH	1,671	15,151
32080	OCEAN TWP MUN UTIL AUTHORITY	3,409	30,922
32260	HUDSON CO COMMUNITY COLLEGE	5,138	46,597
32700	NJ INSTITUTE OF TECHNOLOGY	85,365	774,213
39990	COMPENSATION RATING & INS BUR	89,144	808,490
50050	ALLENTOWN BOROUGH	1,694	15,366
50130	AUDUBON BOROUGH	3,644	33,047
50830	EAST HANOVER TOWNSHIP	20,617	186,985
51750	LEBANON BOROUGH	1,638	14,860

Consistent with established methodology, payment amounts calculated using a payment date 9 months after the valuation date.

Present values as of July 1, 2020 exclude expected payments for fiscal year ending 2021.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX E – EARLY RETIREMENT INCENTIVE PROGRAMS**

<b>Table E-2 (cont.) Local Employers ERI 2 Contribution Schedule</b>			
<b>Location Number</b>	<b>Location Name</b>	<b>Fiscal Year 2022 Payment</b>	<b>Present Value as of 7/1/2020</b>
51800	LINWOOD CITY	\$ 36,757	\$ 333,366
52630	PENNSAUKEN TOWNSHIP	8,476	76,869
53490	WALLINGTON BOROUGH	17,639	159,979
53670	WEST LONG BRANCH BOROUGH	9,106	82,588
55640	FLORHAM PARK SEW AUTHORITY	5,265	47,751
55880	WRIGHTSTOWN MUN UTIL AUTH	1,692	15,344
60023	HUDSON CO SCHOOLS OF TECHNOLOGY	9,819	78,124
<b>Total</b>		<b>\$ 1,019,952</b>	<b>\$ 9,244,783</b>

Consistent with established methodology, payment amounts calculated using a payment date 9 months after the valuation date.

Present values as of July 1, 2020 exclude expected payments for fiscal year ending 2021.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX E – EARLY RETIREMENT INCENTIVE PROGRAMS**

Table E-3 Local Employer ERI Contribution Schedules due to Recent ERI Legislation				
Location Number	Location Name	Years and Form of Payment	Fiscal Year 2022 Payment	Present Value as of 7/1/2020
<b>Chapter 59, P.L. 1999</b>				
21960	WOODBIDGE TOWNSHIP	15 Year - Level	\$ 406,772	\$ 1,955,209
<b>Chapter 126, P.L. 2000</b>				
10100	UNION COUNTY	15 Year - Level	\$ 823,553	\$ 1,509,180
10101	UNION CO BD OF SOCIAL SERVICES	15 Year - Level	372,987	683,508
<b>Sub-Total</b>			<b>\$ 1,196,540</b>	<b>\$ 2,192,688</b>
<b>Chapter 23, P.L. 2002</b>				
30440	SOUTH JERSEY PORT CORPORATION	30 Year - Increasing	\$ 115,241	\$ 1,110,159
31210	NJ HOUSING & MTG FINANCE AGENCY	30 Year - Increasing	139,813	1,346,867
34920	SOUTH JERSEY TRANS AUTHORITY	30 Year - Increasing	121,262	1,168,160
39990	COMPENSATION RATING & INS BUR	30 Year - Increasing	148,558	1,431,116
<b>Sub-Total</b>			<b>\$ 524,874</b>	<b>\$ 5,056,302</b>
<b>Chapter 127, P.L. 2003</b>				
30120	HARRISON TOWN HOUSING AUTHORITY	15 Year - Level	\$ 55,104	\$ 52,268
32310	OCEAN CO SOIL CONSRV DISTRICT	15 Year - Level	36,613	34,728
<b>Sub-Total</b>			<b>\$ 91,717</b>	<b>\$ 86,996</b>
<b>Chapter 129, P.L. 2003</b>				
22223	HOWELL TWP BD OF ED	15 Year - Level	\$ 15,676	\$ 14,869
<b>Total</b>			<b>\$ 2,235,579</b>	<b>\$ 9,306,064</b>

Consistent with established methodology, payment amounts calculated using a payment date 9 months after the valuation date.

Present values as of July 1, 2020 exclude expected payments for fiscal year ending 2021.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX F – CHAPTER 19, P.L. 2009**

**Table F-1  
Local Employer Chapter 19, P.L. 2009 Deferral and Payment Schedule**

<b>Location Number</b>	<b>Location Name</b>	<b>Fiscal Year 2022 Payment</b>	<b>Present Value as of 7/1/2020</b>
10042	MIDDLESEX CO MOSQ EXTERM COMM	\$ 5,398	\$ 20,828
10100	UNION COUNTY	497,825	1,920,663
10101	UNION CO BD OF SOCIAL SERVICES	160,392	618,809
10152	SALEM CO MOSQUITO COMMISSION	1,754	6,765
20050	NORTH ARLINGTON BOROUGH	15,633	60,315
20080	POINT PLEASANT BEACH BOROUGH	15,636	60,325
20090	LAKEWOOD TOWNSHIP	60,942	235,119
20093	LAKEWOOD TWP BD OF ED	32,000	123,461
20110	LINDEN CITY	106,107	409,372
20114	LINDEN CTY FREE PUBLIC LIBRARY	5,626	21,706
20130	PLAINFIELD CITY	69,570	268,409
20150	SEASIDE HEIGHTS BOROUGH	14,691	56,680
20160	ASBURY PARK CITY	40,705	157,043
20170	EAST ORANGE CITY	154,622	596,550
20180	EGG HARBOR CITY	6,733	25,978
20200	PERTH AMBOY CITY	73,446	283,364
20210	WILDWOOD CITY	36,689	141,551
20220	BELLEVILLE TOWNSHIP	36,569	141,086
20230	BLOOMFIELD TOWNSHIP	46,659	180,014
20243	DOVER BD OF ED	116	449
20250	IRVINGTON TOWNSHIP	63,409	244,640
20270	MORRISTOWN TOWN	36,797	141,967
20283	WEST ORANGE TOWNSHIP BD OF ED	75,461	291,136
20350	ORANGE CITY	43,041	166,059
20353	ORANGE CITY BD OF ED	26,347	101,651
20413	WESTFIELD TOWN BD OF ED	44,316	170,977
20440	GLEN RIDGE BOROUGH	11,451	44,180
20483	RIDGEFIELD BORO BD OF ED	26,477	102,152
20533	SOUTH HACKENSACK BD OF ED	2,907	11,215
20570	SOUTH ORANGE VILLAGE	31,939	123,225
20590	HACKENSACK CITY	63,885	246,474
20650	FAIRVIEW BOROUGH	17,392	67,099
20680	NEW MILFORD BOROUGH	15,742	60,735
20700	RUTHERFORD BOROUGH	33,990	131,136
20703	RUTHERFORD BORO BD OF ED	19,670	75,888
20710	SOMERVILLE BOROUGH	22,689	87,535

Consistent with established methodology, payment amounts calculated using a payment date 21 months after the valuation date.

Present values as of July 1, 2020 exclude expected payments for fiscal year ending 2021.



**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX F – CHAPTER 19, P.L. 2009**

**Table F-1 (cont.)  
Local Employer Chapter 19, P.L. 2009 Deferral and Payment Schedule**

<b>Location Number</b>	<b>Location Name</b>	<b>Fiscal Year 2022 Payment</b>	<b>Present Value as of 7/1/2020</b>
20720	WASHINGTON BOROUGH	\$ 8,395	\$ 32,390
20760	MAPLEWOOD TOWNSHIP	39,434	152,140
20780	ATLANTIC CITY	170,917	659,418
20790	BRIDGETON CITY	24,732	95,418
20800	CLIFTON CITY	80,866	311,989
20810	GARFIELD CITY	28,160	108,643
20830	PASSAIC CITY	68,984	266,147
20840	RAHWAY CITY	35,390	136,538
20844	RAHWAY PUBLIC LIBRARY	4,665	18,000
20849	RAHWAY WATER COMM	1,301	5,018
20850	BRIELLE BOROUGH	7,521	29,018
20860	COLLINGSWOOD BOROUGH	16,175	62,403
20900	GARWOOD BOROUGH	6,169	23,801
20920	KEANSBURG BOROUGH	13,956	53,844
20950	MATAWAN BOROUGH	10,353	39,942
20960	MIDDLESEX BOROUGH	19,218	74,143
20980	PALISADES PARK BOROUGH	16,407	63,301
21003	ROCKAWAY BOROUGH BD OF ED	4,983	19,224
21010	ROSELLE BOROUGH	19,671	75,894
21080	HILLSIDE TOWNSHIP	28,326	109,284
21093	MILLBURN TWP PUBLIC SCHOOLS	38,595	148,904
21110	WEEHAWKEN TOWNSHIP	27,945	107,815
21120	HOBOKEN CITY	76,739	296,068
21130	LONG BRANCH CITY	48,409	186,767
21160	HARRISON TOWN (HUDSON)	40,700	157,027
21180	OCEANPORT BOROUGH	5,701	21,994
21190	ORADELL BOROUGH	10,755	41,492
21210	FAIRFIELD TOWNSHIP (ESSEX)	19,633	75,748
21250	UNION TOWNSHIP (UNION)	57,705	222,633
21254	UNION TOWNSHIP LIBRARY	5,854	22,587
21270	BAYONNE CITY	93,415	360,404
21280	ELIZABETH CITY	159,036	613,579
21284	ELIZABETH PUBLIC LIBRARY	8,766	33,822
21290	UNION CITY	68,645	264,842
21300	WEST NEW YORK TOWN	48,406	186,756
21373	MONMOUTH BEACH BD OF ED	1,308	5,046

Consistent with established methodology, payment amounts calculated using a payment date 21 months after the valuation date.

Present values as of July 1, 2020 exclude expected payments for fiscal year ending 2021.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX F – CHAPTER 19, P.L. 2009**

**Table F-1 (cont.)  
Local Employer Chapter 19, P.L. 2009 Deferral and Payment Schedule**

<b>Location Number</b>	<b>Location Name</b>	<b>Fiscal Year 2022 Payment</b>	<b>Present Value as of 7/1/2020</b>
21470	BOGOTA BOROUGH	\$ 5,293	\$ 20,419
21500	MOUNTAINSIDE BOROUGH	8,483	32,730
21560	GLOUCESTER CITY	18,940	73,073
21650	SECAUCUS TOWN	43,565	168,079
21653	SECAUCUS TOWN BD OF ED	22,696	87,565
21690	FREEHOLD BOROUGH	18,276	70,510
21700	MANVILLE BOROUGH	14,249	54,974
21740	EWING TOWNSHIP	39,063	150,708
21760	SALEM CITY	11,946	46,091
21780	TRENTON CITY	242,625	936,076
21800	MAYWOOD BOROUGH	11,286	43,542
21850	CAMDEN CITY	149,024	574,951
21853	CAMDEN CITY BD OF ED	246,995	952,933
21910	PATERSON CITY	133,934	516,733
22030	VERONA TOWNSHIP	25,597	98,755
22050	CINNAMINSON TOWNSHIP	13,297	51,300
22113	HAWTHORNE BD OF ED	21,077	81,317
22150	HAWORTH BOROUGH	7,252	27,978
22180	CEDAR GROVE TOWNSHIP	16,931	65,323
22190	EMERSON BOROUGH	9,223	35,585
22220	HOWELL TOWNSHIP	55,897	215,657
22230	MILLTOWN BOROUGH	14,273	55,066
22310	FANWOOD BOROUGH	8,406	32,432
22350	MIDDLETOWN TOWNSHIP	74,191	286,239
22380	WALL TOWNSHIP	49,427	190,694
22440	SOMERDALE BOROUGH	5,873	22,659
22500	WILLINGBORO TOWNSHIP	37,915	146,278
22520	JEFFERSON TOWNSHIP	29,562	114,053
22533	PENNSVILLE TWP BD OF ED	15,895	61,323
22540	BOUND BROOK BOROUGH	10,393	40,099
22580	LYNDHURST TOWNSHIP	30,700	118,445
22583	LYNDHURST TWP BD OF ED	14,770	56,984
22620	PISCATAWAY TOWNSHIP	64,535	248,982
22710	WEST MILFORD TOWNSHIP	61,385	236,830
22720	RINGWOOD BOROUGH	16,229	62,614
22730	BLOOMINGDALE BOROUGH	10,844	41,836

Consistent with established methodology, payment amounts calculated using a payment date 21 months after the valuation date.

Present values as of July 1, 2020 exclude expected payments for fiscal year ending 2021.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX F – CHAPTER 19, P.L. 2009**

**Table F-1 (cont.)  
Local Employer Chapter 19, P.L. 2009 Deferral and Payment Schedule**

<b>Location Number</b>	<b>Location Name</b>	<b>Fiscal Year 2022 Payment</b>	<b>Present Value as of 7/1/2020</b>
22770	PARAMUS BOROUGH	\$ 67,359	\$ 259,880
22780	METUCHEN BOROUGH	15,397	59,402
22810	MOUNT ARLINGTON BOROUGH	7,283	28,098
22850	WINFIELD TOWNSHIP	1,468	5,665
22930	LITTLE FALLS TWP	11,770	45,410
22990	BERLIN BOROUGH	9,659	37,266
23020	GLOUCESTER TOWNSHIP	37,623	145,152
23030	SOUTH BRUNSWICK TOWNSHIP	81,156	313,110
23040	BARNEGAT TOWNSHIP	19,695	75,987
23070	PLEASANTVILLE CITY	22,481	86,732
23120	HOLMDEL TOWNSHIP	21,129	81,517
23130	NORTH HALEDON BOROUGH	10,388	40,079
23170	RUNNEMEDE BOROUGH	8,080	31,173
23273	LITTLE FERRY BD OF ED	5,673	21,887
23300	BUENA VISTA TOWNSHIP	5,639	21,756
23323	MINE HILL TWP BD OF ED	2,401	9,262
23340	WEST PATERSON BOROUGH	12,735	49,133
23343	WOODLAND PARK BD OF ED	8,148	31,434
23350	NORWOOD BOROUGH	6,449	24,880
23360	MARLBORO TOWNSHIP	44,700	172,458
23400	WINSLOW TOWNSHIP	32,878	126,848
23490	PINE HILL BOROUGH	5,189	20,020
23510	LEBANON TOWNSHIP	5,269	20,328
23560	WEST AMWELL TOWNSHIP	3,560	13,736
23570	EGG HARBOR TOWNSHIP	35,032	135,159
23630	SOUTH AMBOY CITY	16,689	64,388
23660	WEST DEPTFORD TOWNSHIP	36,060	139,123
23700	LAMBERTVILLE CITY	4,702	18,140
23823	MILLSTONE TOWNSHIP BD OF ED	17,308	66,777
30070	NEWARK HOUSING AUTHORITY	165,166	637,230
30130	TRENTON HOUSING AUTHORITY	18,229	70,331
30160	ATLANTIC CITY HOUSING AUTHORITY	21,026	81,121
30200	ORANGE CITY HOUSING AUTHORITY	5,639	21,756
30220	HOBOKEN HOUSING AUTHORITY	15,596	60,171
30250	NEW BRUNSWICK HOUSING AUTHORITY	9,062	34,963
30360	IRVINGTON HOUSING AUTH	9,950	38,388

Consistent with established methodology, payment amounts calculated using a payment date 21 months after the valuation date.

Present values as of July 1, 2020 exclude expected payments for fiscal year ending 2021.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX F – CHAPTER 19, P.L. 2009**

**Table F-1 (cont.)  
Local Employer Chapter 19, P.L. 2009 Deferral and Payment Schedule**

<b>Location Number</b>	<b>Location Name</b>	<b>Fiscal Year 2022 Payment</b>	<b>Present Value as of 7/1/2020</b>
30400	UNION CITY HOUSING AUTHORITY	\$ 10,011	\$ 38,622
30430	NEW BRUNSWICK PARKING AUTHORITY	14,108	54,429
30450	MORRISTOWN HOUSING AUTHORITY	5,908	22,795
30460	PASSAIC CITY HOUSING AUTHORITY	9,628	37,146
30480	WEST NEW YORK HOUSING AUTHORITY	7,648	29,505
30490	NORTH BERGEN HOUSING AUTHORITY	8,397	32,397
30510	PATERSON HOUSING AUTHORITY	16,623	64,135
30520	HACKENSACK HOUSING AUTHORITY	4,816	18,580
30550	GARFIELD HOUSING AUTHORITY	5,915	22,820
30570	CAMDEN CITY HOUSING AUTHORITY	20,959	80,861
30580	TRENTON PARKING AUTHORITY	1,507	5,815
30590	PLAINFIELD HOUSING AUTHORITY	9,745	37,599
30600	EDISON TWP HOUSING AUTHORITY	2,550	9,840
30660	UNION CITY PARKING AUTHORITY	4,088	15,772
30710	HADDON TWP FIRE DISTRICT 1	116	448
30770	PATERSON PARKING AUTHORITY	7,508	28,969
30790	FRANKLIN TWP SEWERAGE AUTH	6,237	24,064
30830	HAMILTON TWP FIRE DISTRICT 2	129	496
30900	GLOUCESTER TWP M U A	10,101	38,971
30970	GUTTENBERG HOUSING AUTHORITY	3,577	13,802
31000	OCEAN CITY HOUSING AUTHORITY	1,158	4,466
31030	FRANKLIN TWP HOUSING AUTHORITY	631	2,434
31050	JERSEY CITY INCINERATOR AUTH	42,371	163,472
31070	MILLVILLE HOUSING AUTHORITY	9,155	35,322
31170	RARITAN VALL COMMUNITY COLLEGE	38,237	147,522
31190	BRIDGETON CITY HOUSING AUTH	5,118	19,744
31250	JERSEY CITY MUNICIPAL UT. AUTH	27,111	104,599
31350	CLEMENTON HOUSING AUTHORITY	995	3,837
31360	BERGEN CO HOUSING AUTHORITY	17,457	67,351
31370	MERCER CO IMPROVEMENT AUTHORITY	10,496	40,496
31520	CARLSTADT SEWERAGE AUTHORITY	600	2,313
31560	WOODBINE MUNICIPAL UTIL AUTH	407	1,569
31600	WILDWOOD CITY HOUSING AUTHORITY	2,409	9,296
31640	RARITAN TWP MUN UTIL AUTHORITY	8,507	32,822
31680	OCEAN GROVE BD OF FIRE COMM	149	576
31710	WEYMOUTH TWP MUN UTIL AUTHORITY	80	310

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**APPENDIX F – CHAPTER 19, P.L. 2009**

**Table F-1 (cont.)  
Local Employer Chapter 19, P.L. 2009 Deferral and Payment Schedule**

<b>Location Number</b>	<b>Location Name</b>	<b>Fiscal Year 2022 Payment</b>	<b>Present Value as of 7/1/2020</b>
31720	NJ SPORTS & EXPOSITION AUTH	\$ 109,193	\$ 421,280
31730	EDGEWATER HOUSING AUTHORITY	1,491	5,751
31870	DOVER TOWN HOUSING AUTHORITY	728	2,810
31890	BURLINGTON CO AVA COMM	1,461	5,637
31970	NEPTUNE TWP SEWERAGE AUTHORITY	7,606	29,345
32250	NEWTON TOWN HOUSING AUTHORITY	768	2,965
32300	DOVER TWP PARKING AUTHORITY	1,422	5,486
32350	GLOUCESTER TWP FIRE DISTRICT 2	478	1,845
32360	HUNTERDON CO SOIL CONSERV DIST	3,175	12,248
32420	CAPE ATL SOIL CONSRVTN DIST	2,240	8,644
32440	TOMS RIVER FIRE DISTRICT # 2	742	2,864
32460	BERGEN COUNTY SOIL CONSER DIST	1,786	6,890
32530	COLLINGSWOOD BORO HOUSING AUTH	809	3,120
32660	MID BERGEN REG HEALTH COMM	1,225	4,725
32720	BURLINGTON CO SOIL CON DIST	1,778	6,859
32870	MADISON BORO HOUSING AUTHORITY	3,316	12,794
32900	NJ TRANSIT CORPORATION	19,731	76,123
32950	NEPTUNE CITY HOUSING AUTHORITY	336	1,298
33000	CAMDEN CO SOIL CONSERVATN DIST	1,608	6,203
33020	MONMOUTH OCEAN ED SERV COMM	24,459	94,365
34120	GLOUCESTER TWP FIRE DISTRICT 3	142	547
34240	WARREN CO AUDIO VISUAL AIDS	186	718
34260	OCEAN TWP FIRE DISTRICT 2	852	3,287
34270	CAMDEN CO IMPROVEMENT AUTHORITY	4,926	19,007
34380	SALEM CITY MUNICIPAL PORT AUTH	150	578
34400	BRICK TWP JOINT BD OF FIRE COMM	2,973	11,469
34420	UNION CO UTILITIES AUTHORITY	6,267	24,180
34500	SOUTH TOMS RIVER SEWERAGE AUTH	177	682
34560	LAKESWOOD TWP FIRE DISTRICT 1	643	2,481
34630	CAMDEN CO HEALTH SERVICES CTR	125,135	482,787
34640	NJ SCHOOL BD ASSOC INS GROUP	16,203	62,512
34680	DELAWARE RIVER JT TOLL BRG COM	1,751	6,755
34690	DELRAN TWP FIRE DISTRICT #1	788	3,040
34710	NORTH BERGEN M.U.A.	16,792	64,786
34770	HOWELL TWP FIRE DISTRICT 3	231	892
34840	EAST BRUNSWICK TWP FIRE DIST #2	1,244	4,799

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**APPENDIX F – CHAPTER 19, P.L. 2009**

Table F-1 (cont.) Local Employer Chapter 19, P.L. 2009 Deferral and Payment Schedule			
Location Number	Location Name	Fiscal Year 2022 Payment	Present Value as of 7/1/2020
34880	BURLINGTON TWP FIRE DISTRICT 1	\$ 694	\$ 2,679
34940	WILDWOODS JOINT CONSTRUCTION	325	1,253
34990	TRENTON DOWNTOWN ASSOCIATION	1,225	4,725
35130	WESTVILLE FIRE DISTRICT # 1	497	1,918
35200	VINELAND-MILLVILLE URB. ENT.ZON	583	2,249
35210	NORTH HUDSON REG. COMM CENTER	3,925	15,143
35250	NJ REDEVELOPMENT AUTHORITY	5,161	19,913
35290	HAZLET TWP FIRE DIST	612	2,359
35370	OLD BRIDGE TWP DISTRICT 1	33	128
35400	SOARING HEIGHTS CHARTER SCHOOL	1,463	5,644
35420	JERSEY CITY COMM CHARTER SCHOOL	8,556	33,010
35530	EMILY FISHER CHARTER SCHOOL	8,715	33,622
35620	EAST ORANGE COMMUNITY CHART SCH	8,367	32,279
35670	RED BANK CHARTER SCHOOL	1,269	4,895
35690	INTERNATIONAL CHARTER SCHOOL	636	2,452
35900	CLASSICAL ACAD. CHARTER SCHOOL	290	1,118
36500	CAMDEN CITY REDEVELOPMENT AGENCY	6,952	26,822
37800	ENGLEWOOD ON THE PALISADES CHAR	1,163	4,486
38400	HUDSON CO ECONOMIC DEVELOP CORP	997	3,846
38500	HOWELL TWP FIRE DISTRICT 4	135	520
39100	BRICK TWP FIRE DISTRICT 1	140	541
39200	QUEEN CITY ACADEMY CHARTER SCH	2,419	9,332
39800	WALL TOWNSHIP FIRE DISTRICT 3	1,044	4,028
40150	BORDENTOWN REG SCH DISTRICT	22,368	86,297
40340	TOMS RIVER SCHOOL DIST	156,078	602,167
40380	WOODSTOWN-PILESGROVE REG SCH	12,872	49,662
41000	RAHWAY CITY REDEVELOPMENT AG	964	3,720
41100	UNIVERSITY ACADEMY CHARTER HS	1,171	4,518
41400	BAYSHORE JOINTURE COMMISSION	2,793	10,776
41600	TEAM ACADEMY CHARTER SCHOOL	4,037	15,573
42000	CARTERET REDEVELOPMENT AGENCY	214	824
42400	PATERSON CHART SCH-SCIENCE/TECH	2,924	11,281
43800	SECAUCUS MUNICIPAL UTIL. AUTH.	5,555	21,433
43900	MONTCLAIR PARKING AUTHORITY	776	2,995

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**APPENDIX F – CHAPTER 19, P.L. 2009**

**Table F-1 (cont.)  
Local Employer Chapter 19, P.L. 2009 Deferral and Payment Schedule**

<b>Location Number</b>	<b>Location Name</b>	<b>Fiscal Year 2022 Payment</b>	<b>Present Value as of 7/1/2020</b>
44600	MIDDLE TOWNSHIP FIRE DIST #1	\$ 994	\$ 3,835
45000	CUMBERLAND-SALEM CONSERV. DIST.	1,402	5,410
45100	BRICK TOWNSHIP FIRE DIST 2	146	564
45300	FREEDOM ACADEMY CHARTER SCHOOL	974	3,757
45800	BLOOMFIELD PARKING AUTHORITY	609	2,350
50033	ALLAMUCHY BD OF ED	3,425	13,212
50050	ALLENTOWN BOROUGH	1,881	7,257
50130	AUDUBON BOROUGH	9,120	35,187
50250	BERKELEY TOWNSHIP MUNICIPAL BLD	43,652	168,414
50410	BROOKLAWN BOROUGH	3,553	13,708
50413	BROOKLAWN BORO BD OF ED	2,270	8,758
50420	BUENA BOROUGH	4,634	17,880
50530	CHESILHURST BOROUGH	1,590	6,133
50733	DENNIS TWP BD OF ED	7,065	27,259
50770	DUNELLEN BOROUGH	6,861	26,471
50790	EASTAMPTON TOWNSHIP	3,020	11,651
50830	EAST HANOVER TOWNSHIP	28,256	109,016
50840	EAST NEWARK BOROUGH	888	3,427
50930	ENGLEWOOD CLIFFS BOROUGH	8,470	32,678
50940	ENGLISHTOWN BOROUGH	2,755	10,629
50973	FAIRFIELD TWP BD ED (CUMBERLND)	2,377	9,170
51080	FRANKLIN TOWNSHIP (GLOUCESTER)	12,912	49,818
51093	FRANKLIN TWP BD OF ED (HUNTRDN)	2,136	8,242
51140	FRELINGHUYSEN TWP	1,258	4,855
51260	GUTTENBERG TOWN	6,859	26,463
51283	HAINESPORT TOWNSHIP BD OF ED	4,363	16,831
51290	HALEDON BOROUGH	9,649	37,229
51333	HAMPTON BOROUGH BD OF ED	1,199	4,625
51360	HARDWICK TOWNSHIP	1,590	6,133
51400	HARRISON TOWNSHIP (GLOUCESTER)	7,305	28,183
51470	HIGHTSTOWN BOROUGH	11,979	46,218
51520	HOPATCONG BOROUGH	21,909	84,526
51640	JERSEY CITY	113,646	438,458
51670	KNOWLTON TOWNSHIP	3,073	11,855
51730	LAWNSIDE BOROUGH	5,687	21,941
51790	LINDENWOLD BOROUGH	13,394	51,676

Consistent with established methodology, payment amounts calculated using a payment date 21 months after the valuation date.

Present values as of July 1, 2020 exclude expected payments for fiscal year ending 2021.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
JULY 1, 2020 ACTUARIAL VALUATION**

**APPENDIX F – CHAPTER 19, P.L. 2009**

**Table F-1 (cont.)  
Local Employer Chapter 19, P.L. 2009 Deferral and Payment Schedule**

<b>Location Number</b>	<b>Location Name</b>	<b>Fiscal Year 2022 Payment</b>	<b>Present Value as of 7/1/2020</b>
51970	MANCHESTER TOWNSHIP	\$ 29,268	\$ 112,917
52000	MANSFIELD TOWNSHIP (WARREN)	5,161	19,913
52050	ABERDEEN TOWNSHIP	17,085	65,915
52060	MAURICE RIVER TOWNSHIP	4,183	16,139
52203	MONROE TWP BD OF ED (GLOUCESTR)	26,428	101,964
52340	NATIONAL PARK BOROUGH	2,529	9,758
52360	NEWARK CITY	539,793	2,082,581
52363	NEWARK PUBLIC SCHOOLS	611,668	2,359,882
52620	PENNS GROVE BOROUGH	4,656	17,964
52720	PLAINSBORO TOWNSHIP	27,824	107,349
52770	PROSPECT PARK BOROUGH	3,494	13,480
52920	ROSELAND BOROUGH	14,873	57,383
52960	SADDLE BROOK TOWNSHIP	18,318	70,674
53100	LAKE COMO BOROUGH	4,626	17,847
53110	SOUTH BOUND BROOK BOROUGH	4,498	17,355
53140	SOUTH TOMS RIVER BOROUGH	2,428	9,369
53260	SUSSEX BOROUGH	2,194	8,463
53360	UNION BEACH BOROUGH	6,838	26,380
53420	UPPER SADDLE RIVER BORO	9,884	38,133
53510	WANAQUE BOROUGH	13,091	50,505
53800	WOODBURY HEIGHTS BOROUGH	4,984	19,227
53823	WOODLAND TWP BD OF ED	1,775	6,848
55130	CAPE MAY CO BRIDGE COMM	6,369	24,573
55450	BERKELEY TWP SEWERAGE AUTHORITY	4,912	18,950
55510	HADDON TOWNSHIP HOUSING AUTH	943	3,638
55520	PRINCETON HOUSING AUTHORITY	2,149	8,293
55950	HIGHLANDS HOUSING AUTH	1,053	4,061
55970	PLEASANTVILLE HOUSING AUTH	3,972	15,325
56120	RED BANK BORO HOUSING AUTH	2,401	9,263
56140	CARTERET HOUSING AUTHORITY	4,820	18,595
56170	EDGEWATER PARK SEWERAGE AUTH	324	1,249
56300	KEANSBURG BORO HOUSING AUTH	1,298	5,006
56320	NEWARK PARKING AUTHORITY	749	2,890
56370	BEVERLY CITY HOUSING AUTHORITY	669	2,582
56400	HIGHLAND PARK HOUSING AUTHORITY	1,511	5,831
56440	FLORENCE TWP HOUSING AUTHORITY	373	1,438

Consistent with established methodology, payment amounts calculated using a payment date 21 months after the valuation date.

Present values as of July 1, 2020 exclude expected payments for fiscal year ending 2021.



**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX F – CHAPTER 19, P.L. 2009**

Table F-1 (cont.) Local Employer Chapter 19, P.L. 2009 Deferral and Payment Schedule			
Location Number	Location Name	Fiscal Year 2022 Payment	Present Value as of 7/1/2020
56480	BOONTON HOUSING AUTHORITY	\$ 1,351	\$ 5,211
57270	SHORE REGIONAL H S DISTRICT	5,835	22,512
57530	NEW HANOVER TWP BD OF ED	1,492	5,757
60023	HUDSON CO SCHOOLS OF TECHNOLOGY	62,138	239,735
60030	PASSAIC COUNTY	483,230	1,864,355
60031	PASSAIC CO BD OF SOCIAL SERVICE	191,327	738,161
60050	WATERFRONT COMM OF NY HARBOR	1,579	6,091
70023	GUTTENBERG BORO BD OF ED	4,082	15,750
79100	NJ FIREMENS HOME	<u>14,346</u>	<u>55,349</u>
<b>Total</b>		<b>\$ 9,040,135</b>	<b>\$ 34,877,843</b>

Consistent with established methodology, payment amounts calculated using a payment date 21 months after the valuation date.

Present values as of July 1, 2020 exclude expected payments for fiscal year ending 2021.

**APPENDIX G – GLOSSARY OF TERMS**

**1. Actuarial Assumptions**

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

**2. Actuarial Cost Method**

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

**3. Actuarial Gain/(Loss)**

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

**4. Actuarial Liability**

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

**5. Actuarial Present Value (Present Value)**

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

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

**6. Actuarial Valuation**

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

**APPENDIX G – 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.

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF NEW JERSEY  
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**APPENDIX G – 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.