



Judicial Retirement System of New Jersey

Actuarial Valuation Report as of July 1, 2020

Produced by Cheiron

April 2021

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
Letter of Transmittal	i
Section I Board Summary	1
Section II Assessment and Disclosure of Risk	13
Section III Assets	31
Section IV Liabilities	38
Section V Contributions.....	43
<u>Appendices</u>	
Appendix A Membership Information.....	45
Appendix B Actuarial Assumptions and Methods	51
Appendix C Summary of Plan Provisions	57
Appendix D Historical Data and Required Exhibits.....	61
Appendix E Glossary of Terms.....	65

LETTER OF TRANSMITTAL

April 1, 2021

State House Commission
Judicial 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 Commission Members:

We have performed the July 1, 2020 Actuarial Valuation of the Judicial Retirement System of New Jersey (JRS 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 State House Commission on July 2, 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 JRS, the DPB and the System auditors for the purposes described herein and in preparing financial reports in accordance with applicable law and annual report requirements. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

Sincerely,

Cheiron



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



Anu Patel, FSA, MAAA, EA
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**JUDICIAL 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 Judicial Retirement System of New Jersey,
- Past and expected future trends and risks to the System’s financial condition, and
- The State’s Statutory pension contribution for the Fiscal Year Ending (FYE) 2022.

In this Section we present a summary of the principal valuation results. This includes the basis upon 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 as well as 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 reporting requirements 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.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

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 State House Commission on July 2, 2020. The valuation is based on a 7.30% interest rate, which was recommended by the State Treasurer.

This valuation reflects plan provisions in effect as of July 1, 2020 and does not reflect the impact of any changes in benefits that may have been approved after the valuation date.

This report was prepared using census data and financial information as of July 1, 2020 provided by the Division of Pensions and Benefits and does not reflect any subsequent changes in the membership or the assets. Events following the valuation 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. Actual experience, both demographic and economic, will be reflected in subsequent valuations as experience emerges.

The Appropriations Act of Fiscal Year 2020 reduced the State pension contribution from the Statutory amount of \$52,327,505 to \$36,610,000.

The potential impact of the Appropriations Act of 2021 reduces the State pension contribution for Fiscal Year 2021 from the Statutory amount of \$65,752,030 to \$51,286,583 (78% of the Statutory contribution). 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 valuation report.

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

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.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

Key Results

Table I-1 below summarizes the key results of the valuation with respect to the System’s membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior year.

Table I-1 Summary of Key Valuation Results			
Valuation Date Fiscal Year Ending (FYE)	July 1, 2020 2022	July 1, 2019 2021	% Change
<u>Member Data</u>			
Contributing Actives	405	421	-3.8%
Non-Contributing Actives	10	5	100.0%
Deferred Vested Members	6	6	0.0%
Retirees and Beneficiaries ¹	640	633	1.1%
Total Members	1,061	1,065	-0.4%
Appropriation Payroll ²	\$ 76,970,450	\$ 76,627,036	0.4%
Annual Retirement Allowances	\$ 59,923,801	\$ 59,393,303	0.9%
<u>Assets and Liabilities</u>			
Actuarial Liability	\$ 809,796,408	\$ 790,936,136	2.4%
Actuarial Value of Assets (AVA) ³	214,861,100	207,308,308	3.6%
Unfunded Actuarial Liability/(Surplus)	\$ 594,935,308	\$ 583,627,828	1.9%
Funded Ratio (AVA)	26.5%	26.2%	0.3%
Market Value of Assets (MVA) ³	\$ 195,515,466	\$ 192,922,219	1.3%
Unfunded Actuarial Liability/(Surplus)	\$ 614,280,942	\$ 598,013,917	2.7%
Funded Ratio (MVA)	24.1%	24.4%	-0.3%
<u>Contribution Amounts</u>			
State Normal Cost at End of Year	\$ 17,175,129	\$ 17,294,294	-0.7%
Amortization Payment of UAL	49,896,970	48,457,736	3.0%
Total Statutory Contribution for FYE	\$ 67,072,099	\$ 65,752,030	2.0%
Percent Appropriated	100.0%	78.0%	22.0%
Net State Contribution	\$ 67,072,099	\$ 51,286,583	30.8%

¹ Retiree and Beneficiary counts do not include QDROs

² Annual compensation for contributing actives only

³ Includes discounted State appropriations receivable

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

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

- The Statutory contribution increased from \$65.8 million for FYE 2021 to \$67.1 million for FYE 2022 prior to any adjustments for the State phase-in of contributions.
- The funded ratio, the ratio of actuarial value of assets over liabilities, increased from 26.2% as of July 1, 2019 to 26.5% as of July 1, 2020. Using the market value of assets, the funded ratio decreased from 24.4% to 24.1%.
- The unfunded actuarial liability increased from \$583.6 million as of July 1, 2019 to \$594.9 million as of July 1, 2020 on an actuarial value of assets basis.
- During the year there was a total actuarial experience loss of \$0.7 million, consisting of an asset loss of \$5.1 million and a liability gain of \$4.4 million. The rate of return on the actuarial value of assets was 4.30% for FYE 2020 compared to the 7.30% assumed rate of return.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

Recent Trends

Although most of the attention given to the valuation reflects the most recently completed 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 the current year results and view them in the context of the System’s recent history as well as trends expected into the future. 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.

In reviewing the historic trends over the 10 year period, the declining funded status coupled with significant negative net cash flow in excess of the long term investment assumption for the assets each year 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

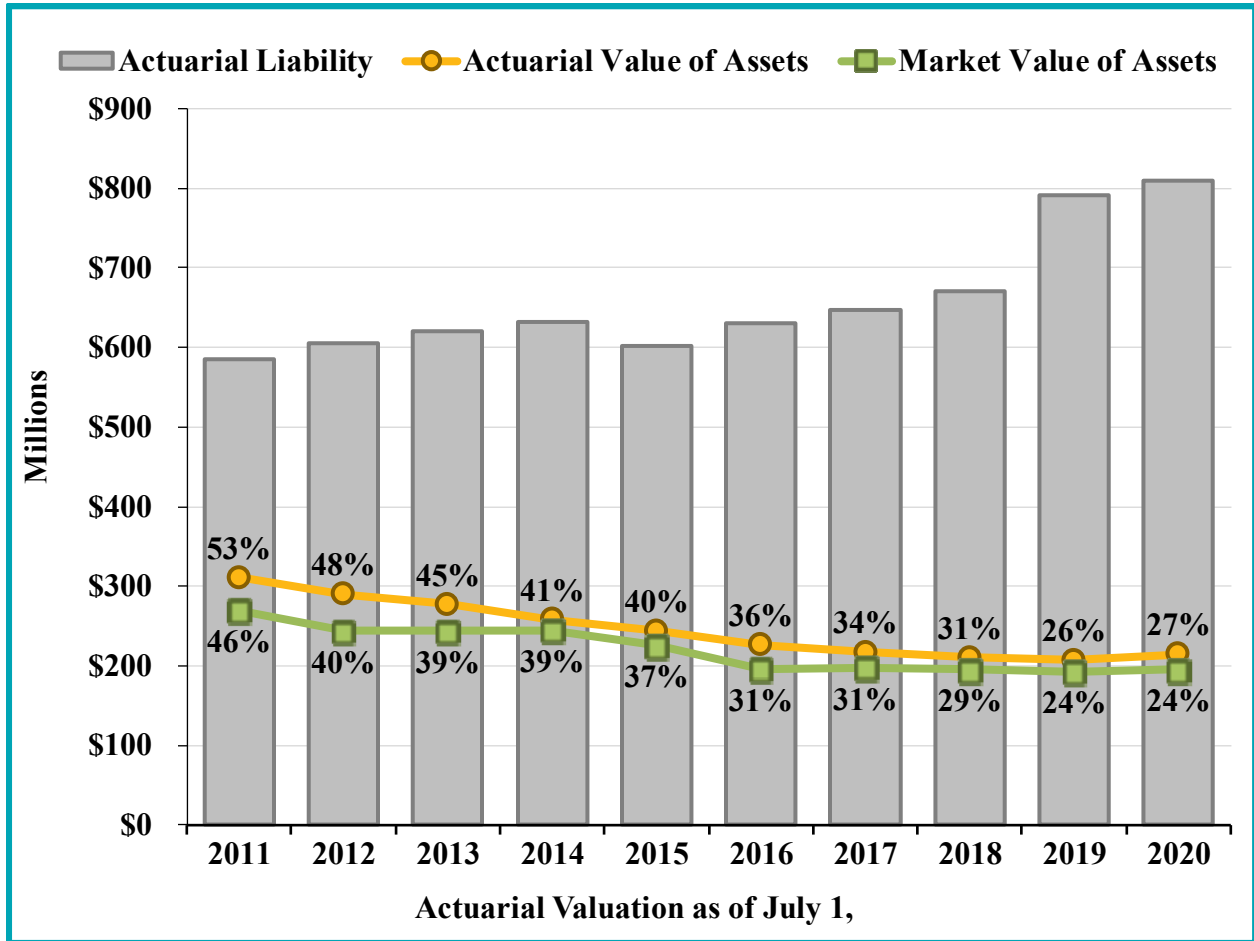
The gray bars represent the Actuarial Liability (AL). The green line is the Market Value of Assets (MVA) and the gold line is the Actuarial Value of Assets (AVA). The System’s funded ratio (ratio of assets to actuarial liability) on both a MVA basis and an AVA basis is shown next to the respective asset 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. The liability decrease in 2015 was due to assumption changes. The large liability increase in 2019 was due to the reduction in the assumed rate of investment return from 7.50% to 7.30% and assumption changes related to an experience study. The largest impact on the liability in 2019 was driven by the change in mortality rates which were updated to use the new public plan mortality tables published by the Society of Actuaries.

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.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY



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

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

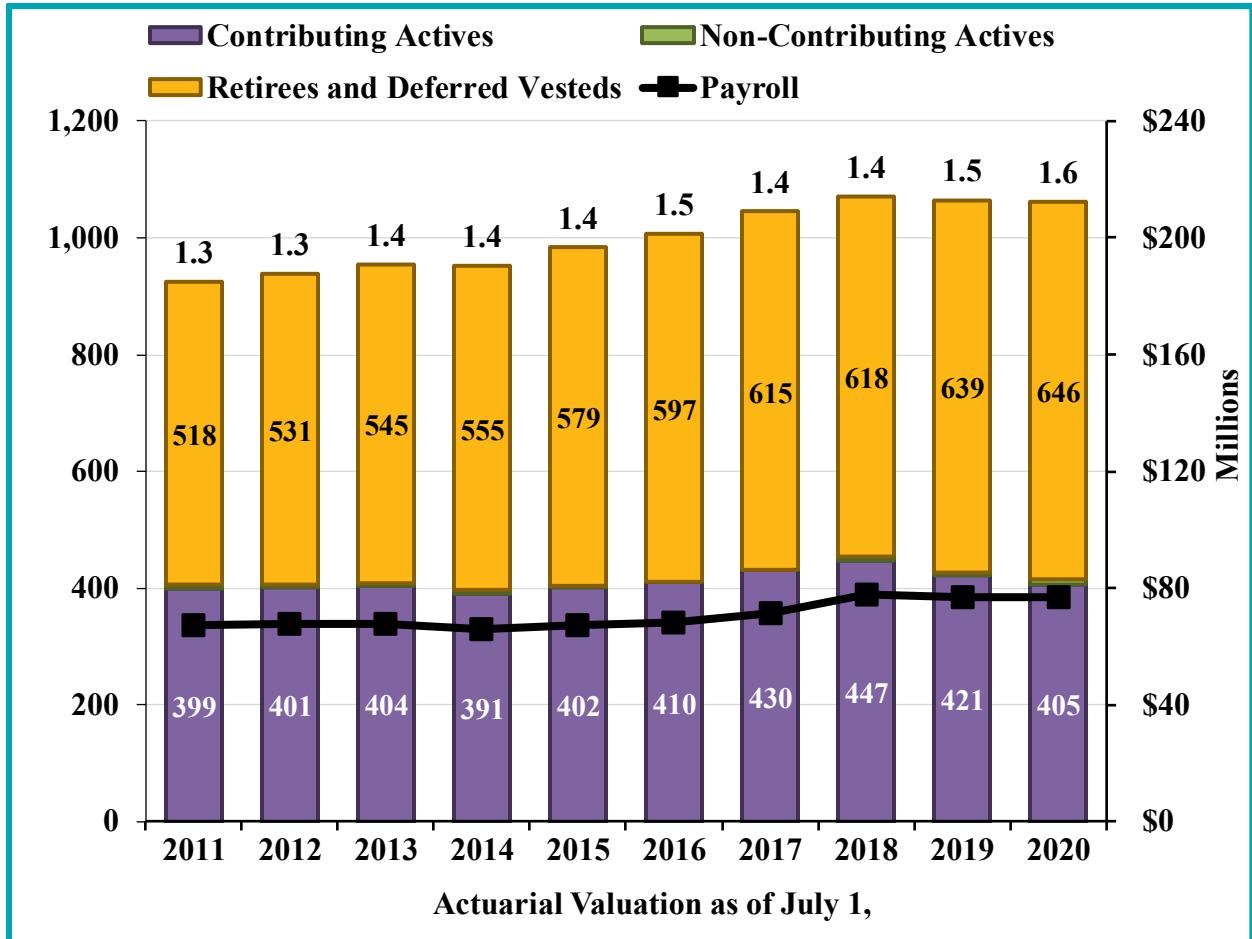
SECTION I – BOARD SUMMARY

Membership Trends

The graph below shows 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 ratio as the support ratio. The support ratio has generally 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 support ratio of 1.6, there are significantly more inactive members than active members implying that the risk factor is at a high level relative to other mature pension funds.

The numbers that are shown in the middle of the bars represent the number of actives or inactive members. The black line represents the appropriation payroll over the period, and corresponds with the scale on the right. For valuation years prior to 2018, appropriation payroll includes payroll for non-contributing actives and the appropriation payroll beginning in 2018 excludes the payroll for non-contributing actives.



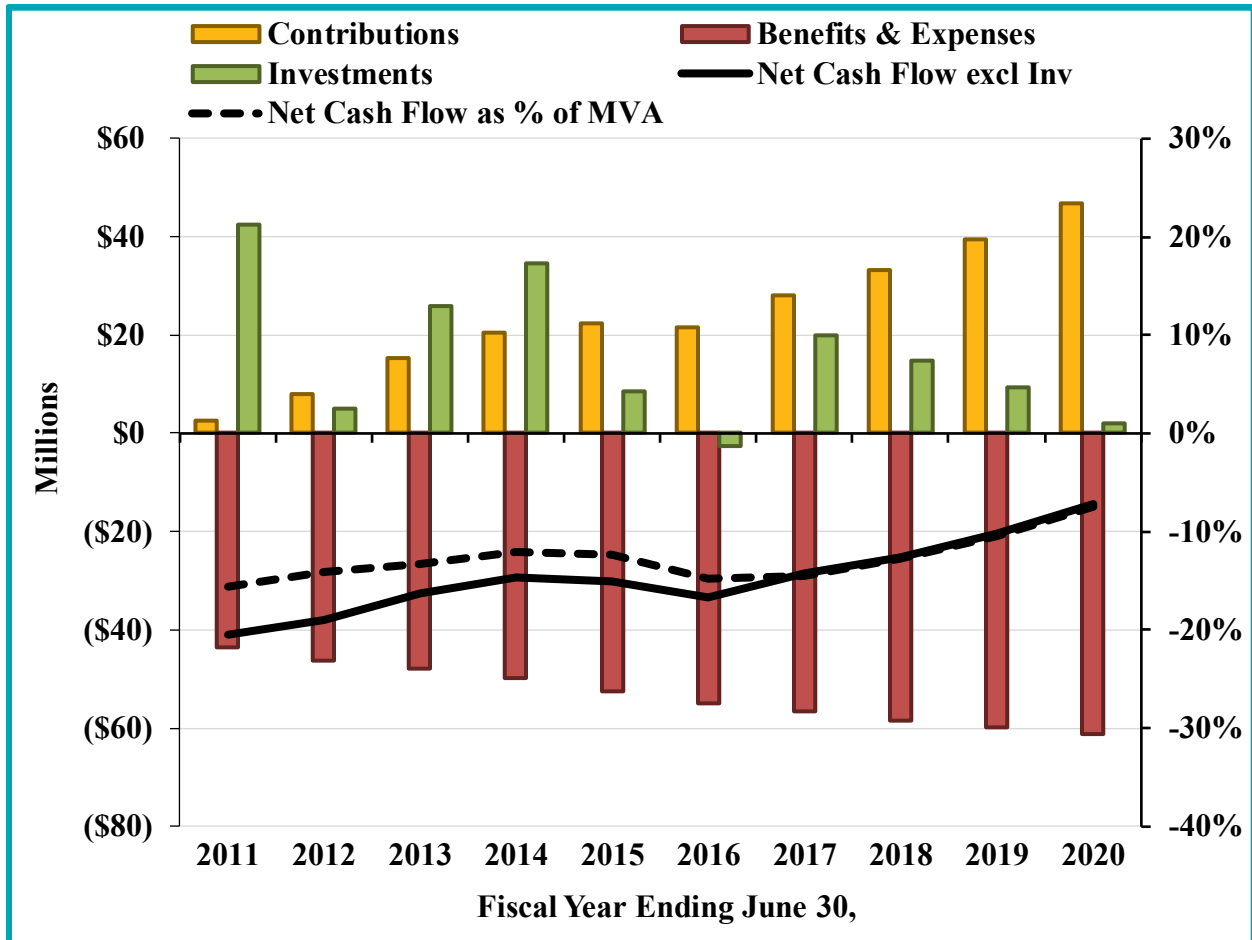
**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

Cash Flows

The following graph shows 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, which excludes investment returns, 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. For the 10 year period shown, the average net cash flow as a percent of assets is -12.7%, which is greater than the long term investment return assumption. This indicates that the plan is expected to defund with an increased risk of insolvency if the contributions do not catch up to cover a higher portion of the benefit payments and expenses. For 2020, the net cash flow of -7.5% implies that the assumed investment return of 7.3%, if achieved, will almost be sufficient to cover this difference. The negative cash flow has improved since 2017 because the State appropriation percentage has increased by approximately 10% per year.



JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION

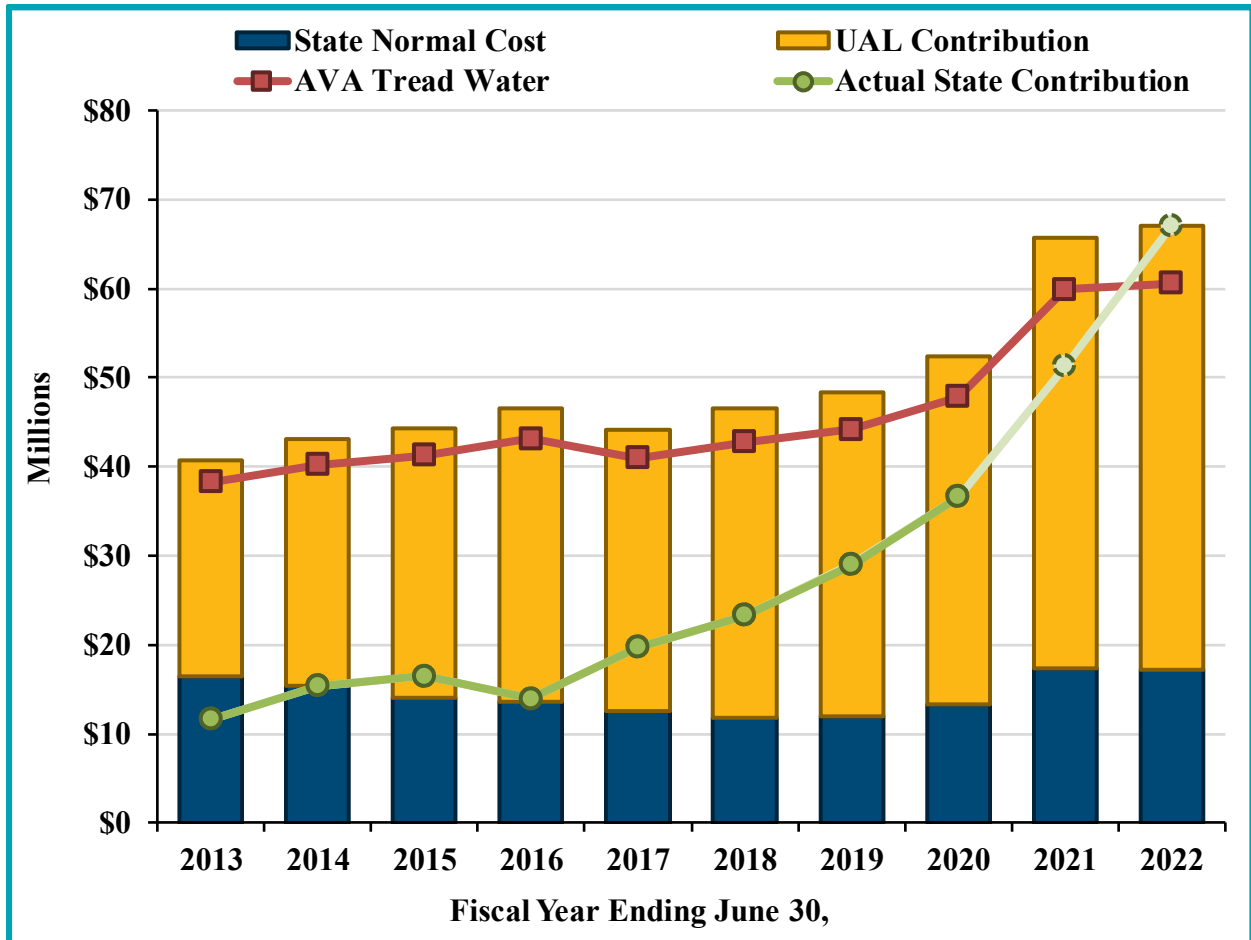
SECTION I – BOARD SUMMARY

Contributions

This graph shows the historical trends for the State contributions. The Statutory contributions are comprised of the State normal cost (blue bars) and the amortization of the UAL (gold bars). The green line shows the actual State 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 based on the State appropriating 78% and 100% of the Statutory contribution, respectively. The expected contributions are shown in Table I-1.

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

The graph 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 UAL is expected to grow from one year to the next. 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.



**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

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 Legislature in their adoption of Chapter 277, P.L. 2017 requiring the System to 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 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, we provide additional **stress testing** in Section II based on varying investment returns in the future. It is our opinion that 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). 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 System’s funded ratio on an Actuarial Value of Assets basis is projected to remain level for a year, as the valuation investment rate of return assumption decreases from 7.30% to 7.00%, and steadily increases thereafter, ultimately reaching 90% by 2050.

The bottom graph shows the contributions by fiscal year. The member contributions are in purple and the State contributions are in gold.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

The projection assumes the State appropriates 100% of the Statutory contribution in FYE 2022 and each year thereafter. Both the appropriated State contributions and the member contributions are shown in dollar amounts.

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 portion of the normal cost.

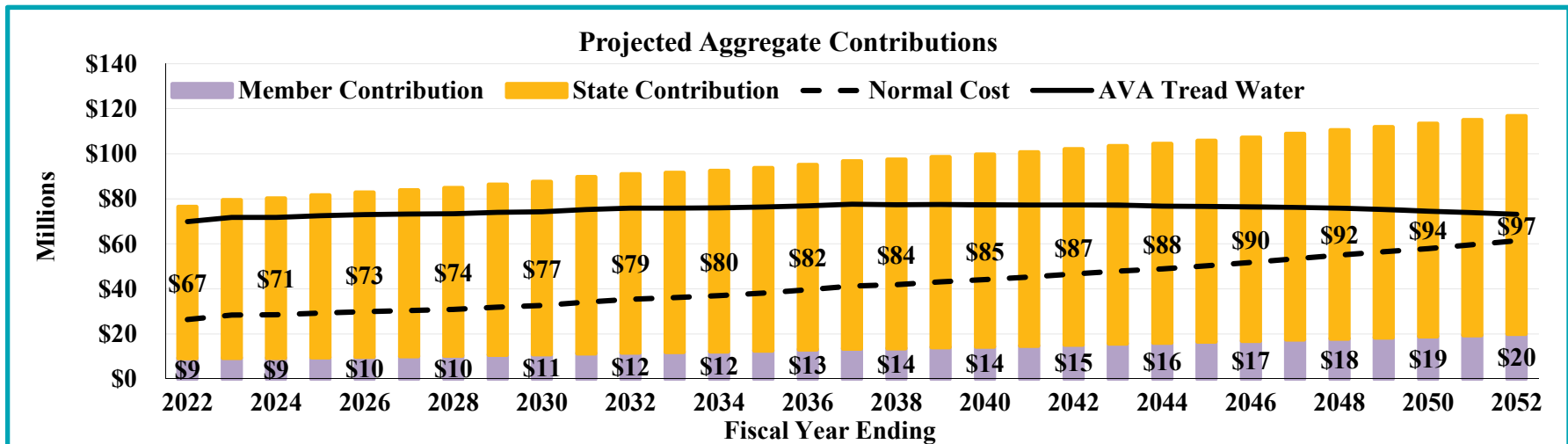
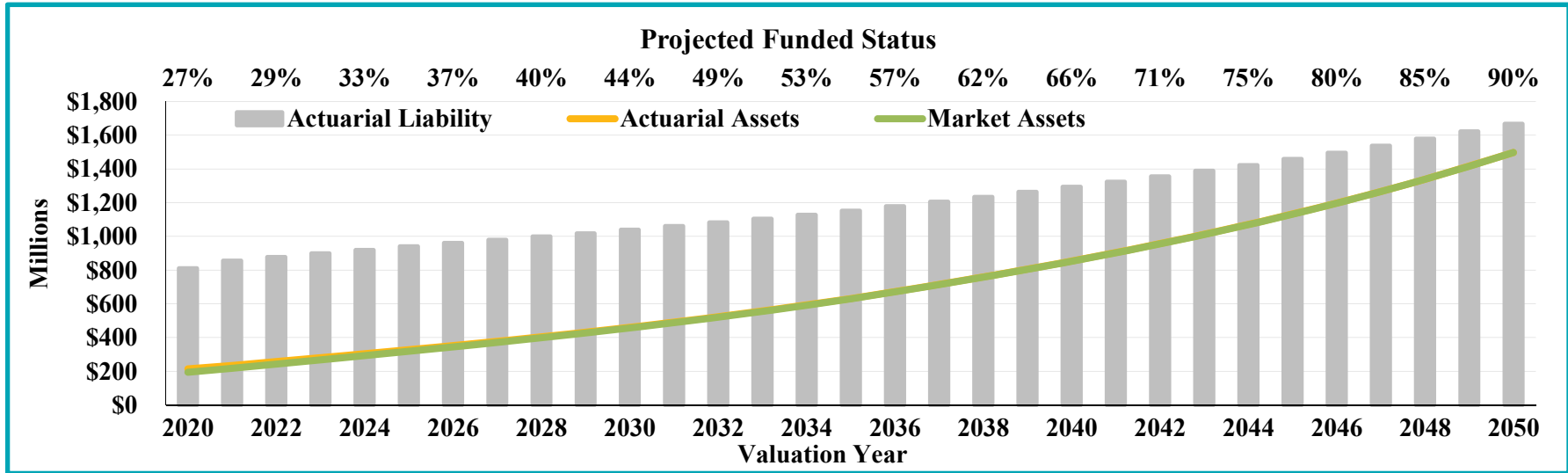
The solid black line is the tread water line based on the Actuarial Value of Assets. Because the tread water metric equals the normal cost plus interest on the UAL, the difference between the solid black line and the dashed black line is the interest on the UAL. When contributions fall below the solid black line, the UAL is expected to grow and the funded ratio falls. When the contributions exceed the solid line, as is the case throughout the projection period, the UAL is expected to decrease and the funded ratio is expected to increase.

The Statutory 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 increase more gradually. Once the appropriated amount equals the Statutory contribution, beginning in FYE 2022, the contributions reach the level necessary to begin to pay down the UAL and the tread water line begins to decrease relative to the Statutory contribution.

JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
 JULY 1, 2020 ACTUARIAL VALUATION

SECTION I – BOARD SUMMARY

Baseline: 7.0% return for all years



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 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.

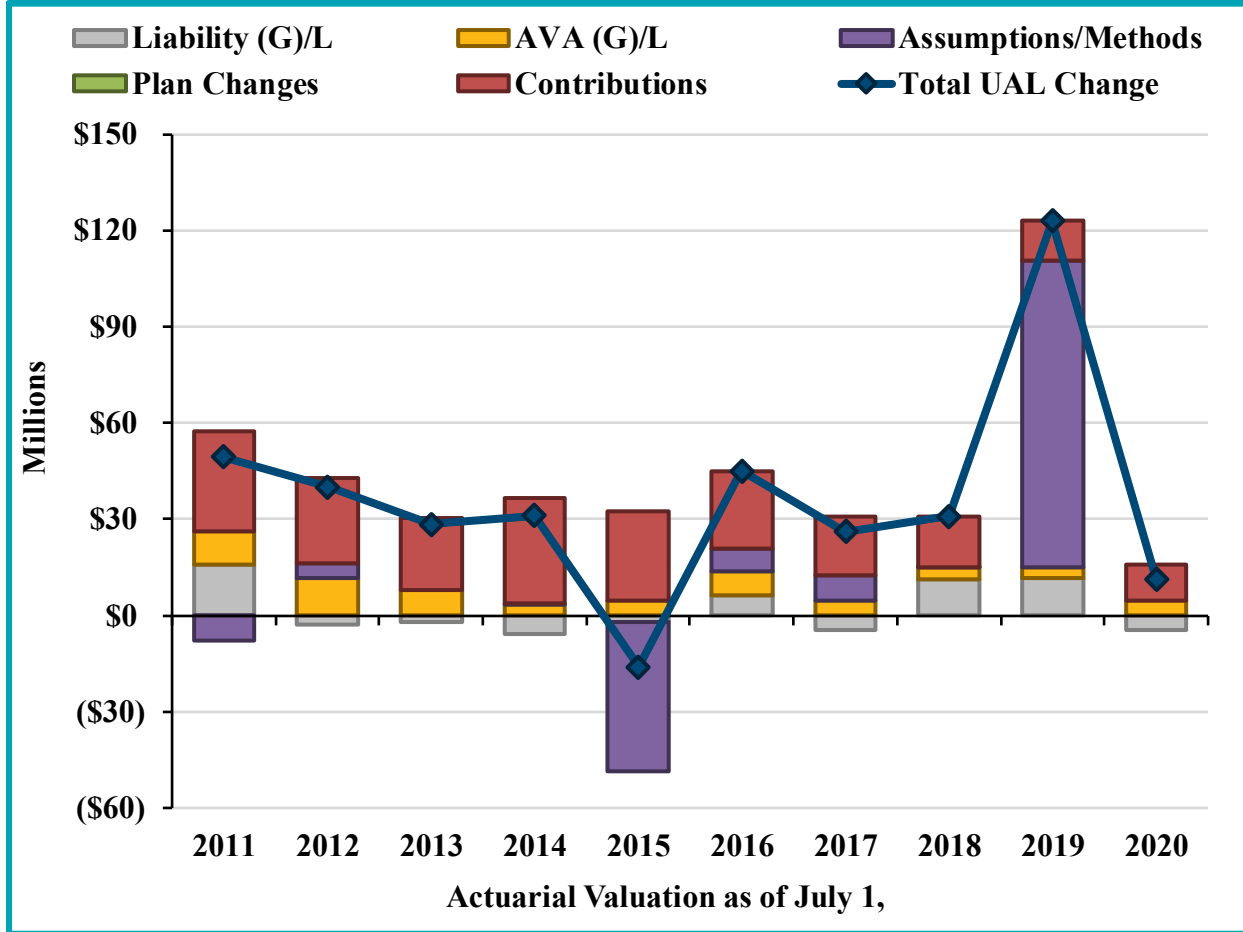
The chart below shows the components of changes in the Unfunded Actuarial Liability (UAL) for the System over the last 10 years, including investment gains and losses on the Actuarial Value of Assets, liability gains and losses, assumption and benefit changes, and contributions compared to the tread water level of contributions (normal cost plus interest on the UAL.) The net UAL change is shown by the dark blue line. Table II-1 below the chart summarizes the changes in the UAL over the last 10 years.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

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



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

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Discount Rate	7.95%	7.90%	7.90%	7.90%	7.90%	7.65%	7.50%	7.50%	7.30%	7.30%	
Source											
AVA (G)/L	\$ 10.1	\$ 11.6	\$ 8.2	\$ 3.4	\$ 4.5	\$ 7.5	\$ 4.8	\$ 3.6	\$ 3.6	\$ 4.8	\$ 62.2
Liability (G)/L	15.9	(2.7)	(2.0)	(5.6)	(2.1)	6.3	(4.6)	11.3	11.5	(4.4)	23.6
Assumptions/Methods	(7.8)	4.5	0.0	0.6	(46.4)	7.1	7.8	0.2	95.6	0.0	61.5
Plan Changes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Contributions ¹	31.3	26.6	22.3	32.8	27.9	24.1	18.0	15.9	12.3	10.9	222.1
Net UAL Change	\$ 49.5	\$ 40.0	\$ 28.4	\$ 31.2	\$ (16.1)	\$ 45.0	\$ 26.1	\$ 31.0	\$ 123.0	\$ 11.3	\$ 369.4

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

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

On a smoothed asset basis, the investment gains and losses (gold bars) from 2011 to 2020 reflect material investment losses driven in part by the market decline of 2008 and 2009, which were spread over the five successive years. In aggregate, over the 10-year period, investment losses have added approximately \$62.2 million to the 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 \$23.6 million over the 10-year period.

Assumption and method changes (purple bars) over the last 10 years have increased the UAL by approximately \$61.5 million. 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.

There have been no plan changes (green bars) over the last 10 years.

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 UAL by approximately \$222.1 million over the last 10 years.

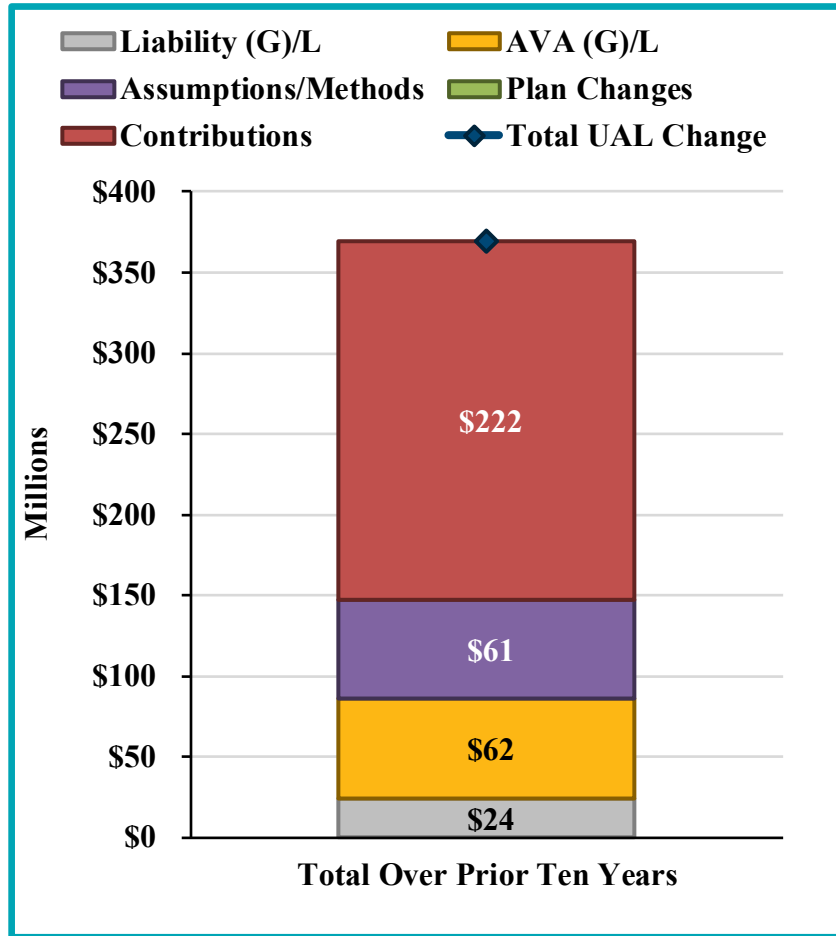
In general, the amortization methods used to determine the Statutory contributions are designed to collect more than the tread water level. However, contributions may be less than this threshold due to the State appropriating less than the Statutory contributions.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

The following chart shows the total changes to the UAL over the 10-year period.

Total Historical Change in UAL 2011-2020



Plan Maturity Measures

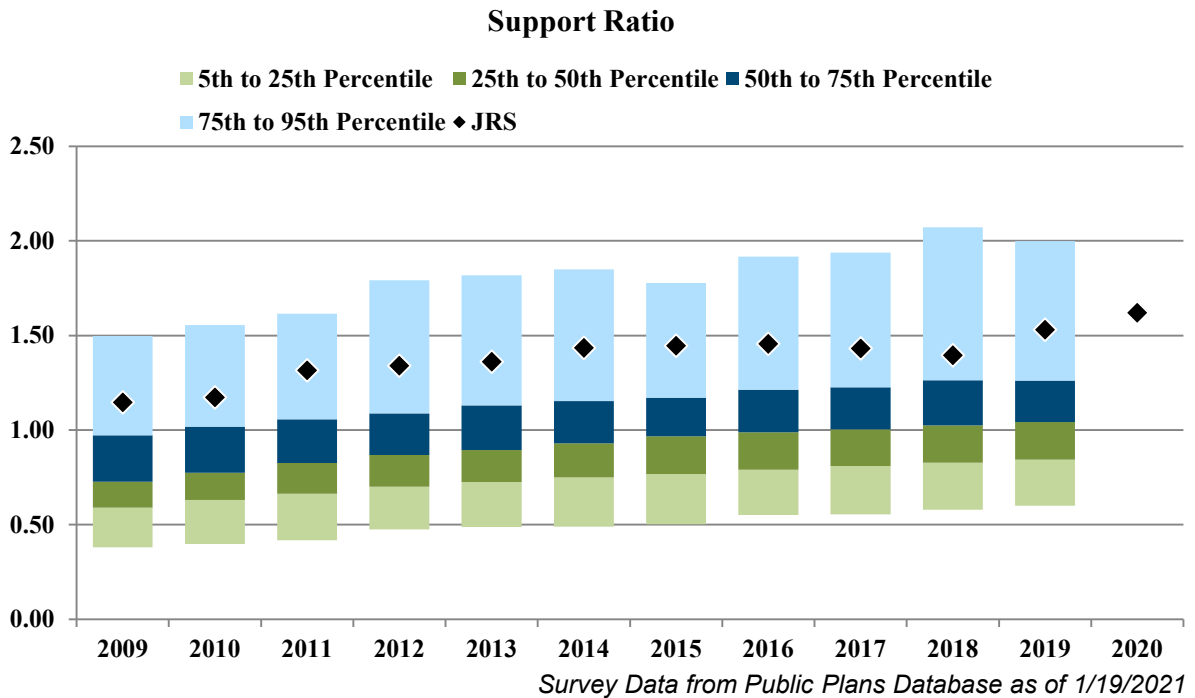
The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of the plan compared to other plans and how the maturity has changed over time.

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 indicates 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 5th to 95th percentile of support ratios for the plans in the Public Plans Database. The black diamond shows how JRS compares dating back to 2009. For the entire period shown, the JRS support ratio has been above the 75th percentile.

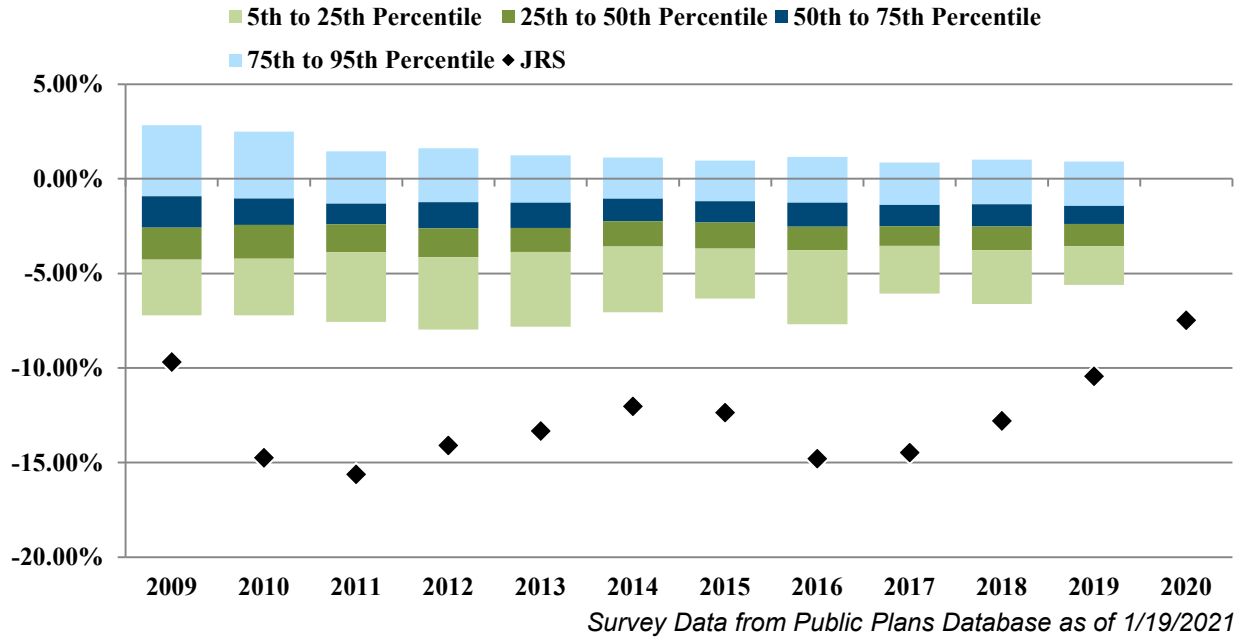
Net Cash Flow

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.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Net Cash Flow Rate



The chart above shows the distribution from the 5th to 95th percentile of net cash flow for the plans in the Public Plans Database. The black diamond shows how JRS compares. Since the Great Recession, JRS has been below the 5th percentile compared to the database of other public plans in terms of negative cash flow as a percentage of assets.

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 State House Commission 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.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

For stress testing purposes, we developed six hypothetical scenarios to illustrate the impact actual 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 following table using the capital market assumptions from the New Jersey Division of Investments (geometric return of 6.94%, standard deviation of 11.05%).

Distribution of Expected Average Annual Returns		
Percentile	1 Year	5 Year
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.

FYE	Theoretical Scenarios					
	1-Yr Shock		5-Yr Moderate		5-Yr Significant	
	Neg	Pos	Neg	Pos	Neg	Pos
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%

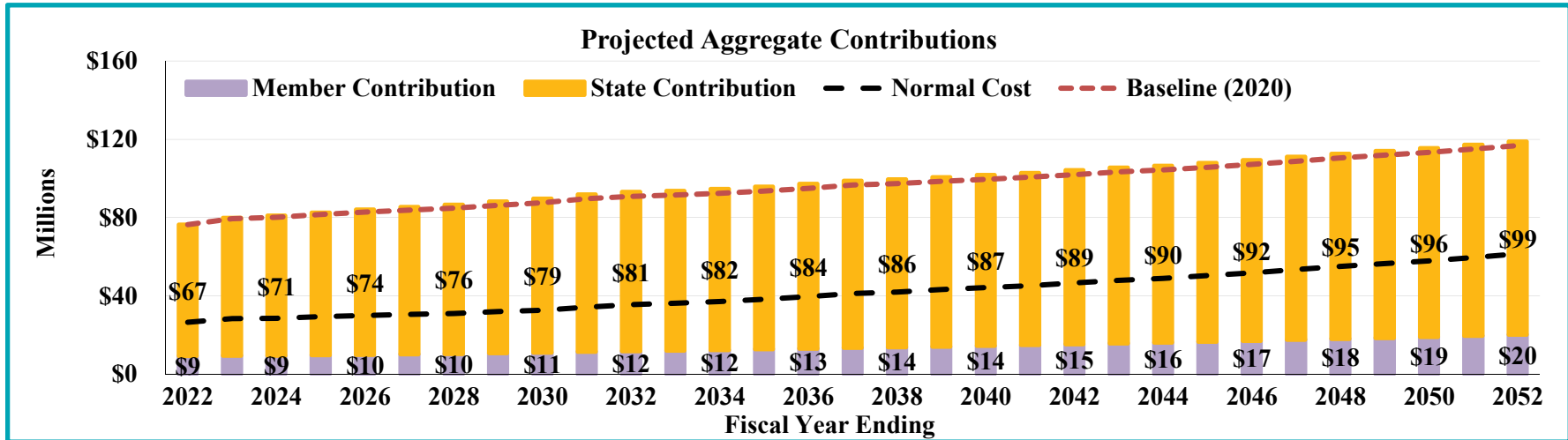
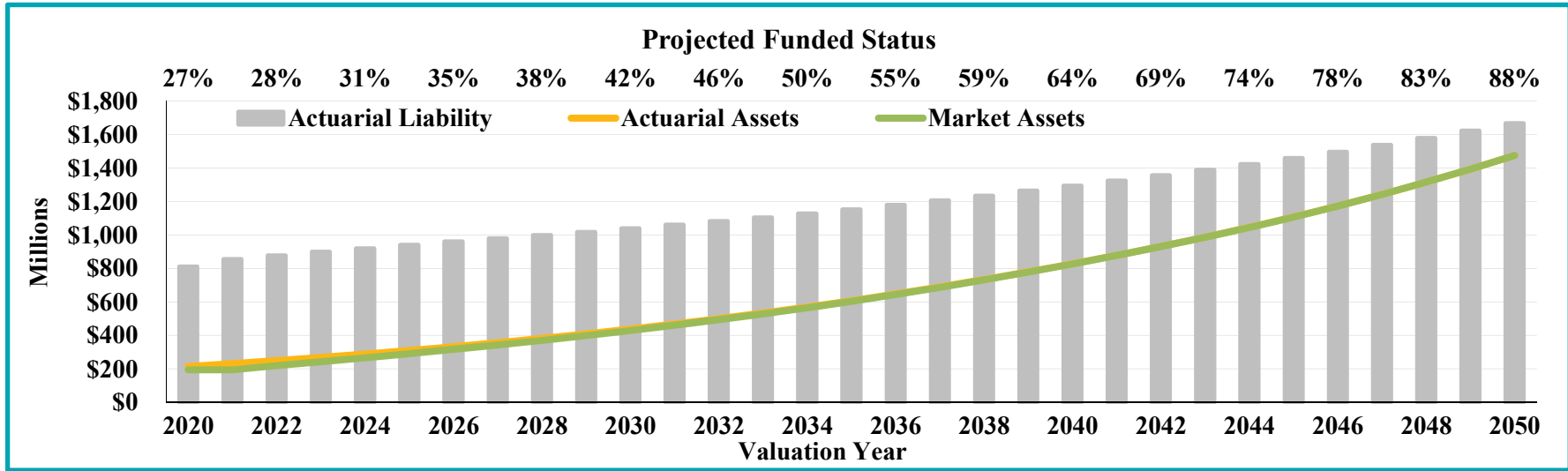
In reviewing each of these projections, it is the future trends, not necessarily the actual values, that are important to observe in consideration of the risks of the System and the potential volatility of future funded ratios and Statutory contribution levels.

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.

JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

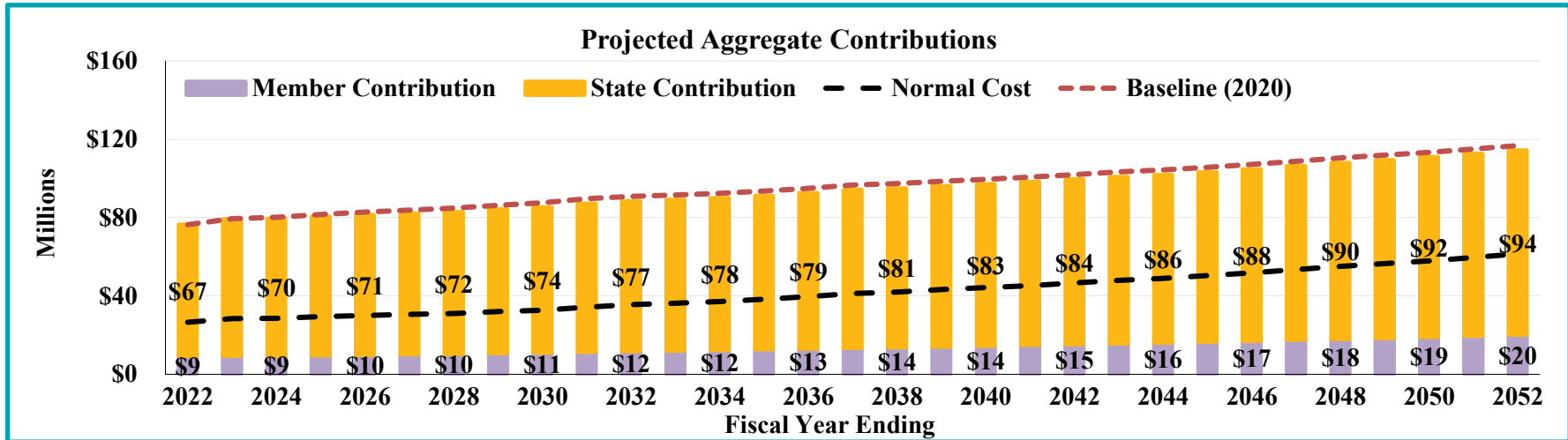
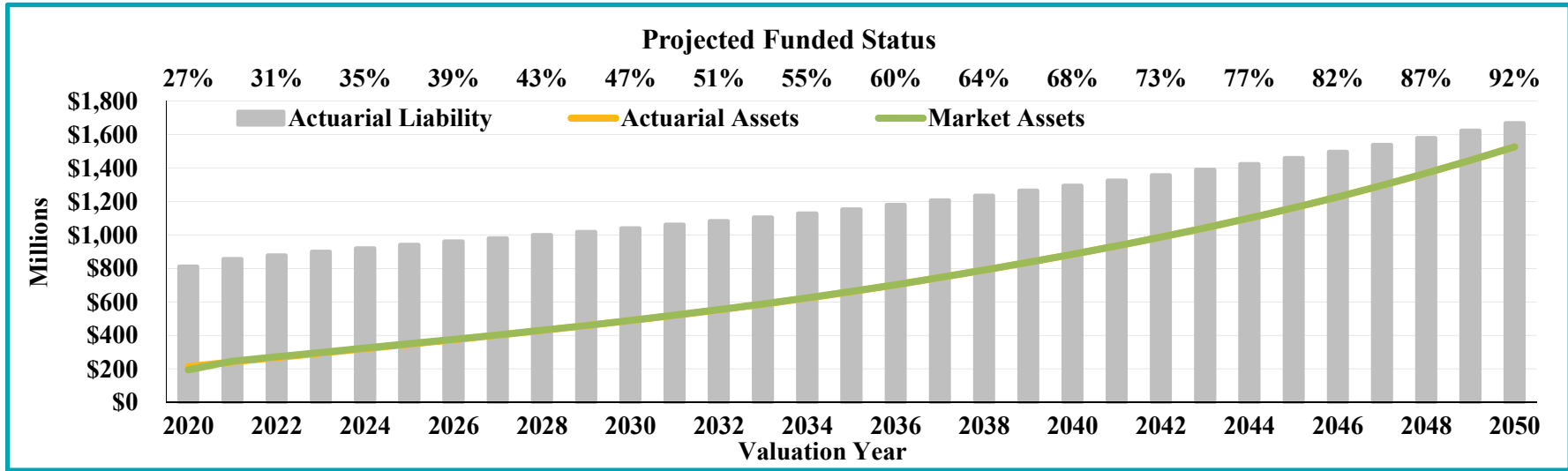
One-Year Negative Shock Scenario: -9.7% return FYE 2021, 7.0% after



JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

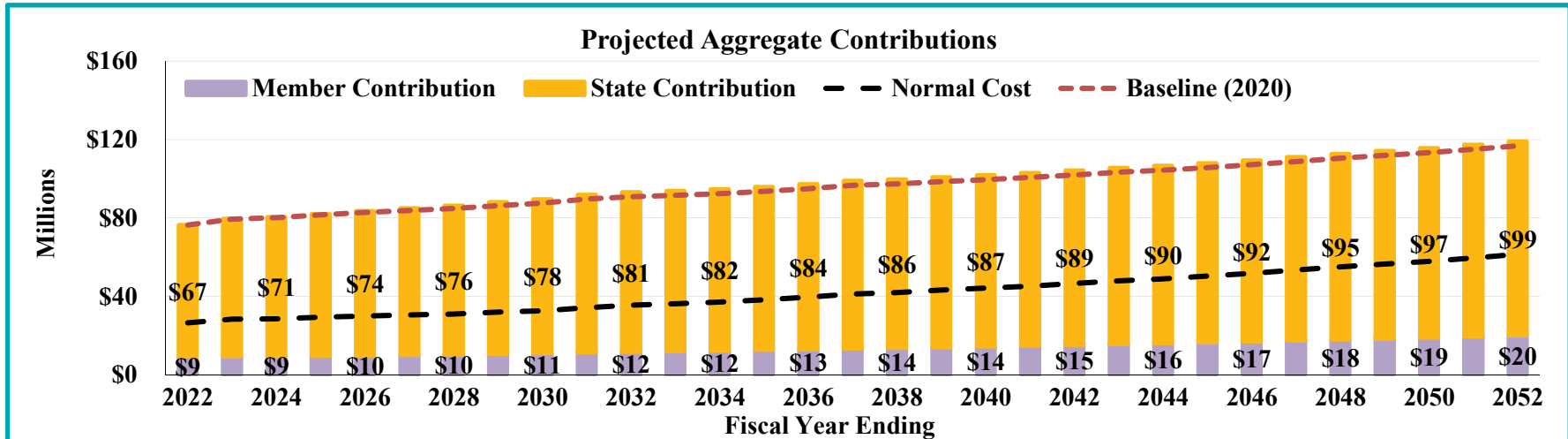
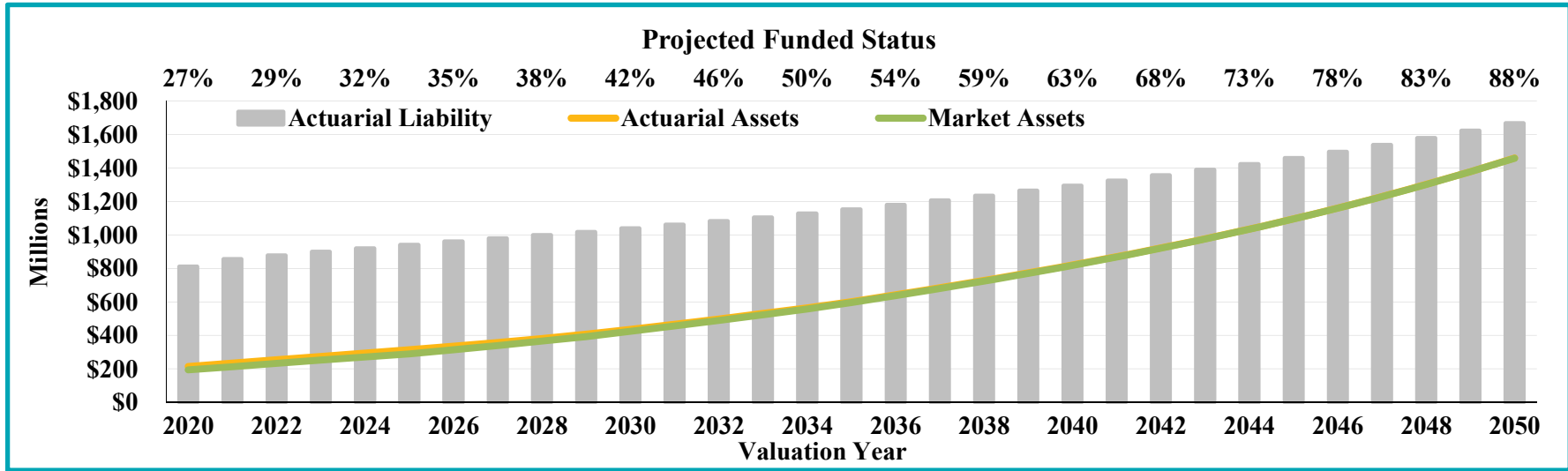
One-Year Positive Shock Scenario: 26.6% return FYE 2021, 7.0% after



JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

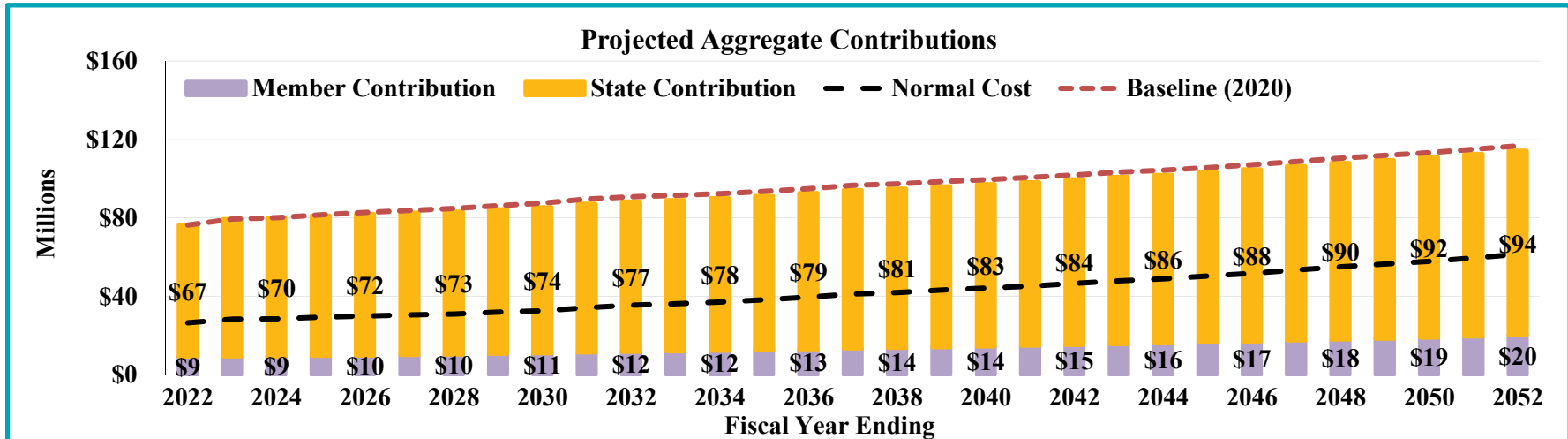
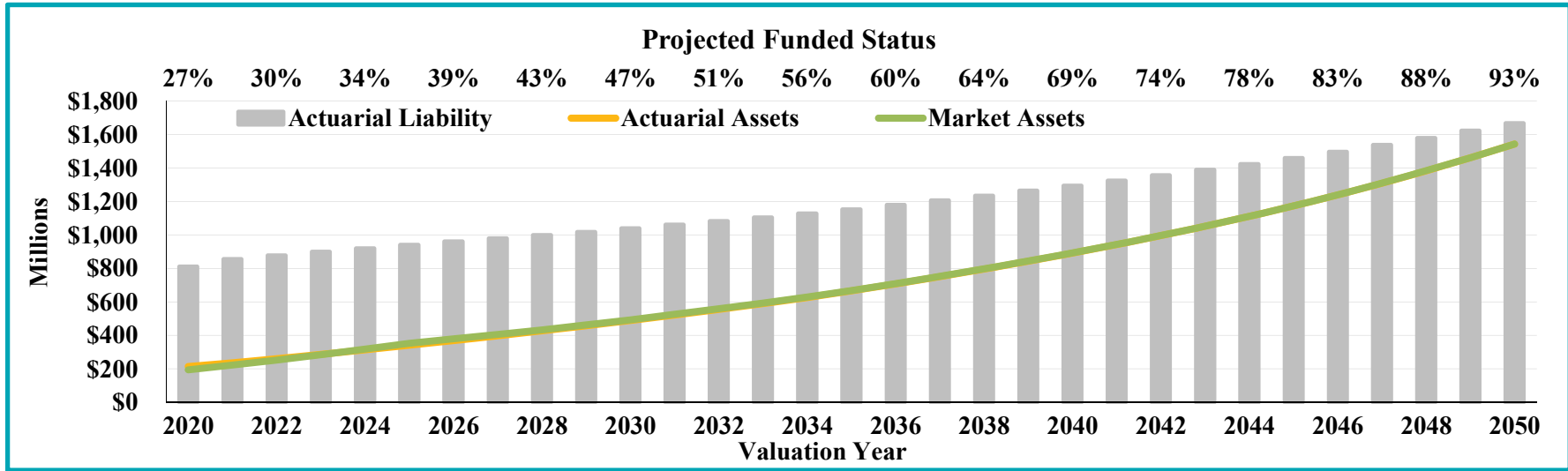
Five-Year Moderate Negative Scenario: 3.7% return FYE 2021-2025, 7.0% after



JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

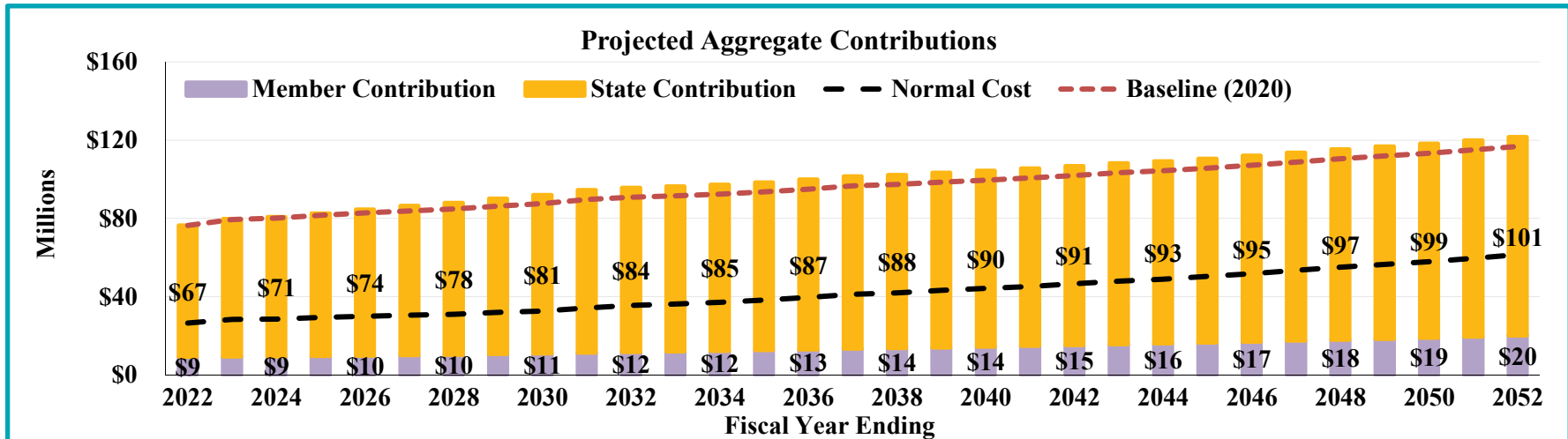
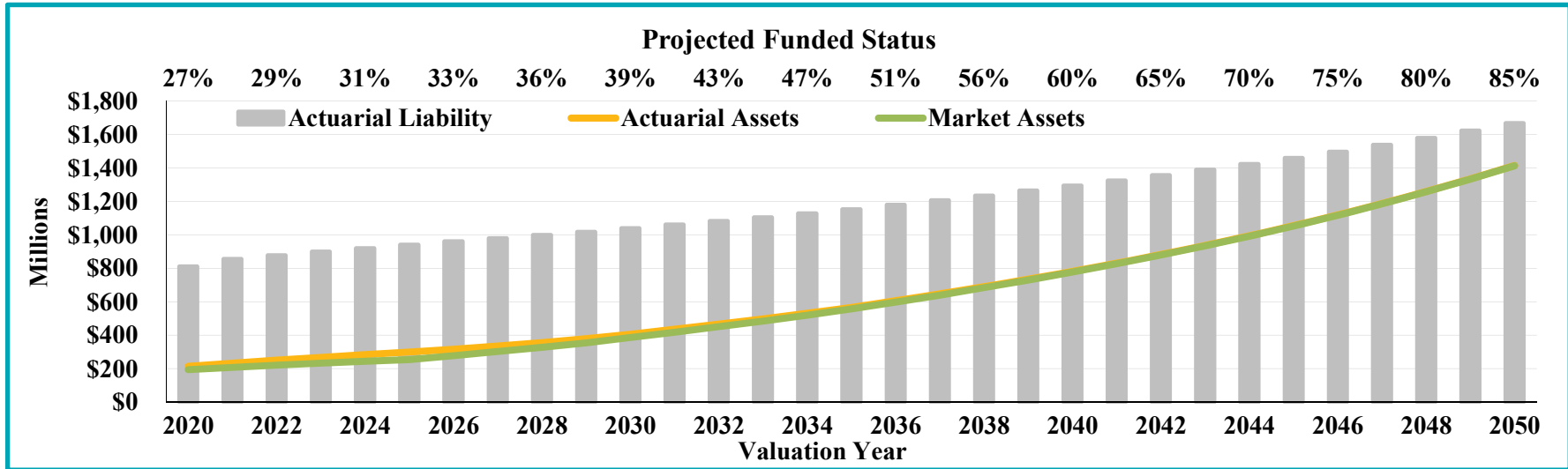
Five-Year Moderate Positive Scenario: 10.3% return FYE 2021-2025, 7.0% after



JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

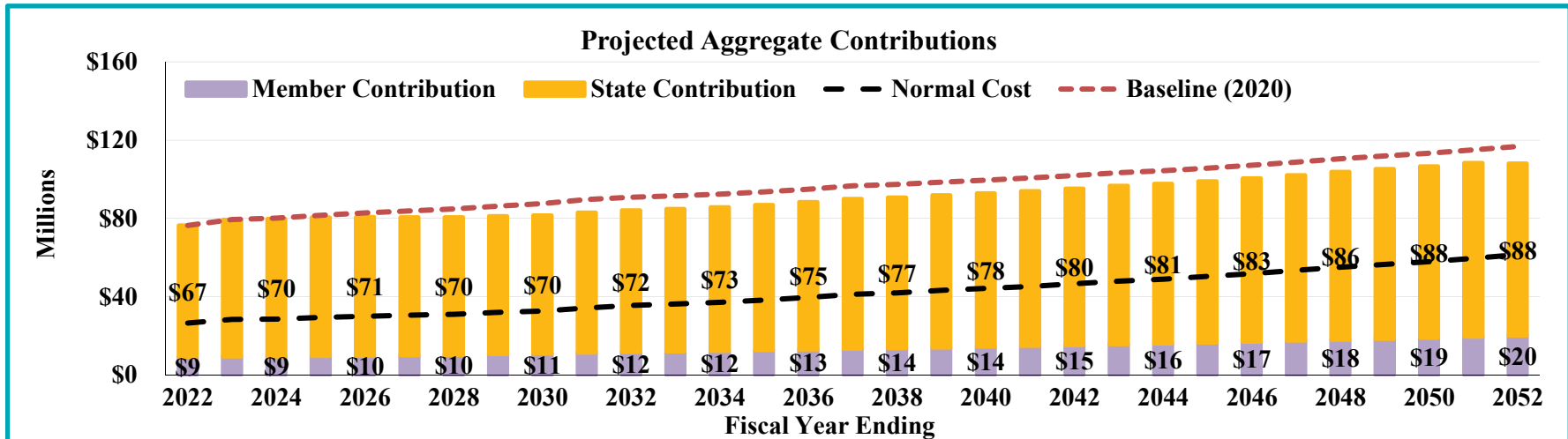
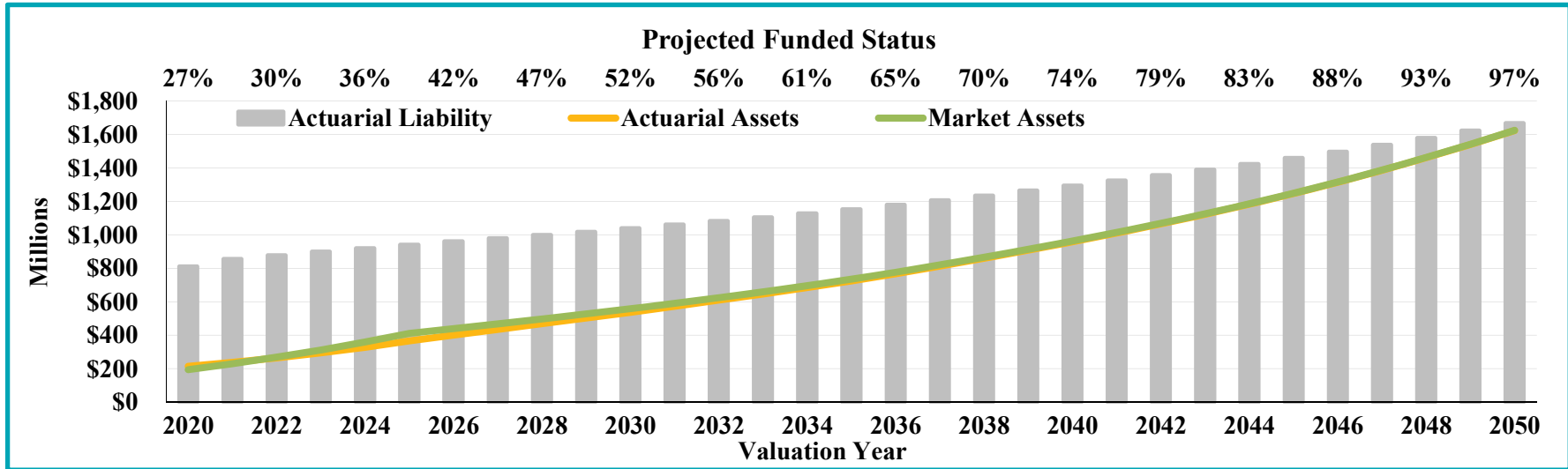
Five-Year Significant Negative Scenario: -0.8% return FYE 2021-2025, 7.0% after



JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

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



**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

These scenarios show that actual future investment returns have an impact on future State contribution amounts. The System is less sensitive to investment returns deviating from the assumption when compared to other Systems, because of the low funded status at the beginning of the projection period. **The System is not well funded and, as a result, has less to gain or lose from positive or negative investment experience.**

In each of the scenarios, the State contribution amount increases in FYE 2023 as the valuation investment rate of return assumption decreases from 7.30% to 7.00%. The following table summarizes the impact on the State contributions in FYE 2034 for each of the investment return scenarios.

Table II-2 Impact on Contributions for FYE 2034 (dollar amounts in millions)						
	1-Yr Shock		5-Yr Moderate		5-Yr Significant	
	Neg	Pos	Neg	Pos	Neg	Pos
Amount	\$2	(\$2)	\$2	(\$2)	\$5	(\$7)
Percent	2%	-3%	2%	-3%	6%	-9%

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.

Assumption Change Risk – Sensitivity Testing

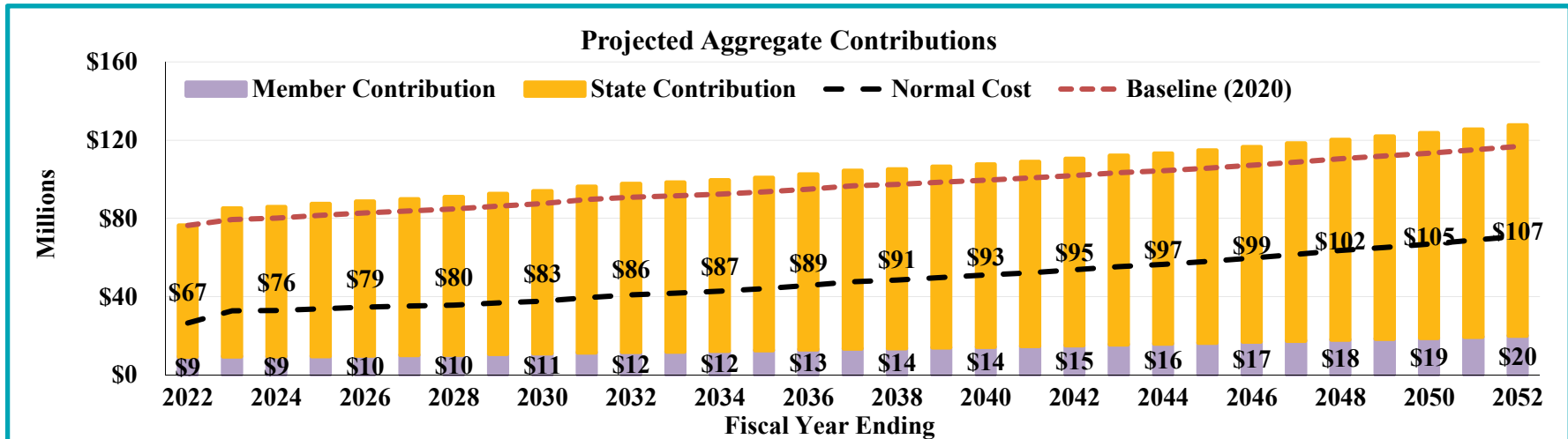
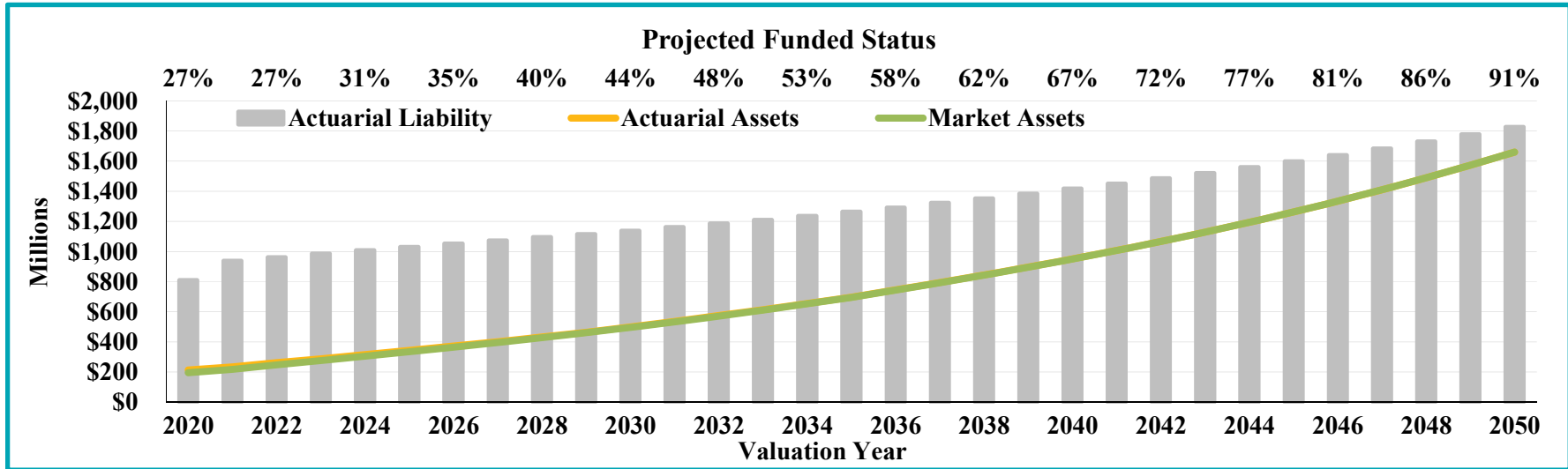
As shown in Table II-1, assumption changes over the last decade have increased the UAL by approximately \$61.5 million. The most significant changes were reductions in the discount rate, decreases in mortality rates and projections of mortality improvement. The reductions in discount rates have been 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 graph on the following page shows 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 contribution amounts that are approximately 9% higher than the baseline in FYE 2034.

JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

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



**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

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, appropriated contributions have consistently been less than the Statutory contributions and the tread water level, causing an increase in the UAL of approximately \$222.1 million over the last 10 years. The baseline projections assume the State appropriates 100% of the Statutory contribution beginning in FYE 2022 each year thereafter, at which time contributions are projected to be greater than the tread water level.

Contribution risk is the potential for actual future contributions to deviate from expected future contributions. The graphs on the following page 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. We show the contribution risk sensitivity assuming the appropriation percent remains at the current level of 78%.

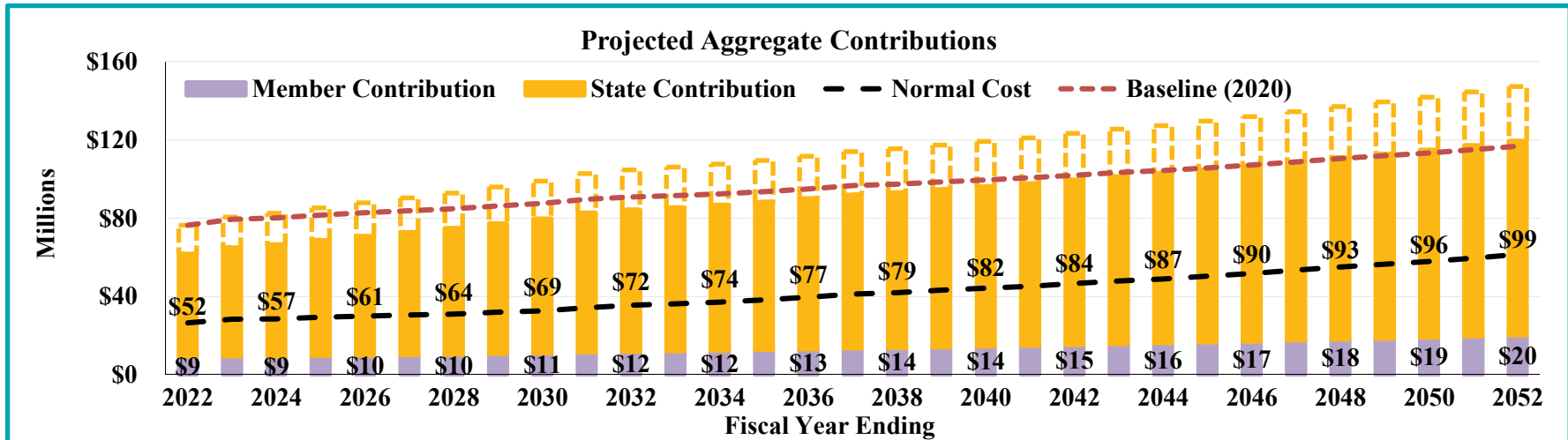
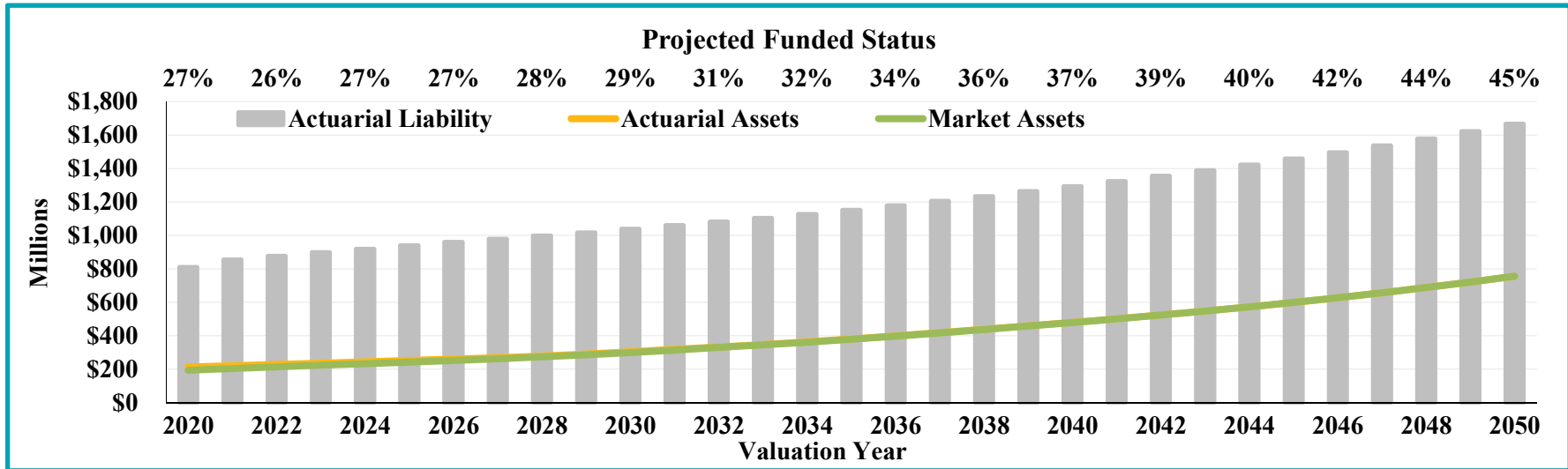
The gold outline in the bottom graph shows the State's full Statutory contributions with the shaded portion showing the anticipated appropriated amount.

This scenario shows both the Statutory and appropriated State contributions gradually increasing over time. The Statutory contributions quickly exceed the baseline. The appropriated contributions are below the baseline initially but eventually grow to reach the same level, with a much lower funded ratio. The funded ratio at the end of the projection period is 45% compared to 90% under the baseline projections.

JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
 JULY 1, 2020 ACTUARIAL VALUATION

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

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



**JUDICIAL 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 State House Commission with a more in-depth analysis at their request.

**JUDICIAL 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 a reasonable range of the market value.

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

- Disclosure of assets for the current and prior year,
- Statement of cash flows during the year,
- Development of the actuarial value of assets, and
- Disclosure of investment performance for the year.

Disclosure

The market value of assets represents a “snap-shot” value as of the last day of the fiscal year that provides the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the value of the investments. Because these fluctuations would cause volatility in employer contributions, an actuarial value of assets is developed. Table 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 returns in aggregate over various periods and durations of time.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION III – ASSETS

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

	June 30, 2020	June 30, 2019
Assets		
Cash	\$ 379,896	\$ 720,054
Securities Lending Collateral	2,518,548	1,962,719
Investment Holdings	140,954,898	160,123,955
Interest Receivable on Investment	2,763	998
Employer Contributions Receivable		
State	9,152,500	0
NGCI	37,365	30,475
Members Contributions Receivable	458,752	826,413
Loans Receivable	244,322	338,374
Accounts Receivable	503,050	886,293
Total Assets	<u>\$ 154,252,094</u>	<u>\$ 164,889,281</u>
Liabilities		
Pension Payroll Payable	\$ (3,932,170)	\$ (3,833,483)
Pension Adjustment Payroll Payable	(214,858)	(247,134)
Death Benefits Payable	(37,365)	(30,475)
Withholdings Payable	(875,826)	(882,086)
Securities Lending Collateral and Rebates Payable	(2,517,714)	(1,960,346)
Accounts Payable - Other	(245,318)	(71,564)
Total Liabilities	<u>\$ (7,823,251)</u>	<u>\$ (7,025,088)</u>
Preliminary Market Value of Assets	\$ 146,428,843	\$ 157,864,193
Discounted State Appropriations Receivable	49,086,623	35,058,026
Market Value of Assets	\$ 195,515,466	\$ 192,922,219

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION III – ASSETS

System Cash Flows as of June 30, 2020

Table III-2	
Changes in Market Values for FYE June 30, 2020	
Additions	
Pension Contributions	
Members' Contributions	\$ 9,239,505
Transfers from Other Systems	389,607
Accumulated Interest	
Transfer from Other Systems	320,590
Employers' Contributions	
State Appropriations	36,610,000
Non-Contributory Group Insurance	886,113
Transfer from Other Systems	315,605
Administrative Fees - Loans	225
Income	
Per Statement	1,972,315
Total Additions	\$ 49,733,960
Deductions	
Benefits Provided by Members	
Withdrawal of Members' Contributions - Regular	\$ 40,682
Withdrawal of Members' Interest - Regular	0
Benefits Provided by Employers and Members	
Retirement Allowances	57,340,981
Benefits Provided by Employers	
Benefit Expense - Pension Adjustment	2,681,333
Administrative Expense	219,916
Administrative Expense - Loans	285
Miscellaneous Expense	0
NCGI Premium Expense	886,113
Total Deductions	\$ 61,169,310
Net Increase/(Decrease)	\$ (11,435,350)
Preliminary Market Value of Assets Beginning of Year	\$ 157,864,193
Preliminary Market Value of Assets End of Year	\$ 146,428,843
Discounted State Appropriations Receivable	49,086,623
Market Value of Assets	\$ 195,515,466
Approximate Return	1.35%

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION III – ASSETS

Actuarial Value of Assets

To determine on-going funding requirements, most pension systems utilize an actuarial value of assets that differs from the market value of assets. The actuarial value of assets represents an asset value based on averaging or smoothing year-to-year market value returns for purposes of reducing contribution volatility. Each year, 20% of the difference between the market value of assets and the expected actuarial value of assets is added to the expected actuarial value of assets.

Table III-3 Development of Actuarial Value of Assets for July 1, 2020		
1. Preliminary Actuarial Value of Assets as of 7/1/2019 ¹	\$	172,250,282
2. Net Cash Flow excluding Investment Income	\$	(13,407,665)
3. Expected Investment Income ²	\$	11,768,269
4. Expected Actuarial Value of Assets as of 7/1/2020: (1+2+3)	\$	170,610,886
5. Preliminary Market Value as of 6/30/2020	\$	146,428,843
6. 20% of Difference from MVA = (5-4) x 0.2	\$	(4,836,409)
7. Preliminary Actuarial Value of Assets as of 7/1/2020: (4+6)	\$	165,774,477
8. Discounted State Appropriations Receivable	\$	49,086,623
9. Actuarial Value of Assets as of 7/1/2020: (7+8)	\$	214,861,100
10. Rate of Return on Actuarial Value of Assets		4.30%
11. Ratio of Actuarial Value of Assets to Market Value of Assets		109.89%

¹ Excludes discounted State appropriations receivable

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

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION III – ASSETS

Investment Performance

The market value of assets rate of return was 1.35% 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 4.30%. In the table below, we show historical asset returns compared to the investment return assumption. We show returns beginning with the year ending in 2000.

Table III-4 Annual Rates of Return			
Year Ended June 30	Investment Return Assumption	Market Value¹	Actuarial Value²
2000	8.75%	11.86%	11.88%
2001	8.75%	-9.80%	7.15%
2002	8.75%	-8.61%	4.13%
2003	8.75%	3.31%	3.74%
2004	8.75%	14.16%	5.35%
2005	8.25%	8.77%	5.35%
2006	8.25%	9.79%	6.07%
2007	8.25%	17.14%	7.78%
2008	8.25%	-2.61%	6.15%
2009	8.25%	-15.49%	1.80%
2010	8.25%	13.34%	3.23%
2011	8.25%	17.97%	4.97%
2012	7.95%	2.47%	3.81%
2013	7.90%	11.72%	4.61%
2014	7.90%	16.79%	6.27%
2015	7.90%	4.08%	5.66%
2016	7.90%	-1.15%	4.18%
2017	7.65%	11.95%	4.82%
2018	7.50%	9.17%	5.50%
2019	7.50%	5.96%	5.38%
2020	7.30%	1.35%	4.30%

¹Beginning in 2017, the returns are from the System’s Actuarial Valuation Reports. 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.

²The prior actuary did not report an actuarial value return in 2000. The return shown was calculated based on available information.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION III – ASSETS

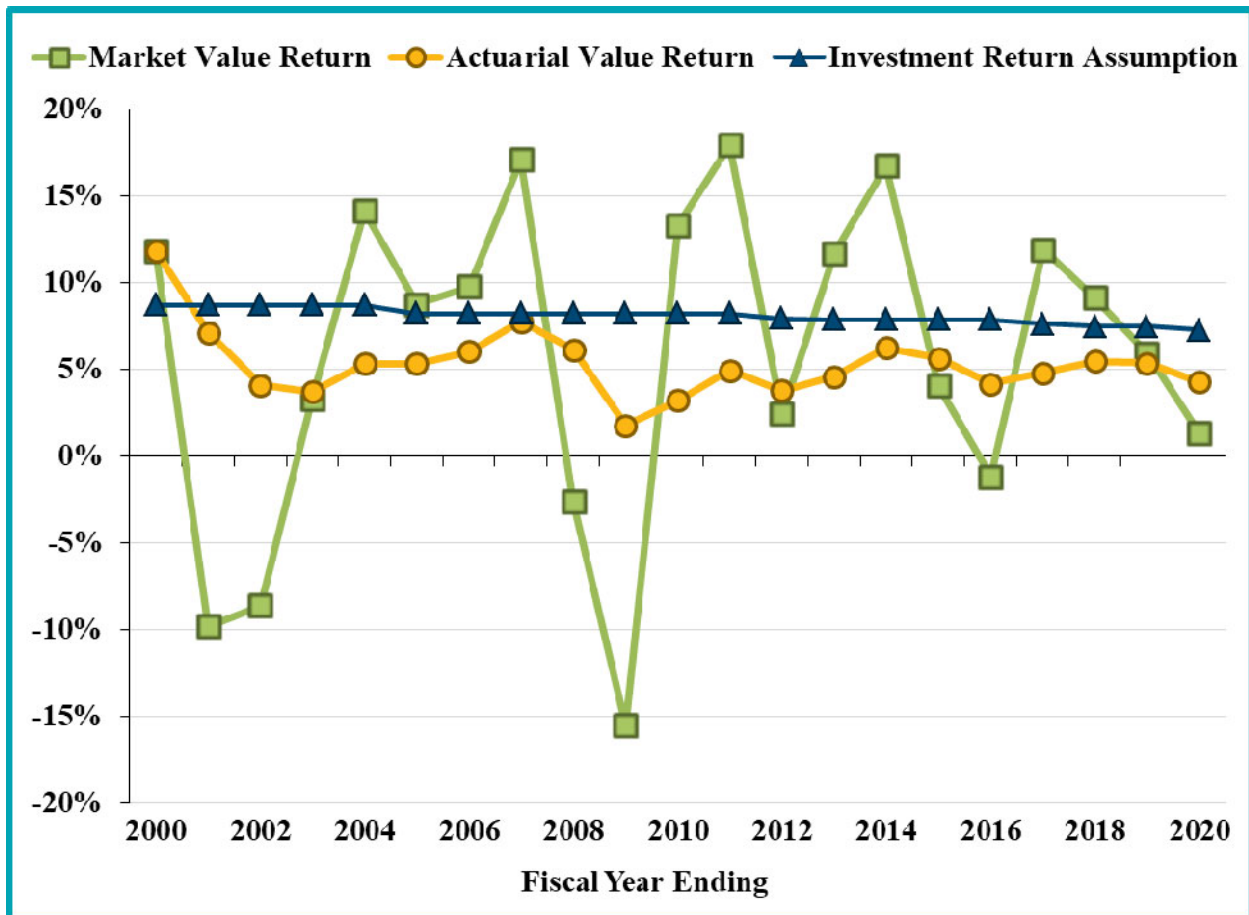
Additionally, we show the compound annualized rates of return for various periods in the following table. On a cumulative basis, there are periods where the market value return significantly exceeds the actuarial value return. This is due to the recognition of market value losses from earlier years in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

Table III-5 Compound Annualized Rates of Returns			
Period	Investment Return		Actuarial Value
	Assumption	Market Value	
Since July 1, 1999	8.14%	5.41%	5.32%
20-Year	8.11%	5.10%	5.00%
15-Year	7.93%	6.45%	4.96%
10-Year	7.77%	7.85%	4.95%
5-Year	7.57%	5.35%	4.83%
Consecutive Five-Year Periods			
2000 to 2004	8.75%	1.69%	6.41%
2005 to 2009	8.25%	2.86%	5.41%
2010 to 2014	8.05%	12.32%	4.57%
2015 to 2019	7.69%	5.91%	5.11%
2020 (One-Year)	7.30%	1.35%	4.30%

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION III – ASSETS

We present the annual rates of return from Table III-4 in the following graph. The market value return (green) shows 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).



**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

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, and
- The development of the actuarial gain and loss.

Disclosure

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

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION IV – LIABILITIES

Table IV-1 shows the actuarial liability, unfunded actuarial liability and funded ratio as of July 1, 2020, and July 1, 2019 for the System.

Table IV-1 Actuarial Liability		
	July 1, 2020	July 1, 2019
Actuarial Liability		
Contributing Actives	\$ 242,167,242	\$ 231,929,444
Non-Contributing Actives	5,862,773	1,635,273
Deferred Vested	3,551,193	3,581,554
Retirees	477,107,887	477,511,494
Disabled	9,509,333	9,647,427
Beneficiaries	71,597,980	66,630,944
Total	\$ 809,796,408	\$ 790,936,136
Actuarial Value of Assets	\$ 214,861,100	\$ 207,308,308
Unfunded Actuarial Liability/(Surplus)	\$ 594,935,308	\$ 583,627,828
Funded Ratio	26.5%	26.2%

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION IV – LIABILITIES

Table IV-2 presents the change in the actuarial liabilities, actuarial assets, and unfunded actuarial liability during the plan year. In general, the unfunded actuarial liability (UAL) of any retirement system is expected to change at each subsequent valuation for a variety of reasons. In each valuation, we report on those elements of change in the UAL which are of particular significance, potentially affecting the long-term financial outlook of the System.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION IV – LIABILITIES

Table IV-2 Development of 2020 Experience (Gain)/Loss			
	Actuarial Liability	Actuarial Value of Assets	Unfunded Actuarial Liability
1. Value as of July 1, 2019	\$ 790,936,136	\$ (207,308,308)	\$ 583,627,828
2. Additions			
a.) Normal Cost	\$ 24,852,303	\$ 0	\$ 24,852,303
b.) Statutory State Contributions	0	(65,752,030)	(65,752,030)
c.) Expected Member Contributions	<u>0</u>	<u>(9,047,799)</u>	<u>(9,047,799)</u>
d.) Total Additions	\$ 24,852,303	\$ (74,799,829)	\$ (49,947,526)
3. Decreases			
a.) Benefit Payments	\$ (60,062,996)	\$ 60,062,996	\$ 0
b.) Expected Administrative Expenses	<u>0</u>	<u>0</u>	<u>0</u>
c.) Total Deductions	\$ (60,062,996)	\$ 60,062,996	\$ 0
4. Net Transfers from Other Systems			
a.) State Contributions	\$ 315,605	\$ (315,605)	\$ 0
b.) Member Contributions	<u>710,197</u>	<u>(710,197)</u>	<u>0</u>
c.) Total Net Transfers	\$ 1,025,802	\$ (1,025,802)	\$ 0
5. Expected Interest	\$ 57,435,652	\$ (13,341,030)	\$ 44,094,622
6. Expected Value as of July 1, 2020: [1+2+3+4+5]	\$ 814,186,897	\$ (236,411,973)	\$ 577,774,924
7. Other Changes			
a.) Appropriation Adjustment	\$ 0	\$ 14,485,220	\$ 14,485,220
b.) Contribution Timing	0	2,199,960	2,199,960
c.) Actual Member Contributions	0	(198,580)	(198,580)
d.) Assumption Changes	0	0	0
e.) Change in Benefits	<u>0</u>	<u>0</u>	<u>0</u>
f.) Total Other Changes	\$ 0	\$ 16,486,600	\$ 16,486,600
8. Expected Value after Changes: [6+7]	\$ 814,186,897	\$ (219,925,373)	\$ 594,261,524
9. Actual Value as of July 1, 2020	\$ 809,796,408	\$ (214,861,100)	\$ 594,935,308
10. Actuarial (Gain)/Loss: [9-8]	\$ (4,390,489)	\$ 5,064,273	\$ 673,784

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION IV – LIABILITIES

Table IV-3 shows the components of the Actuarial (Gain)/Loss as of July 1, 2020 and July 1, 2019 for the System.

Table IV-3 Actuarial (Gain)/Loss Analysis		
Components	July 1, 2020	July 1, 2019
Actuarial Value of Assets		
Investment Return	\$ 4,836,409	\$ 3,596,522
Administrative Expenses	227,864	207,715
Total	<u>\$ 5,064,273</u>	<u>\$ 3,804,237</u>
Actuarial Liability		
Salary Increases	\$ 91,527	\$ 4,986,565
New Entrants	349,380	82,477
Demographic Experience and Census Data Updates		
Contributing Actives	(1,555,028)	(1,049,569)
Non-Contributing Actives	(303,879)	710,656
Inactives	<u>(1,909,905)</u>	<u>8,168,782</u>
Sub-Total	\$ (3,327,905)	\$ 12,898,911
Impact of Net Transfers from Other Systems	<u>(1,062,584)</u>	<u>(1,358,359)</u>
Total	<u>\$ (4,390,489)</u>	<u>\$ 11,540,552</u>
Actuarial (Gain)/Loss	\$ 673,784	\$ 15,344,789

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION V – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funded status of the System. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

Under the current funding policy, the State funding requirement contains two components: the employer normal cost and an amortization of the unfunded actuarial liability (UAL). 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 JRS, the funding method employed is the Projected Unit Credit (PUC) Actuarial Cost Method. Under this funding method, the actuarial liability is calculated as the actuarial present value of the projected benefits allocated to periods prior to the valuation year. The unfunded actuarial liability is the actuarial liability on the valuation date less the actuarial value of assets.

In accordance with Chapter 78, P. L. 2011, the unfunded actuarial liability for the July 1, 2019 valuation was 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.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

SECTION V – CONTRIBUTIONS

Table V-1 shows the development of the Statutory pension contribution for the current and prior year. Table V-2 summarizes the contributions as a percentage of payroll.

Table V-1 Development of Statutory Pension Contribution		
Valuation Date Fiscal Year Ending	July 1, 2020 2022	July 1, 2019 2021
1. Unfunded Actuarial Liability Contribution		
a. Actuarial Liability	\$ 809,796,408	\$ 790,936,136
b. Actuarial Value of Assets	214,861,100	207,308,308
c. Unfunded Actuarial Liability: (1a.-1b.)	<u>\$ 594,935,308</u>	<u>\$ 583,627,828</u>
d. Amortization Period (years)	29	30
e. Amortization of UAL payable at Valuation Date (Level Dollar)	\$ 46,502,302	\$ 45,160,984
f. UAL Contribution payable Beginning of Fiscal Year: (1e. with interest)	\$ 49,896,970	\$ 48,457,736
2. Normal Cost Contribution		
a. Gross Normal Cost	\$ 24,627,866	\$ 24,852,303
b. Expected Member Contributions	8,621,222	8,734,601
c. State Normal Cost: (2a.-2b.)	<u>\$ 16,006,644</u>	<u>\$ 16,117,702</u>
d. State Normal Cost payable Beginning of Fiscal Year: (2c. with interest)	\$ 17,175,129	\$ 17,294,294
3. Total Statutory Pension Contribution as of Beginning of Fiscal Year: (1f.+2d.)	\$ 67,072,099	\$ 65,752,030

Table V-2 Statutory Contributions as a Percent of Appropriation Payroll		
Valuation Date Fiscal Year Ending	July 1, 2020 2022	July 1, 2019 2021
Statutory Contribution		
State Normal Cost	22.31%	22.57%
UAL Amortization Payment	64.83%	63.24%
Total Statutory Pension Contribution	<u>87.14%</u>	<u>85.81%</u>

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP DATA

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: Contributing Active Member Data
- A-2: Non-Contributing Active Member Data
- A-3: Inactive Member Data, Total Annual and Average Retirement Allowances by Status
- A-4: Reconciliation of Plan Membership
- A-5 and A-6: Contributing Active Member Data by Age and Service
- A-7 and A-8: Inactive Member Data by Age and Status

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP DATA

Table A-1 Contributing Active Member Data				
	July 1, 2020		July 1, 2019	% Change
Count	405		421	-3.8%
Average Age	59.0		58.6	0.7%
Average Judicial Service	9.2		8.7	4.8%
Average Appropriation Pay	\$ 190,050	\$	182,012	4.4%
Total Appropriation Payroll	\$ 76,970,450	\$	76,627,036	0.4%

Table A-2 Non-Contributing Active Member Data				
	July 1, 2020		July 1, 2019	% Change
<u>Members Eligible for Annuity</u>				
Count	4		3	33.3%
Average Age	68.8		56.2	22.4%
Average Judicial Service	13.3		9.8	35.2%
Average Last Reported Pay	\$ 191,634	\$	175,244	9.4%
Total Last Reported Pay	\$ 766,534	\$	525,731	45.8%
<u>Members Only Eligible for Refund</u>				
Count	6		2	200.0%
Last Reported Annuity Savings Fund	238,090		113,308	110.1%
<u>Total</u>				
Count	10		5	100.0%

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP DATA

Table A-3			
Inactive Member Data by Status			
	July 1, 2020	July 1, 2019	% Change
Retirees			
Count	455	461	-1.3%
Annual Retirement Allowances	\$ 48,885,221	\$ 49,229,153	-0.7%
Average Retirement Allowance	\$ 107,440	\$ 106,788	0.6%
Beneficiaries			
Count	176	163	8.0%
Annual Retirement Allowances	\$ 9,989,366	\$ 9,114,936	9.6%
Average Retirement Allowance	\$ 56,758	\$ 55,920	1.5%
Disabled			
Count	9	9	0.0%
Annual Retirement Allowances	\$ 1,049,214	\$ 1,049,214	0.0%
Average Retirement Allowance	\$ 116,579	\$ 116,579	0.0%
In-Pay Total			
Count	640	633	1.1%
Annual Retirement Allowances	\$ 59,923,801	\$ 59,393,303	0.9%
Average Retirement Allowance	\$ 93,631	\$ 93,828	-0.2%
Deferred Vested Members			
Count	6	6	0.0%
Annual Retirement Allowances	\$ 331,785	\$ 330,771	0.3%
Average Retirement Allowance	\$ 55,298	\$ 55,128	0.3%

QDRO benefits included with member records for valuation purposes.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP DATA

**Table A-4
Reconciliation of Plan Membership from July 1, 2019 to July 1, 2020**

	Contributing Actives	Non-Contrib. Actives	Deferred Vested	Retired	Disabled	Beneficiaries	Total
1. July 1, 2019	421	5	6	461	9	163	1,065
2. Additions							
a. New entrants	9						9
b. New dependents							0
c. Data correction				2		4	6
d. Total	<u>9</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>4</u>	<u>15</u>
3. Reductions							
a. Withdrawal	(1)						(1)
b. Died without beneficiary				(11)		(7)	(18)
c. Payments ceased							0
d. Total	<u>(1)</u>	<u>0</u>	<u>0</u>	<u>(11)</u>	<u>0</u>	<u>(7)</u>	<u>(19)</u>
4. Changes in Status							
a. Contributing Active	1		(1)				0
b. Non-Contributing Active	(6)	7	(1)				0
c. Deferred Vested	(2)	(1)	3				0
d. Retired	(17)	(1)	(1)	19			0
e. Disabled							0
f. Died with beneficiary				(16)		16	0
g. Total	<u>(24)</u>	<u>5</u>	<u>0</u>	<u>3</u>	<u>0</u>	<u>16</u>	<u>0</u>
5. July 1, 2020	405	10	6	455	9	176	1,061

QDRO benefits included with member records for valuation purposes

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP DATA

**Table A-5
Counts by Age and Service of Contributing Active Members
As of July 1, 2020**

Attained Age	Years of Judicial Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & up	
Under 40	0	1	0	0	0	0	0	0	1
40 to 44	2	9	0	0	0	0	0	0	11
45 to 49	2	17	9	2	0	0	0	0	30
50 to 54	3	30	23	11	0	0	0	0	67
55 to 59	1	30	38	19	10	0	0	0	98
60 to 64	0	28	22	30	23	8	1	0	112
65 & up	0	7	24	23	16	10	3	3	86
Total	8	122	116	85	49	18	4	3	405

**Table A-6
Average Appropriation Pay by Age and Service of Contributing Active Members
As of July 1, 2020**

Attained Age	Years of Judicial Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & up	
Under 40	\$ 0	\$ 189,000	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 189,000
40 to 44	189,000	189,000	0	0	0	0	0	0	189,000
45 to 49	189,000	189,000	189,000	189,000	0	0	0	0	189,000
50 to 54	189,000	189,000	189,000	189,612	0	0	0	0	189,100
55 to 59	189,000	189,000	189,000	189,000	190,053	0	0	0	189,107
60 to 64	0	189,376	189,931	190,853	191,125	191,158	199,534	0	190,458
65 & up	0	191,926	189,280	189,916	194,377	196,228	198,266	192,511	191,848
Total	\$ 189,000	\$ 189,254	\$ 189,235	\$ 189,981	\$ 191,968	\$ 193,975	\$ 198,583	\$ 192,511	\$ 190,050

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP DATA

Table A-7 Counts by Age and Status of Inactive Members As of July 1, 2020				
Attained Age	Status			Total
	Retiree	Beneficiary	Disabled	
Under 45	0	6	0	6
45 to 49	0	1	0	1
50 to 54	0	2	0	2
55 to 59	1	0	0	1
60 to 64	13	2	2	17
65 to 69	55	11	1	67
70 to 74	144	17	4	165
75 to 79	116	30	1	147
80 to 84	70	43	0	113
85 & up	56	64	1	121
Total	455	176	9	640

Table A-8 Average Retirement Allowances by Age and Status of Inactive Members As of July 1, 2020				
Attained Age	Status			Total
	Retiree	Beneficiary	Disabled	
Under 45	\$ 0	\$ 12,118	\$ 0	\$ 12,118
45 to 49	0	129,112	0	129,112
50 to 54	0	31,251	0	31,251
55 to 59	54,676	0	0	54,676
60 to 64	101,732	45,250	107,265	95,738
65 to 69	114,533	65,550	131,651	106,746
70 to 74	108,595	62,091	124,043	104,179
75 to 79	111,107	73,367	111,746	103,409
80 to 84	101,377	59,727	0	85,528
85 & up	99,753	48,261	95,115	72,479
Total	\$ 107,440	\$ 56,758	\$ 116,579	\$ 93,631

QDRO benefits included with member records for valuation purposes.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

1. **Investment Rate of Return** 7.30% per annum, compounded annually.

2. **Administrative Expenses** No explicit assumption is made for administrative expenses for funding purposes per the funding methodology prescribed by NJ State Statute.

3. **Interest Crediting Rate on Accumulated Deductions** 7.30% per annum, compounded annually. Interest credits are assumed to end upon termination.

4. **Cost-of-Living Adjustments (COLAs)** No future COLA is assumed. Previously granted COLAs are included in the data.

5. **Salary Increases** Salaries are assumed to increase 4.6% from FYE 2018 to FYE 2019, 4.4% from FYE 2019 to FYE 2020, 2.0% per year for the following five years (from FYE 2020 to FYE 2025), and 2.75% per year thereafter.

Salary increases are assumed to occur on January 1.

6. **401(a)(17) Pay Limit** \$285,000 in 2020 increasing 2.75% per annum, compounded annually.

7. **Disability** Representative disability rates are as follows:

Age	Rates
30	0.022%
35	0.026
40	0.033
45	0.064
50	0.114
55	0.197
60	0.326
65	0.473

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

8. Mortality

Healthy Retirees (Healthy Annuitants): The Pub-2010 Teachers Above-Median Income Healthy Retiree mortality table [*PubT-2010(A) Healthy Retiree*] as published by the Society of Actuaries, unadjusted, 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, unadjusted, and with future improvement from the base year of 2010 on a generational basis using SOA’s Scale MP-2018.

Pre-Retirement (Non-Annuitants): The Pub-2010 Teachers Above-Median Income Employee mortality table [*PubT-2010(A) Employee*] as published by the Society of Actuaries, unadjusted, and with future improvement from the base year of 2010 on a generational basis using SOA’s Scale MP-2018.

9. Retirement

Retirement rates are as follows:

Age	Less than		
	15 Years of Judicial Service	15-19 Years of Judicial Service	20 or more Years of Judicial Service
<60	0.0%	0.0%	0.0%
60	2.0	5.0	20.0
61	2.0	5.0	20.0
62	2.0	5.0	20.0
63	2.0	5.0	20.0
64	2.0	5.0	20.0
65	5.0	40.0	30.0
66	2.0	50.0	20.0
67	2.0	60.0	20.0
68	2.0	60.0	20.0
69	2.0	60.0	20.0
70	100.0	100.0	100.0

10. Termination

None assumed.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

- 11. Family Composition Assumptions** For members not currently in receipt, 90% 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.
- For purposes of the statutory death benefit for members currently in receipt, 100% of participants are assumed married to spouses of the opposite sex, with the exception of those members who elected Optional Forms A, B, C or D and are currently in receipt of their maximum retirement allowance. The spouse is assumed to be the reported beneficiary. If no beneficiary date of birth is provided, males are assumed to be three years older than females.
- No additional dependent children or parents are assumed.
- Current dependents under age 21 are assumed to receive a benefit until age 21. Current dependents over age 21 are assumed to receive a benefit for the remainder of their lifetime.
- 12. Form of Payment** Current actives are assumed to elect the Maximum Option.
- 13. Data** Information provided by the prior actuary was relied upon for the purposes of valuing certain deferred vested members.
- For current beneficiaries with missing data, reasonable assumptions were made based on the information available in prior years.
- Inactives receiving benefits according to the 2019 data but omitted from the 2020 data are assumed to have died without a beneficiary.
- 14. 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 State House Commission on July 2, 2020. The investment return assumption was recommended by the State Treasurer.
- 15. Changes in Assumptions Since Last Valuation** None.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

B. Projection Assumptions

- 1. Investment Rate of Return** July 1, 2021 and later valuations: 7.00% per annum, compounded annually.

- 2. Appropriation Percentages** The State is assumed to appropriate 100% of the Statutory contribution in FYE 2022 and each year thereafter.

- 3. Administrative Expenses** The actual administrative expenses paid in FYE 2020 are assumed to increase by 2.75% per annum, compounded annually.

- 4. New Entrants**
 - Contributing active population assumed to remain at 2020 levels.
 - Assumed to join mid-year.
 - Age/sex distributions based on the last three years of new hires.
 - Salary based on salary for most recent hires reported on 2020 data.
 - New entrant salary assumed to increase at the same rate used for current members.

- 5. Demographic Assumptions** Same as those used for valuation purposes.

- 6. Projection Basis** 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.

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.

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.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

C. Actuarial Methods

The actuarial methods used for determining State contributions are described as follows.

1. Actuarial Cost Method

The actuarial cost method for funding calculations is the Projected Unit Credit Cost Method.

The actuarial liability is calculated as the actuarial present value of the projected benefits linearly allocated to periods prior to the valuation year based on judicial service. Refunds are valued as the reported Accumulated Deductions as provided by the DPB. The unfunded actuarial liability is the actuarial liability on the valuation date less the actuarial value of assets.

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

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

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

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 return on the previous year's assets and the current year's cash flow at the prior year's actuarial valuation interest rate, with a further adjustment to reflect 20% of the difference between the resulting value and the actual market value of Plan assets.

3. State Contribution Payable Dates

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

4. Valuation Software

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

5. Changes in Methods Since the Last Valuation

None.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

This summary of Plan provisions provides an overview of the major provisions of the JRS used in the actuarial valuation. It is not intended to replace the more precise language of the NJ State Statutes, Title 43, Chapter 6A, 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

Chief Justice and Associate Justices of the State Supreme Court, and judges of the Appellate Court, Superior Court and Tax Court of the State of New Jersey.

2. Plan Year

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

3. Service Credit

A year is credited for each year of service as a public employee in the State of New Jersey. Any service, for which the member did not receive annual salary of at least \$500, shall be excluded. Judicial service credit is based on biweekly pay periods for which member contributions are made to JRS.

4. Final Salary

Annual salary received by the member at the time of retirement or other termination of service. (Effective June 30, 1996, Chapter 113, P.L. 1997 provided that the amount of compensation used for employer and member contributions and benefits under the program cannot exceed the compensation limitation of Section 401(a)(17) of the Internal Revenue Code.)

5. Accumulated Deductions

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

6. Interest Credits on Accumulated Deductions

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

7. Employee Contributions

Any member enrolled prior to January 1, 1996 contributes 3% of the difference between current salary and salary for the position on January 18, 1982. Members enrolled on or after January 1, 1996 contribute 3% of their full salary.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Chapter 78, P.L. 2011 increased Member Contributions by 9% of salary phased in over a period of seven years beginning October 2011. (The additional 9% of salary was fully recognized in July 2017.)

a) For Members enrolled prior to January 1, 1996:

- (1) Member contributes 9% (phased in over a period of seven years beginning October 2011) of the salary for that position on January 18, 1982.
- (2) Member contributes 12% (9% of that phased in over a period of seven years beginning October 2011) of the difference between current salary and salary for that position on January 18, 1982.

b) For members enrolled on or after January 1, 1996, Member contributes 12% (9% of that phased in over a period of seven years beginning October 2011) of full salary.

8. Retirement Allowance

Benefit comprised of a member annuity plus an employer pension.

9. Benefits

a) Service Retirements

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

- (1) Age 70 and 10 years of judicial service; or

Age 65 and 15 years of judicial service; or

Age 60 and 20 years of judicial service.

Benefit is an annual retirement allowance equal to 75% of final salary.

- (2) Age 65 while serving as a judge, 5 consecutive years of judicial service and 15 years in the aggregate of public service; or

Age 60 while serving as a judge, 5 consecutive years of judicial service and 20 years in the aggregate of public service.

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

- (3) Age 60 while serving as a judge, 5 consecutive years of judicial service and 15 years in the aggregate of public service.

Benefit is an annual retirement allowance equal to 2% of final salary for each year of public service up to 25 years plus 1% of final salary for each year of public service in excess of 25 years.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

(4) Age 60 while serving as a judge.

Benefit is an annual retirement allowance equal to 2% of final salary for each year of judicial service up to 25 years plus 1% for each year of public service in excess of 25 years.

b) Early Retirement

Prior to age 60 while serving as a judge, 5 consecutive years of judicial service and 25 or more years in the aggregate of public service.

Benefit is an annual retirement allowance equal to 2% of final salary for each year of public service up to 25 years plus 1% of final salary for each year of public service in excess of 25 years, actuarially reduced for commencement prior to age 60.

c) Deferred Retirement

Termination of service prior to age 60, with 5 consecutive years of judicial service and 10 years in the aggregate of public service.

Benefit is a refund of accumulated deductions, or a deferred life annuity beginning at age 60 equal to 2% of final salary for each year of public service up to 25 years, plus 1% of final salary for each year of public service in excess of 25 years.

d) Non-Vested Termination

Termination of service prior to age 60, with less than 5 years of judicial service or less than 10 years in the aggregate of public service.

Benefit is a refund of accumulated deductions.

e) Disability Retirement

Physically or otherwise incapacitated for the full and efficient service to State in his judicial capacity and such incapacity is likely to be permanent.

Benefit is an annual retirement allowance of 75% of final salary.

f) Death Benefits

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

a) Lump sum payment equal to 1-1/2 times compensation, plus

b) Spousal life annuity of 25% of final salary 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 final salary payable to one (two, three or more) dependent child(ren). If there is no surviving spouse or dependent child(ren), 20% (30%) of final salary 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. This is also known as the statutory death benefit.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

(2) After Retirement: Death of a retired member of the plan. The benefit is equal to:

- a) Lump sum of 25% of final salary for a member retired under service or early retirement. For a member receiving a disability benefit, a lump sum of 150% of final salary if death occurred before the member attained age 60 and 25% of final salary if death occurred after age 60, plus
- b) Spousal life annuity of 25% of final salary adjusted for any previously granted Cost-of-Living Adjustments, or the salary of an active judge in the member's final position at retirement, if larger, 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 final salary payable to one (two, three or more) dependent child(ren). This is also known as the statutory death benefit.

10. Forms of Payment

In addition to the postretirement death benefits listed above, the member may elect the following forms of payment.

- a) Maximum Option: Single life annuity with a return of the balance of the member 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

11. Changes in Plan Provisions since Last Valuation

None.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS

Valuation Date July 1,	Market Value of Assets	Actuarial Value of Assets	Actuarial Liability	Funded Ratio	
				Market Value	Actuarial Value
2020	\$ 195,515,466	\$ 214,861,100	\$ 809,796,408	24.1%	26.5%
2019	192,922,219	207,308,308	790,936,136	24.4%	26.2%
2018	195,468,291	209,981,271	670,562,613	29.1%	31.3%
2017	197,567,630	216,952,852	646,507,109	30.6%	33.6%
2016	196,407,352	226,310,119	629,810,812	31.2%	35.9%
2015	225,712,843	243,864,022	602,364,200	37.5%	40.5%
2014	244,567,822	258,101,497	632,679,937	38.7%	40.8%
2013	244,280,889	276,966,331	620,376,292	39.4%	44.6%
2012	243,679,037	290,191,842	605,180,634	40.3%	48.0%
2011	270,183,306	310,724,782	585,700,787	46.1%	53.1%

Fiscal Year Ending June 30,	Statutory/ Actuarially Determined Contribution	Actual Pension Contributions	Contribution Deficiency (Excess)	Percentage of Contribution Covered
2021 ²	\$ 65,752,030	\$ 51,286,583	\$ 14,465,447	78.00%
2020	52,327,505	36,610,000	15,717,505	69.96%
2019	48,368,041	29,000,000	19,368,041	59.96%
2018	46,531,943	23,266,000	23,265,943	50.00%
2017	44,156,771	19,677,000	24,479,771	44.56%
2016	46,502,819	13,951,000	32,551,819	30.00%
2015	44,334,504	16,506,000	27,828,504	37.23%
2014	43,050,167	15,334,000	27,716,167	35.62%
2013	40,751,804	11,643,000	29,108,804	28.57%
2012	38,352,572	5,479,000	32,873,572	14.29%

¹Excludes contributions for NCGI

²Reflects the State's planned contribution of 78% of the Statutory Contribution

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

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

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.

Table D-3 Schedule of Retirees and Beneficiaries Added to and Removed from Rolls								
Valuation Date July 1,	Added to Rolls		Removed from Rolls		Rolls at End of Year		Average Annual Allowance ¹	% Increase in Average Annual Allowance ¹
	Number	Annual Allowance	Number ¹	Annual Allowance	Number ¹	Annual Allowance		
2020	41	\$ 3,538,867	34	\$ 3,037,320	640	\$ 59,923,801	\$ 93,631	-0.21%
2019	38	3,911,675	19	1,734,194	633	59,393,303	93,828	0.78%
2018	31	2,668,375	28	1,958,556	614	57,164,048	93,101	2.69%
2017	37	3,058,274	19	1,670,094	623	56,481,444	90,660	-0.44%
2016	41	3,599,047	22	1,471,553	605	55,093,264	91,063	0.75%
2015	43	4,254,340	18	1,234,963	586	52,965,770	90,385	1.52%
2014	34	3,165,378	22	1,456,153	561	49,946,393	89,031	1.33%
2013	48	4,091,470	34	2,021,915	549	48,237,168	87,864	1.82%
2012	34	3,723,186	21	1,423,636	535	46,167,613	86,295	2.69%
2011	41	3,699,618	24	1,442,965	522	43,868,063	84,038	2.88%

¹Beginning with the 2018 valuation, QDRO records excluded from headcounts and QDRO benefits included with member records. This change resulted in 12 fewer records on the rolls as of July 1, 2018.

Table D-4 Schedule of Active Member Valuation Data				
Valuation Date July 1,	Number of Contributing Active Members ¹	Annual Compensation ¹	Annual Average Compensation ¹	% Increase in Average Annual Compensation ¹
2020	405	\$ 76,970,450	\$ 190,050	4.42%
2019	421	76,627,036	182,012	4.62%
2018	447	77,763,777	173,968	4.79%
2017	430	71,385,705	166,013	0.00%
2016	410	68,062,584	166,006	-0.05%
2015	404	67,097,166	166,082	-0.14%
2014	397	66,028,491	166,319	0.32%
2013	409	67,810,110	165,795	-0.03%
2012	407	67,497,660	165,842	-0.16%
2011	406	67,437,125	166,101	0.01%

¹ Prior to July 1, 2018, includes non-contributing active members

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS

**Table D-5
Schedule of Funding Progress**

Valuation Date July 1,	Actuarial Value of Assets ¹ (a)	Actuarial Accrued Liability (b)	(Surplus)/Unfunded Actuarial Liability (c) = (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (d)	(Surplus)/Unfunded Actuarial Liability as % of Covered Payroll (c) / (d)
2020	\$ 214,861,100	\$ 809,796,408	\$ 594,935,308	26.53%	\$ 76,970,450	772.94%
2019	207,308,308	790,936,136	583,627,828	26.21%	76,627,036	761.65%
2018	209,981,271	670,562,613	460,581,342	31.31%	77,763,777	592.28%
2017	216,952,852	646,507,109	429,554,257	33.56%	71,385,705	601.74%
2016	226,310,119	629,810,812	403,500,693	35.93%	68,062,584	592.84%
2015	243,864,022	602,364,200	358,500,178	40.48%	67,097,166	534.30%
2014	258,101,497	632,679,937	374,578,440	40.79%	66,028,491	567.30%
2013	276,966,331	620,376,292	343,409,961	44.64%	67,810,110	506.43%
2012	290,191,842	605,180,634	314,988,792	47.95%	67,497,660	466.67%
2011	310,724,782	585,700,787	274,976,005	53.05%	67,437,125	407.75%

¹Includes receivable amounts

**Table D-6
Schedule of Funded Liabilities by Type (Solvency Test)**

Valuation Date July 1,	Actuarial Accrued Liability for				Actuarial Value of Assets ²	Portion of Actuarial Accrued Liabilities Covered by Actuarial Value of Assets		
	Contributing & Non-Active Member Contributions (1)	Retirees, Beneficiaries & Deterred Vested ¹ (2)	Contributing & Non-Contributing Active Member Benefits Financed by Employer ¹ (3)			(1)	(2)	(3)
2020	\$ 56,024,212	\$ 561,766,393	\$ 192,005,803	\$ 214,861,100	100.00%	28.27%	0.00%	
2019	50,003,665	557,371,419	183,561,052	207,308,308	100.00%	28.22%	0.00%	
2018	44,573,503	474,289,256	151,699,854	209,981,271	100.00%	34.87%	0.00%	
2017	37,093,233	471,714,228	137,699,648	216,952,852	100.00%	38.13%	0.00%	
2016	31,564,870	460,298,517	137,947,425	226,310,119	100.00%	42.31%	0.00%	
2015	26,322,768	430,541,499	145,499,933	243,864,022	100.00%	50.53%	0.00%	
2014	23,058,086	444,577,573	165,044,278	258,101,497	100.00%	52.87%	0.00%	
2013	20,588,967	435,970,958	163,816,367	276,966,331	100.00%	58.81%	0.00%	
2012	19,799,227	417,423,315	167,958,092	290,191,842	100.00%	64.78%	0.00%	
2011	18,353,365	394,760,527	172,586,895	310,724,782	100.00%	74.06%	0.00%	

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

²Includes receivable amounts

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX D – HISTORICAL DATA AND REQUIRED EXHIBITS

Table D-7
Analysis of Financial Experience
Change in Unfunded Actuarial Liability

Valuation Date July 1,	Actuarial Value of Assets Investment (Gain)/Loss	Actuarial Accrued Liability (Gain)/Loss	Assumption & Method Changes	Plan Changes	Contributions ¹	Change in Unfunded Actuarial Accrued Liability
2020	\$ 4,836,409	\$ (4,390,489)	\$ 0	\$ 0	\$ 10,861,560	\$ 11,307,480
2019	3,596,522	11,540,552	95,614,278	0	12,295,134	123,046,486
2018	3,628,245	11,259,223	240,890	0	15,898,727	31,027,085
2017	4,846,305	(4,615,530)	7,782,928	0	18,039,861	26,053,564
2016	7,475,692	6,312,912	7,095,990	0	24,115,921	45,000,515
2015	4,537,795	(2,080,753)	(46,435,820)	0	27,900,516	(16,078,262)
2014	3,383,419	(5,591,539)	550,325	0	32,826,274	31,168,479
2013	8,171,361	(2,041,123)	0	0	22,290,931	28,421,169
2012	11,628,201	(2,699,458)	4,492,499	0	26,591,545	40,012,787
2011	10,135,369	15,918,821	(7,845,712)	0	31,257,511	49,465,989

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

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX E – GLOSSARY OF TERMS

1. Actuarial Assumptions

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

2. Actuarial Cost Method

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

3. Actuarial Gain/(Loss)

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

4. Actuarial Liability

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

5. Actuarial Present Value (Present Value)

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

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

6. Actuarial Valuation

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

APPENDIX E – GLOSSARY OF TERMS

7. Actuarial Value of Assets

The value of cash, investments and other property belonging to a pension plan as used by the actuary for the purpose of an Actuarial Valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values. This way long-term costs are not distorted by short-term fluctuations in the market.

8. Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

9. Amortization Payment

The portion of the pension plan contribution which is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Funded Ratio

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities.

11. Investment Return Assumption

The assumed interest rate used for projecting dollar related values in the future.

12. Mortality Table

A set of percentages which estimate the probability of death at a particular point in time. Typically, the rates are annual and based on age and sex.

13. Normal Cost

That portion of the Actuarial Present Value of pension plan benefits and expenses, which is allocated to a valuation year by the Actuarial Cost Method.

14. Projected Benefits

Those pension plan benefit amounts which are expected to be paid in the future under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and increases in future compensation and service credits.

**JUDICIAL RETIREMENT SYSTEM OF NEW JERSEY
JULY 1, 2020 ACTUARIAL VALUATION**

APPENDIX E – GLOSSARY OF TERMS

15. Projected Unit Credit Cost Method

A method under which the Actuarial Liability is calculated as the Actuarial Present Value of the Projected Benefits allocated to periods prior to the valuation year.

16. Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Actuarial Value of Assets.