

# North Dakota Public Employees Retirement System

Actuarial Valuation as of July 1, 2021



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October 22, 2021

Board Members  
North Dakota Public Employees Retirement System  
Bismarck, North Dakota

Members of the Board:

We are pleased to provide our formal annual Actuarial Valuation Report as of July 1, 2021, for the North Dakota Public Employees Retirement System (“NDPERS”). The actuarial valuation was performed at the request of the Board and is intended for use by the Board and NDPERS and those designated by the Board and NDPERS. This report may be provided to parties other than the Board and NDPERS only in its entirety and only with the permission of the Board and NDPERS. GRS is not responsible for unauthorized use of this report.

The purposes of the actuarial valuation are to measure the funding progress of NDPERS and to determine the actuarial employer contribution rate for the NDPERS for the Plan Year commencing July 1, 2021, and ending on June 30, 2022. This actuarial valuation also provides information required by GASB Statement No. 67. Information required by GASB Statement No. 68 and the employer allocation of the Net Pension Liability are provided in a separate report. This report should not be relied on for any purpose other than the purpose described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

The actuarial employer contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Section E of this report. This report includes risk metrics on page A-6 but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

This actuarial valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

The actuarial valuation was based upon information furnished by the NDPERS Staff, concerning benefits provided by the North Dakota Public Employees Retirement System, financial transactions, plan provisions and census data for active members, terminated members, retirees and beneficiaries as of July 1, 2021. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the NDPERS Staff.

This report was prepared using actuarial assumptions adopted by the Board as authorized under North Dakota Administrative Code Section 71-02. The actuarial assumptions used in the actuarial valuation as of July 1, 2021 were based on an experience review for the period from July 1, 2014 to July 1, 2019, and were adopted for first use commencing with the actuarial valuation as of July 1, 2020. All actuarial assumptions used in this report are reasonable for the purposes of this actuarial valuation. Additional information about the actuarial assumptions is included in the Section E of this report.

Plan provisions are unchanged since the last actuarial valuation as of July 1, 2020.

Since the last actuarial valuation, House Bill 1380 was passed which adds the Main System as a recipient of potential future Legacy Fund earnings if the Plan's actuarial funded ratio is less than 90 percent. This potential source of revenue has no immediate actuarial impact.

Contributions to PERS are based on fixed statutory contribution rates. Based on the current actuarial valuation and the current actuarial assumptions, methods, and benefit provisions for current employees, the total statutory contribution rate of 14.12 percent for the Main System (15.26 percent for employees hired on or after January 1, 2020) is not expected to ever amortize the unfunded liability. The plan changes for employees first enrolled on or after January 1, 2020 will slowly improve the funding of the plan, but only have a marginal impact on the current valuation results. When new hires are reflected, the Main System funded ratio is projected to ultimately increase from the current funded ratio of about 70 percent, to approximately 90 percent in 30 years, and 100 percent in 40 years. We recommend an increase to the Main System total statutory contribution rate such that the funded ratio is projected to reach 100 percent within 30 years.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the North Dakota Public Employees Retirement System as of the actuarial valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

This report reflects the impact of COVID-19 through June 30, 2021. However, this report does not reflect the longer term and still developing future impact of COVID-19, which is likely to further influence demographic experience and economic expectations. We will continue to monitor these developments and their impact.


Bonita Wurst and Abra Hill are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions herein.

The signing actuaries are independent of the plan sponsor.

Gabriel, Roeder, Smith & Company will be pleased to review this actuarial valuation and report with the Board of Trustees and to answer any questions pertaining to the actuarial valuation.

Respectfully submitted,

Gabriel, Roeder, Smith & Company

  
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## **SECTION A**

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### **ACTUARIAL VALUATION RESULTS**

# Comments on the Actuarial Valuation

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## Purpose

At your request, we have performed an actuarial valuation of the North Dakota Public Employees Retirement System as of July 1, 2021:

- To determine the funding status of the System as of the actuarial valuation date;
- To determine the actuarial employer contribution rate for the fiscal year beginning July 1, 2021; and
- To provide other data required by NDPERS.

Pension plan financial reporting under GASB Statement No. 67 is provided in Section D of this report. Employer financial reporting under GASB Statement No. 68 is provided in a separate report.

## Membership Data

We received the data from the North Dakota Public Employees Retirement System Staff. We performed certain checks for reasonableness and found the data to be complete and reliable for actuarial valuation purposes. However, we did not audit the data.

A total of 24,594 active members (including the Main System, Judges and Public Safety) were included in the actuarial valuation as of July 1, 2021. Between the 2020 and 2021 actuarial valuations, the number of active employees increased by 105 members, or 0.4 percent. The average annual actuarial valuation pay increased by 3.5 percent, from \$47,685 to \$49,348 between the 2020 and 2021 actuarial valuations. There were 6,297 active members who were eligible for retirement (normal, early or Rule of 85, 88 or 90) as of July 1, 2021.

The number of benefit recipients increased from 12,945 to 13,575, or 4.9 percent, since the last actuarial valuation. The average monthly benefit increased by 2.3 percent, from \$1,333 to \$1,363. During the year ending June 30, 2021, there were 1,045 members awarded a benefit.

There were 7,094 inactive members as of July 1, 2021, who were vested and elected to receive a deferred benefit. The average monthly deferred benefit is \$528. There were 7,877 inactive members as of July 1, 2021, who were not vested or elected to receive a refund of contributions.

Section C summarizes the membership data.

## Plan Provisions

There have been no changes in plan provisions since the previous actuarial valuation as of July 1, 2020.

Since the last actuarial valuation, House Bill 1380 was passed which adds the Main System as a recipient of potential future Legacy Fund earnings if the Plan's actuarial funded ratio is less than 90 percent. This potential source of revenue has no immediate actuarial impact.

# Comments on the Actuarial Valuation

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## Actuarial Assumptions and Methods

This report was prepared using actuarial assumptions adopted by the Board as authorized under North Dakota Administrative Code Section 71-02. The actuarial assumptions used in the valuation were based on an experience review for the period from July 1, 2014 to July 1, 2019, and were adopted for first use commencing with the actuarial valuation as of July 1, 2020. All actuarial assumptions used in this report are reasonable for the purposes of this actuarial valuation.

In a letter dated September 10, 2021, GRS determined that an investment return assumption of 7.0% can be deemed reasonable for this valuation. However, we caution that 7.0% is really an upper bound. If capital market assumptions remain at the present levels, the 7.0% return assumption might not comply with actuarial standards for the July 1, 2022 valuation.

Section E outlines the actuarial assumptions and methods used in the actuarial valuation. The assumption for administrative expenses is equal to the prior years' administrative expenses, adjusted for inflation. In total, this amount has decreased from \$2,791,178 to \$2,626,993.

The actuarial contribution rate is calculated using a 20-year open period, level percentage of payroll amortization method. The remaining amortization period will be reset to 20 years in each future actuarial valuation.

## Plan Asset Return

On a market value basis, NDPERS assets had an investment return of approximately 27.00 percent (net of investment expenses). On an actuarial value of asset basis, NDPERS assets had an investment return of approximately 10.38 percent, which compares to the prior year assumed rate of return of 7.00 percent. The actuarial value of assets is currently 89.8 percent of the market value of assets. There are \$402,902,222 in net asset gains currently being deferred that will be phased into the actuarial value of assets over the next four years.

## Gain/Loss Analysis

During the plan year ending June 30, 2021, the unfunded actuarial accrued liability ("UAAL") decreased from \$1,456,824,681 as of July 1, 2020, to \$1,444,722,519 as of July 1, 2021, which is a decrease of \$12,102,162. The key factor contributing to the decrease in the UAAL was the recognition of asset gains. These asset gains offset increases in UAAL caused by the difference between the statutory contributions and the actuarially determined contribution rate, as well as the increase resulting from new entrants to the system. The unfunded actuarial accrued liability based on the market value of assets decreased from \$1,563,056,358 to \$1,041,820,297.

## Funded Ratio

The funded ratio measures the portion of the actuarial accrued liability (calculated based on the actuarial assumptions disclosed in this report) that is currently funded. The total PERS funded ratio is 71.1 percent on an actuarial value of assets basis and 79.1 percent on a market value of assets basis as of July 1, 2021.



## Comments on the Actuarial Valuation

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The funded ratio as of July 1, 2021 is 70.3 percent for the Main System, 114.7 percent for the Judges System, 78.2 percent for the Public Safety plan with prior Main System service, and 103.5 percent for the Public Safety plan without prior Main System service. The funded ratios based on the market value of assets are approximately 8 to 13 percentage points higher than the funded ratios based on the actuarial value of assets.

The funded ratio and unfunded actuarial accrued liability are appropriate for assessing the need for and the amount of future unfunded liability contributions (excludes normal cost contributions). They are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the System's benefit obligations.

### Employer Contributions

The actuarially determined contribution rate is calculated as the normal cost contribution (to fund benefits accruing during the year) plus a contribution to amortize the unfunded liability. The unfunded liability contribution rate is calculated using a 20-year open period, level percentage of payroll amortization method. The remaining amortization period will be reset to 20 years in each future actuarial valuation. If employers contributed the actuarial contribution rate, the contribution rate would be expected to gradually decrease using a 20-year open amortization period as the funded ratio gradually increased. An open amortization period is expected to gradually improve the funded ratio. However, the funded ratio is not expected to reach 100 percent under this method (assuming no actuarial gains or losses) because the remaining unfunded liability at each future actuarial valuation date is re-amortized over a new 20-year period.

The contributions made by employers are based on fixed contribution rates set by statute (and not based on the actuarially determined rate). The statutory contribution rate is significantly lower than the actuarial contribution rate for the Main System, significantly higher than the actuarial contribution rate for Judges and higher than the actuarial rate for the Public Safety Systems. Because the Main System comprises the majority of the liability and contribution requirement for the Combined System, the statutory contribution rate for the total PERS is also significantly lower than the actuarial contribution rate.

The portion of the statutory contribution that is applied toward the unfunded liability is the statutory contribution rate minus the employer normal cost rate. Because the statutory employer rate is higher than the actuarial employer rate (based on a 20-year amortization period) for the Judges and Public Safety Systems, the statutory employer rate amortizes the unfunded liability over a period shorter than 20 years.

Contributions to PERS are based on fixed statutory contribution rates. Based on the current actuarial valuation and the current actuarial assumptions, methods, and benefit provisions for current employees, the total statutory contribution rate of 14.12 percent for the Main System (15.26 percent for employees hired on or after January 1, 2020) is not expected to ever amortize the unfunded liability. The plan changes for employees first enrolled on or after January 1, 2020 will slowly improve the funding of the plan, but only have a marginal impact on the current valuation results. When new hires are reflected, the Main System funded ratio is projected to ultimately increase from the current funded ratio of about 70 percent, to approximately 90 percent in 30 years, and 100 percent in 40 years. We recommend an





## Comments on the Actuarial Valuation

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increase to the Main System total statutory contribution rate such that the funded ratio is projected to reach 100 percent within 30 years.

### Historical Trends

The funded ratio (based on the actuarial value of assets) for the total PERS increased over the past 9 years from a historical low of 62.0 percent in 2013, to the current funded ratio of 71.1 percent.

## Risk Measures

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### Risks Associated with Measuring the Accrued Liability and Contributions

The determination of the accrued liability and the statutory and actuarially determined contribution requires the use of actuarial assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the actuarial assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the statutory and actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic actuarial assumptions; changes in economic or demographic actuarial assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. **Investment Risk** – actual investment returns may differ from the expected returns;
2. **Asset/Liability Mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. **Contribution Risk** – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll or other relevant contribution base;
4. **Salary and Payroll Risk** – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. **Longevity Risk** – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
6. **Other Demographic Risks** – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

## Risk Measures

The statutory contribution may be considered as a minimum contribution that complies with State statute. The timely receipt of contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made in accordance with the funding policy do not necessarily guarantee benefit security.

### Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	2020	2021
Ratio of the Market Value of Assets to Total Payroll	2.70	3.25
Ratio of Actuarial Accrued Liability to Payroll	4.04	4.11
Ratio of Actives to Retirees and Beneficiaries	1.89	1.81
Ratio of Net Cash Flow to Market Value of Assets	-1.38%	-1.25%

### Ratio of Market Value of Assets to Payroll

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

### Ratio of Actuarial Accrued Liability to Payroll

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time. The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

### Ratio of Actives to Retirees and Beneficiaries

A young plan with many active members and few retirees will have a high ratio of actives to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

## Risk Measures

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### Ratio of Net Cash Flow to Market Value of Assets

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means benefits and expenses exceed contributions, and existing funds may be used to make benefit payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

### Additional Risk Assessment

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability.

# Summary of Actuarial Valuation Results (Total PERS)

		July 1, 2020 Results	July 1, 2021 Results
<b>Membership Data</b>			
	Active Members	24,489	24,594
	Inactive Vested and Non-Vested Members	13,843	14,971
	Retirees and Beneficiaries	12,945	13,575
	<b>TOTAL</b>	<b>51,277</b>	<b>53,140</b>
<b>Plan Liabilities</b>			
	Actuarial Accrued Liability:		
	Active Members	\$ 2,312,780,347	\$ 2,390,543,659
	Inactive Vested and Non-Vested Members	292,651,658	333,949,099
	Retirees and Beneficiaries	2,111,975,492	2,267,050,239
	<b>TOTAL</b>	<b>\$ 4,717,407,497</b>	<b>\$ 4,991,542,997</b>
	Actuarial Value of Assets at Valuation Date	\$ 3,260,582,816	\$ 3,546,820,478
	Unfunded (Overfunded) Actuarial Accrued Liability	\$ 1,456,824,681	\$ 1,444,722,519
	<b>Funded Position of Plan's Actuarial Accrued Liability <sup>1</sup></b>	<b>69.1 %</b>	<b>71.1 %</b>
<b>Actuarial Contribution Requirement</b>		<b>Fiscal Year 2021</b>	<b>Fiscal Year 2022</b>
	Annual Normal Cost as of Valuation Date	\$ 139,211,899	\$ 143,197,284
	Normal Cost Expense Load	2,791,178	2,626,993
	Amortization Payment	101,447,001	100,601,651
	<b>Total Actuarial Contribution Requirement</b>	<b>243,450,078</b>	<b>246,425,928</b>
	Expected Employee Contributions	85,907,047	89,036,261
	<b>Actuarial Employer Contribution Requirement</b>	<b>\$ 157,543,031</b>	<b>\$ 157,389,667</b>
	Projected Annual Compensation	\$ 1,238,766,600	\$ 1,287,162,453
<b>Actuarial Employer Contribution % of Projected Annual Compensation</b>			
	Main System	12.94%	12.46%
	Judges	8.81%	8.62%
	Public Safety with prior Main System service	9.33%	9.33%
	Public Safety without prior Main System service	7.72%	7.31%
	<b>Total PERS (Combined)</b>	<b>12.72%</b>	<b>12.23%</b>
<b>Statutory Employer Contribution % of Projected Annual Compensation</b>			
	Main System <sup>2</sup>	7.16%	7.26%
	Judges	17.52%	17.52%
	Public Safety with prior Main System service	9.81%	9.81%
	Public Safety without prior Main System service	7.93%	7.93%
	<b>Total PERS (Combined)</b>	<b>7.35%</b>	<b>7.47%</b>

<sup>1</sup> Equals the ratio of the actuarial value of assets to the total actuarial accrued liability.

<sup>2</sup> Weighted average of 7.12 percent for members hired before 1/1/2020 and 8.26% for members hired on or after 1/1/2020.



# Contribution Rate by Plan

## All PERS Plans

	Main System	%	Judges	%	Public Safety w/ Prior	%	Public Safety w/o Prior	%	Total	% of Payroll
<b>Actuarial Valuation as of July 1, 2021</b>										
Based on Actuarial Value of Assets										
Total Actuarial Accrued Liability	\$ 4,795,054,158		\$ 53,424,304		\$ 128,468,679		\$ 14,595,856		\$ 4,991,542,997	
Actuarial Value of Assets (AVA)	3,369,943,759		61,293,801		100,482,794		15,100,124		3,546,820,478	
Unfunded Actuarial Accrued Liability (UAAL)	1,425,110,399		(7,869,497)		27,985,885		(504,268)		1,444,722,519	
Funded Ratio (Actuarial Value of Assets)	70.3%		114.7%		78.2%		103.5%		71.1%	
Total Annual Gross Normal Cost	134,286,848	11.19%	2,052,452	23.02%	7,905,234	11.92%	1,579,743	13.10%	145,824,277	11.33%
Employee Contribution	83,991,302	7.00%	713,144	8.00%	3,668,522	5.53%	663,293	5.50%	89,036,261	6.92%
Annual Employer Normal Cost	50,295,546	4.19%	1,339,308	15.02%	4,236,712	6.39%	916,450	7.60%	56,788,016	4.41%
Amortization of Unfunded Liability <sup>1</sup>	99,258,221	8.27%	(570,651)	(6.40%)	1,949,203	2.94%	(35,122)	(0.29%)	100,601,651	7.82%
Actuarial Contribution	\$ 149,553,767	12.46%	\$ 768,657	8.62%	\$ 6,185,915	9.33%	\$ 881,328	7.31%	\$ 157,389,667	12.23%
Statutory Employer Contribution	87,110,979	7.26%	1,561,786	17.52%	6,505,259	9.81%	956,348	7.93%	96,134,372	7.47%
Statutory Contribution Deficit/(Surplus)	62,442,788	5.20%	(793,129)	(8.90%)	(319,344)	(0.48%)	(75,020)	(0.62%)	61,255,295	4.76%
Employer UAAL Contribution from Statutory Rate	36,815,433	3.07%	222,478	2.50%	2,268,547	3.42%	39,898	0.33%	39,346,356	3.06%
Amortization Period from Statutory Rate (Years)	100+		None		16.2		None		100+	
Based on Market Value of Assets										
Market Value of Assets (MVA)	\$ 3,752,753,612		\$ 68,256,490		\$ 111,897,170		\$ 16,815,428		\$ 3,949,722,700	
Unfunded Actuarial Accrued Liability (UAAL)	1,042,300,546		(14,832,186)		16,571,509		(2,219,572)		1,041,820,297	
Funded Ratio (Market Value of Assets)	78.3%		127.8%		87.1%		115.2%		79.1%	
Actuarial Contribution		10.24%		2.95%		8.13%		6.32%		10.04%
Amortization Period from Statutory Rate (Years)	100+		None		8.5		None		100+	
<b>Actuarial Valuation as of July 1, 2020</b>										
Based on Actuarial Value of Assets										
Total Actuarial Accrued Liability	\$ 4,557,679,020		\$ 51,150,968		\$ 95,981,010		\$ 12,596,499		\$ 4,717,407,497	
Actuarial Value of Assets (AVA)	3,112,920,033		58,168,317		76,782,064		12,712,402		3,260,582,816	
Unfunded Actuarial Accrued Liability (UAAL)	1,444,758,987		(7,017,349)		19,198,946		(115,903)		1,456,824,681	
Funded Ratio (Actuarial Value of Assets)	68.3%		113.7%		80.0%		100.9%		69.1%	
Total Annual Gross Normal Cost	132,492,248	11.33%	1,969,804	22.66%	5,964,147	12.15%	1,576,878	13.29%	142,003,077	11.46%
Employee Contribution	81,838,631	7.00%	695,347	8.00%	2,720,309	5.54%	652,760	5.50%	85,907,047	6.93%
Annual Employer Normal Cost	50,653,617	4.33%	1,274,457	14.66%	3,243,838	6.61%	924,118	7.79%	56,096,030	4.53%
Amortization of Unfunded Liability <sup>1</sup>	100,626,735	8.61%	(508,858)	(5.85%)	1,337,197	2.72%	(8,073)	(0.07%)	101,447,001	8.19%
Actuarial Contribution	\$ 151,280,352	12.94%	\$ 765,599	8.81%	\$ 4,581,035	9.33%	\$ 916,045	7.72%	\$ 157,543,031	12.72%
Statutory Employer Contribution	83,709,228	7.16%	1,522,810	17.52%	4,815,052	9.81%	941,161	7.93%	90,988,252	7.35%
Statutory Contribution Deficit/(Surplus)	67,571,124	5.78%	(757,211)	(8.71%)	(234,017)	(0.48%)	(25,116)	(0.21%)	66,554,779	5.37%
Employer UAAL Contribution from Statutory Rate	33,055,611	2.83%	248,353	2.86%	1,571,214	3.20%	17,043	0.14%	34,892,222	2.82%
Amortization Period from Statutory Rate (Years)	100+		None		15.9		None		100+	
Based on Market Value of Assets										
Market Value of Assets (MVA)	\$ 3,011,499,294		\$ 56,273,160		\$ 74,280,460		\$ 12,298,225		\$ 3,154,351,139	
Unfunded Actuarial Accrued Liability (UAAL)	1,546,179,726		(5,122,192)		21,700,550		298,274		1,563,056,358	
Funded Ratio (Market Value of Assets)	66.1%		110.0%		77.4%		97.6%		66.9%	
Actuarial Contribution		13.54%		10.39%		9.69%		7.97%		13.32%
Amortization Period from Statutory Rate (Years)	100+		None		18.9		None		100+	
<b>Changes from Actuarial Valuation as of July 1, 2020 to July 1, 2021</b>										
AVA Unfunded Actuarial Accrued Liability (UAAL)	\$ (19,648,588)		\$ (852,148)		\$ 8,786,939		\$ (388,365)		\$ (12,102,162)	
MVA Unfunded Actuarial Accrued Liability (UAAL)	(503,879,180)		(9,709,994)		(5,129,041)		(2,517,846)		(521,236,061)	
AVA Funded Ratio	2.0%		1.0%		-1.8%		2.6%		2.0%	
MVA Funded Ratio	12.2%		17.7%		9.7%		17.6%		12.2%	
Actuarial Contribution Rate (AVA)		-0.48%		-0.19%		0.00%		-0.41%		-0.49%
Actuarial Contribution Rate (MVA)		-3.30%		-7.44%		-1.56%		-1.65%		-3.28%

<sup>1</sup> Amortization as a level percentage of payroll over a 20-year open period. Total payroll assumed to increase 3.00% annually for the Judges and 3.50% for the Main System and Public Safety groups.



# Actuarial Valuation Results

## All PERS Plans

Valuation as of July 1, 2021

July 1, 2020

	Valuation as of July 1, 2021								July 1, 2020			
	Main System	%	Judges	%	Public Safety w/ Prior	%	Public Safety w/o Prior	%	Total	% of Payroll	Total	% of Payroll
<b>Active Members</b>												
Number	23,370		57		967		200		24,594		24,489	
Average Age	46.2		56.4		36.5		37.8		45.7		45.9	
Average Years of Benefit Service	9.4		9.2		6.6		4.8		9.3		9.3	
Average Years of Vesting Service	9.5		15.4		7.6		5.8		9.4		9.4	
Total Payroll	\$ 1,132,390,738		\$ 8,654,665		\$ 61,533,502		\$ 11,097,033		\$ 1,213,675,937		\$ 1,167,767,935	
Projected Annual Compensation	\$ 1,199,875,749		\$ 8,914,304		\$ 66,312,530		\$ 12,059,870		\$ 1,287,162,453		\$ 1,238,766,600	
<b>Inactive Vested and Non-Vested Members</b>												
Number	14,477		1		355		138		14,971		13,843	
Total Annualized Benefits (Vested)	\$ 43,437,177		\$ 24,051		\$ 1,238,971		\$ 253,160		\$ 44,953,360		\$ 40,698,481	
<b>Retired Members and Beneficiaries</b>												
Number	13,361		63		137		14		13,575		12,945	
Total Annualized Benefits	\$ 215,323,434		\$ 3,637,743		\$ 2,948,915		\$ 139,708		\$ 222,049,800		207,123,745	
Total Membership	51,208		121		1,459		352		53,140		51,277	
<b>Actuarial Accrued Liability</b>												
Active Members	\$ 2,270,654,282		\$ 22,394,664		\$ 86,194,586		\$ 11,300,127		\$ 2,390,543,659		\$ 2,312,780,347	
Inactive Vested and Non-Vested Members	323,226,817		179,618		8,899,970		1,642,694		333,949,099		292,651,658	
Retired Members and Beneficiaries	2,201,173,059		30,850,022		33,374,123		1,653,035		2,267,050,239		2,111,975,492	
Total	4,795,054,158		53,424,304		128,468,679		14,595,856		4,991,542,997		4,717,407,497	
Actuarial Value of Assets	\$ 3,369,943,759		\$ 61,293,801		\$ 100,482,794		\$ 15,100,124		\$ 3,546,820,478		\$ 3,260,582,816	
Unfunded Actuarial Accrued Liability	\$ 1,425,110,399		\$ (7,869,497)		\$ 27,985,885		\$ (504,268)		\$ 1,444,722,519		\$ 1,456,824,681	
Funded Ratio (Actuarial Value of Assets)	70.28%		114.73%		78.22%		103.45%		71.1%		69.1%	
<b>Annual Gross Normal Cost</b>												
Benefits	\$ 131,755,463	10.98%	\$ 2,045,083	22.94%	\$ 7,832,942	11.81%	\$ 1,563,796	12.97%	\$ 143,197,284	11.13%	\$ 139,211,899	11.24%
Expenses of Administration	2,531,385	0.21%	7,369	0.08%	72,292	0.11%	15,947	0.13%	2,626,993	0.20%	2,791,178	0.22%
Total	134,286,848	11.19%	2,052,452	23.02%	7,905,234	11.92%	1,579,743	13.10%	145,824,277	11.33%	142,003,077	11.46%
Amortization of Unfunded Liability <sup>1</sup>	\$ 99,258,221	8.27%	\$ (570,651)	(6.40%)	\$ 1,949,203	2.94%	\$ (35,122)	(0.29%)	\$ 100,601,651	7.82%	\$ 101,447,001	8.19%
<b>Actuarial Contribution Requirement</b>												
Employer Portion	\$ 149,553,767	12.46%	\$ 768,657	8.62%	\$ 6,185,915	9.33%	\$ 881,328	7.31%	\$ 157,389,667	12.23%	\$ 157,543,031	12.72%
Employee Portion	83,991,302	7.00%	713,144	8.00%	3,668,522	5.53%	663,293	5.50%	89,036,261	6.92%	85,907,047	6.93%
Total	233,545,069	19.46%	1,481,801	16.62%	9,854,437	14.86%	1,544,621	12.81%	246,425,928	19.15%	243,450,078	19.65%
Actuarial Contribution	\$ 149,553,767	12.46%	\$ 768,657	8.62%	\$ 6,185,915	9.33%	\$ 881,328	7.31%	\$ 157,389,667	12.23%	\$ 157,543,031	12.72%
Statutory Employer Contribution	87,110,979	7.26%	1,561,786	17.52%	6,505,259	9.81%	956,348	7.93%	96,134,372	7.47%	90,988,252	7.35%
Statutory Contribution Deficit/(Surplus)	62,442,788	5.20%	(793,129)	(8.90%)	(319,344)	(0.48%)	(75,020)	(0.62%)	61,255,295	4.76%	66,554,779	5.37%

<sup>1</sup> Amortization as a level percentage of payroll over a 20-year open period. Total payroll assumed to increase 3.00% annually for the Judges and 3.50% for the Main System and Public Safety groups.



# Actuarial Valuation Results

## Gain/Loss Analysis

### RECONCILIATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY

	Main System	Judges	Public Safety with Prior Main System Service	Public Safety without Prior Main System Service	Total
Unfunded liability at previous valuation	\$ 1,444,758,987	\$ (7,017,349)	\$ 19,198,946	\$ (115,903)	\$ 1,456,824,681
<b>Expected unfunded liability at current valuation</b>					
Normal cost for plan year	132,492,248	1,969,804	5,964,147	1,576,878	142,003,077
Interest on unfunded liability and normal cost	105,691,928	(423,437)	1,549,141	46,144	106,863,776
Contributions using actuarial rate with interest to current valuation date	<u>241,140,151</u>	<u>1,511,214</u>	<u>7,552,569</u>	<u>1,622,785</u>	<u>251,826,719</u>
Total expected change in unfunded liability at current valuation	(2,955,975)	35,153	(39,281)	237	(2,959,866)
Total expected unfunded liability at current valuation	1,441,803,012	(6,982,196)	19,159,665	(115,666)	1,453,864,815
Change due to:					
Amount of contributions (based on statutory rate) <sup>1</sup>	70,383,139	(582,373)	(1,306,422)	55,548	68,549,892
Amount of administrative expenses	(230,395)	(4,976)	7,194	(1,454)	(229,631)
Recognition of asset (gains)/losses	(108,804,392)	(564,096)	136,812	(32,155)	(109,263,831)
Salary experience	(15,590,291)	(4,722)	(723,523)	(409,213)	(16,727,749)
Retirement experience	10,474,513	(545,852)	274,316	(20,925)	10,182,052
Withdrawal experience	5,641,187	1,170	960,293	(18,202)	6,584,448
Disability experience	81,980	(14,722)	(11,238)	(6,157)	49,863
Death in Service experience	227,956	(12,532)	9,709	1,125	226,258
Death After Retirement experience	(6,439,447)	621,772	(242,598)	(59,583)	(6,119,856)
New entrants <sup>2</sup>	17,131,458	37,847	10,066,578	114,084	27,349,967
Data changes and other experience	10,431,679	181,183	(344,901)	(11,670)	10,256,291
Change in actuarial assumptions	-	-	-	-	-
Changes in plan provisions <sup>3</sup>	-	-	-	-	-
Total change	<u>(16,692,613)</u>	<u>(887,301)</u>	<u>8,826,220</u>	<u>(388,602)</u>	<u>(9,142,296)</u>
Unfunded liability at current valuation	\$ 1,425,110,399	\$ (7,869,497)	\$ 27,985,885	\$ (504,268)	\$ 1,444,722,519

### RECONCILIATION OF ACTUARIAL EMPLOYER CONTRIBUTION RATE

	Main System	Judges	Public Safety with Prior Main System Service	Public Safety without Prior Main System Service
FY 2021 Actuarial Employer Contribution Rate	12.94%	8.81%	9.33%	7.72%
Expected FY 2022 Actuarial Employer Contribution Rate <sup>1</sup>	12.63%	9.01%	9.24%	7.72%
Expected FY 2022 Actuarial Employer Contribution Rate with New Pay Base	12.58%	9.40%	8.34%	7.54%
Impact due to Pay Base	-0.05%	0.39%	-0.90%	-0.18%
Change due to:				
Amount of contributions (based on statutory rate) <sup>1</sup>	0.41%	-0.47%	-0.13%	0.03%
Amount of administrative expenses	-0.02%	-0.06%	0.01%	-0.01%
Recognition of asset (gains)/losses	-0.64%	-0.46%	0.01%	-0.02%
Salary experience	-0.09%	0.00%	-0.07%	-0.24%
Retirement experience	0.06%	-0.45%	0.03%	-0.01%
Withdrawal experience	0.04%	0.01%	0.10%	-0.01%
Disability experience	0.00%	-0.02%	-0.01%	0.00%
Death in Service experience	0.00%	-0.01%	0.01%	0.00%
Death After Retirement experience	-0.04%	0.51%	-0.03%	-0.04%
New entrants <sup>2</sup>	0.10%	0.03%	1.06%	0.07%
Data changes and other experience	0.06%	0.14%	0.01%	0.00%
Change in actuarial assumptions	0.00%	0.00%	0.00%	0.00%
Changes in plan provisions <sup>3</sup>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>
Total change	-0.12%	-0.78%	0.99%	-0.23%
FY 2022 Actuarial Employer Contribution Rate	12.46%	8.62%	9.33%	7.31%
FY 2022 Statutory Employer Contribution Rate	7.26%	17.52%	9.81%	7.93%

<sup>1</sup> Expected actuarial contribution rate is based on contributions using the actuarial rate. The change due to amount and timing of contributions is based on the statutory contributions that were made compared to the actuarial contributions.

<sup>2</sup> New entrants change includes the net impact of liability and asset transfers.

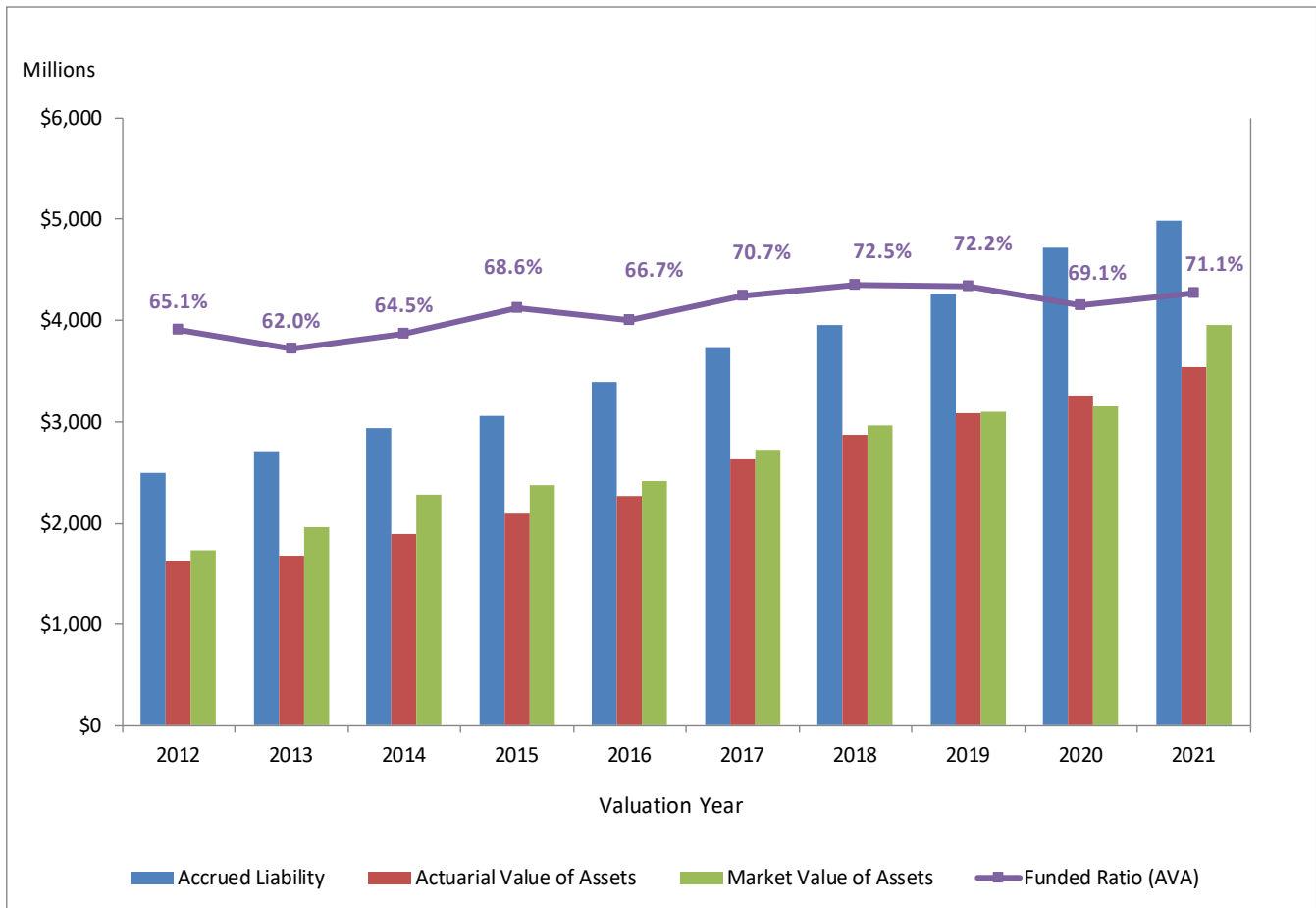
<sup>3</sup> The change due to the change in the interest rate earned on member contributions is included with assumption changes.



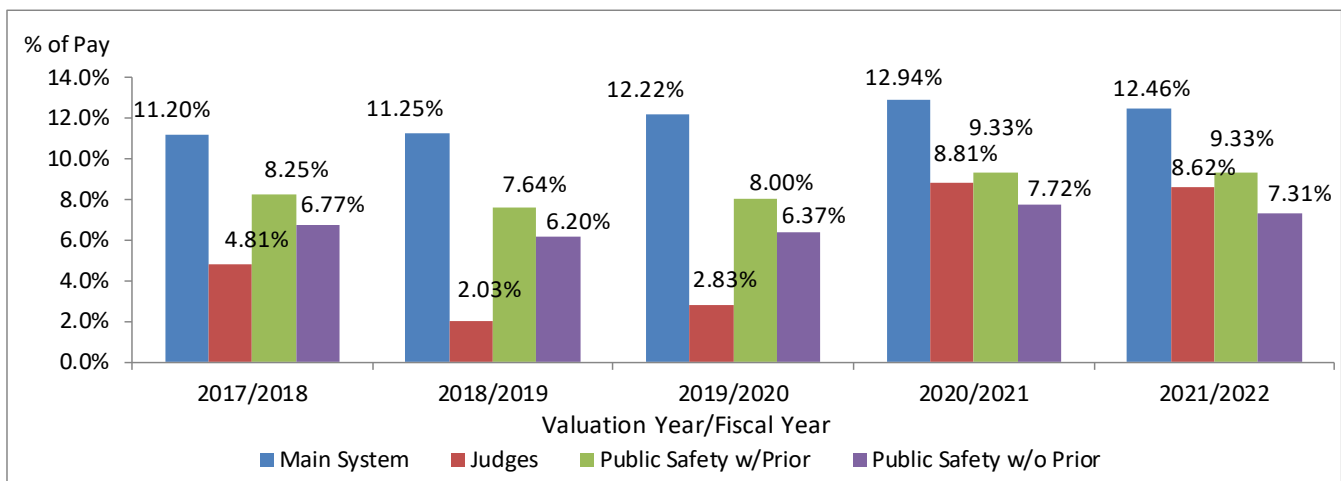


# Historical Trends of Funded Ratio and Employer Contributions

## Funded Ratio History



## Actuarial Employer Contribution Rate History



## Actuarial Valuation Results All PERS Plans (\$ in Millions)

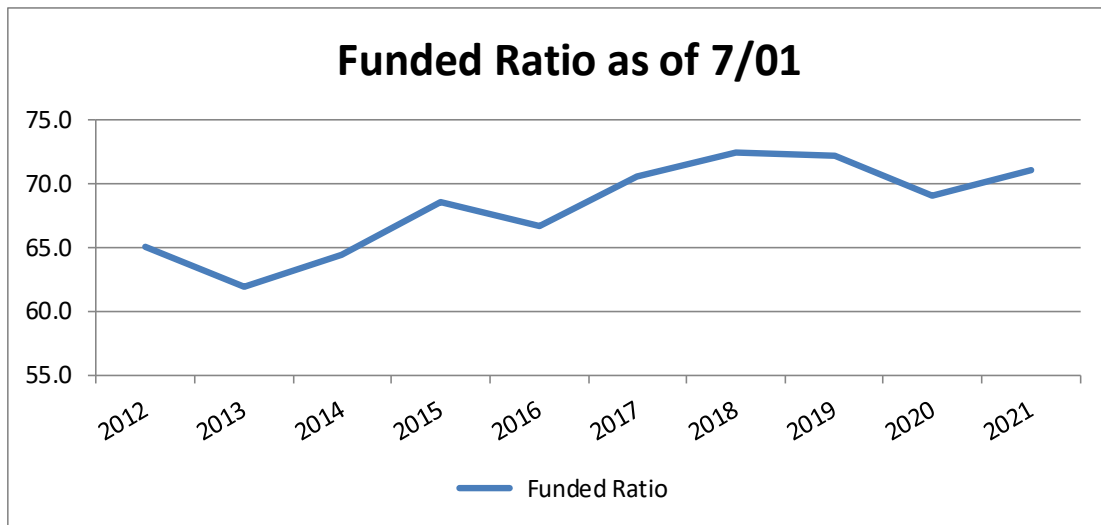
Valuation Date 7/1	Total Actuarial Accrued Liability	(1)	(2)	(3)	Actuarial Value of Assets	Portion (%) of Actuarial Accrued Liability By Assets		
		Active Member Contributions*	Retirees, Beneficiaries and Inactive Members	Active Members (Employer Financed Portion)		(1)	(2)	(3)
2012	\$2,501.3	\$626.2	\$1,070.7	\$804.4	\$1,627.4	100%	94%	0%
2013	2,716.5	687.9	1,126.0	902.6	1,683.0	100%	88%	0%
2014	2,938.8	746.5	1,255.4	936.9	1,895.8	100%	92%	0%
2015	3,052.4	788.3	1,437.0	827.1	2,094.3	100%	91%	0%
2016	3,396.6	879.3	1,559.5	957.8	2,265.3	100%	89%	0%
2017	3,726.8	943.0	1,751.0	1,032.8	2,633.2	100%	97%	0%
2018	3,959.1	1,027.6	1,917.4	1,014.0	2,868.8	100%	96%	0%
2019	4,269.3	1,068.4	2,163.0	1,037.9	3,081.9	100%	93%	0%
2020	4,717.4	1,138.6	2,404.6	1,174.2	3,260.6	100%	88%	0%
2021	4,991.5	1,213.5	2,601.0	1,177.0	3,546.8	100%	90%	0%

\*Includes vested employer contributions for members who have the Portability Enhancement Provision (PEP).



## Funded Ratio History

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)
7/1/2012	\$ 1,627,395,600	\$ 2,501,331,500	\$ 873,935,900	65.1 %
7/1/2013	1,682,958,500	2,716,494,800	1,033,536,300	62.0
7/1/2014	1,895,837,700	2,938,752,200	1,042,914,500	64.5
7/1/2015	2,094,251,400	3,052,446,500	958,195,100	68.6
7/1/2016	2,265,277,641	3,396,565,467	1,131,287,826	66.7
7/1/2017	2,633,198,632	3,726,815,087	1,093,616,455	70.7
7/1/2018	2,868,788,729	3,959,094,976	1,090,306,247	72.5
7/1/2019	3,081,881,908	4,269,339,965	1,187,458,057	72.2
7/1/2020	3,260,582,816	4,717,407,497	1,456,824,681	69.1
7/1/2021	3,546,820,478	4,991,542,997	1,444,722,519	71.1



## Schedule of Funding Progress

Valuation Year	Actuarial Accrued Liabilities	Valuation Assets	Unfunded Actuarial Accrued Liabilities	Ratio of Assets to AAL	Active Member Payroll	UAAL as Percent of Active Member Payroll
2011 <sup>1</sup>	\$ 2,339,833,200	\$ 1,650,463,700	\$ 689,369,500	70.5%	\$ 769,710,000	89.6%
2012 <sup>1</sup>	\$ 2,501,331,500	\$ 1,627,395,600	\$ 873,935,900	65.1%	\$ 804,169,000	108.7%
2013 <sup>1</sup>	2,716,494,800	1,682,958,500	1,033,536,300	62.0%	800,878,000	129.1%
2014	2,938,752,200	1,895,837,700	1,042,914,500	64.5%	888,452,060	117.4%
2015	3,052,446,500	2,094,251,400	958,195,100	68.6%	973,536,402	98.4%
2016	3,396,565,467	2,265,277,641	1,131,287,826	66.7%	1,048,548,467	107.9%
2017	3,726,815,087	2,633,198,632	1,093,616,455	70.7%	1,063,371,798	102.8%
2018	3,959,094,976	2,868,788,729	1,090,306,247	72.5%	1,075,957,954	101.3%
2019	4,269,339,965	3,081,881,908	1,187,458,057	72.2%	1,098,416,146	108.1%
2020	4,717,407,497	3,260,582,816	1,456,824,681	69.1%	1,167,767,935	124.8%
2021	4,991,542,997	3,546,820,478	1,444,722,519	71.1%	1,213,675,937	119.0%

<sup>1</sup>The active member payroll is approximated based on figures from the NDPERS Comprehensive Annual Financial Report.

## **SECTION B**

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### **ASSET EXHIBITS**

## Statement of Fiduciary Net Position (Total PERS)

	Fiscal Year Ending	
	June 30, 2020	June 30, 2021
<b>Assets</b>		
Cash	\$ 15,113,663	\$ 16,168,202
Receivables		
Contribution receivable	12,756,310	12,731,180
Interest receivable	9,952,954	8,205,048
Due from other fiduciary funds	9,250	-
Due from Uniform Group Insurance Plan	-	-
Due from other state agencies	-	-
Total receivables	<u>22,718,514</u>	<u>20,936,228</u>
Investments		
External Investment Pool	3,120,007,872	3,917,244,099
Equities	-	-
Fixed income		
Real estate		
Mutual funds	-	-
Annuities		
Alternative investments	-	-
Invested cash	-	-
Total Investments	<u>3,120,007,872</u>	<u>3,917,244,099</u>
Prepaid expenses	-	-
Invested Securities Lending Collateral	8,953,451	15,875,367
Capital assets (net of depreciation/ amortization)	200,849	123,726
Total assets	<u>3,166,994,349</u>	<u>3,970,347,622</u>
<b>Liabilities</b>		
Salaries payable	118,234	131,657
Accounts payable	3,454,006	4,471,974
Due to other fiduciary funds	-	-
Due to Uniform Group Insurance Plan	-	-
Securities Lending Collateral	8,953,451	15,875,367
Due to other state agencies	13,824	18,050
Accrued compensated absences	103,695	127,874
Total liabilities	<u>12,643,210</u>	<u>20,624,922</u>
<b>Net position restricted for pensions</b>	<u>\$ 3,154,351,139</u>	<u>\$ 3,949,722,700</u>



## Statement of Changes in Fiduciary Net Position (Total PERS)

	Fiscal Year Ending	
	June 30, 2020	June 30, 2021
<b>Additions</b>		
Contributions:		
From employer	\$ 85,504,033	\$ 91,265,640
From employee	81,477,666	85,914,756
Transfer from general fund	-	-
Transfers from other plans	-	-
Total contributions	<u>166,981,699</u>	<u>177,180,396</u>
Investment income:		
Net change in fair value of investments	43,599,936	793,302,359
Interest and dividends	65,795,981	62,626,623
Less investment expense	<u>(8,419,181)</u>	<u>(11,212,468)</u>
Net investment income	100,976,736	844,716,514
Securities Lending Income	129,262	216,695
Repurchase service credit	10,818,588	7,129,269
Miscellaneous income	<u>(2,580)</u>	<u>(1,723)</u>
Total additions	<u>278,903,705</u>	<u>1,029,241,151</u>
<b>Deductions</b>		
Benefits paid to participants	204,312,452	218,414,339
Refunds	14,122,715	12,792,647
Transfers to other plans	<u>118,721</u>	<u>93,418</u>
Total deductions	218,553,888	231,300,404
Administrative expenses	<u>2,729,759</u>	<u>2,569,186</u>
Total deductions	<u>221,283,647</u>	<u>233,869,590</u>
Change in net position	57,620,058	795,371,561
<b>Net position restricted for pensions</b>		
Beginning of year	<u>3,096,731,081</u>	<u>3,154,351,139</u>
End of year	<u>\$ 3,154,351,139</u>	<u>\$ 3,949,722,700</u>



## Market Value of Assets by Plan (Total PERS)

	Fiscal Year Ending									
	June 30, 2020					June 30, 2021				
	Main System	Judges	Public Safety with Prior Main System Service	Public Safety without Prior Main System Service	Total PERS	Main System	Judges	Public Safety with Prior Main System Service	Public Safety without Prior Main System Service	Total PERS
<b>Additions</b>										
Contributions:										
From employer	\$ 78,110,561	\$ 1,570,506	\$ 4,845,254	\$ 977,712	\$ 85,504,033	\$ 83,508,849	\$ 1,389,483	\$ 5,470,675	\$ 896,633	\$ 91,265,640
From employee	77,718,958	673,310	2,478,776	606,622	81,477,666	81,568,186	634,464	3,093,634	618,472	85,914,756
Transfer from general fund	-	-	-	-	-	-	-	-	-	-
Transfers from other plans	(242,733)	-	242,733	-	-	(12,595,524)	-	12,595,524	-	-
Total contributions	155,586,786	2,243,816	7,566,763	1,584,334	166,981,699	152,481,511	2,023,947	21,159,833	1,515,105	177,180,396
Investment income	96,500,260	1,822,701	2,290,579	363,196	100,976,736	808,404,721	13,443,484	19,768,050	3,100,259	844,716,514
Securities Lending Income	129,262	-	-	-	129,262	216,695	-	-	-	216,695
Repurchase service credit	9,884,501	-	327,833	606,254	10,818,588	6,894,649	-	100,219	134,401	7,129,269
Miscellaneous income	(2,580)	-	-	-	(2,580)	(1,723)	-	-	-	(1,723)
Total additions	262,098,229	4,066,517	10,185,175	2,553,784	278,903,705	967,995,853	15,467,431	41,028,102	4,749,765	1,029,241,151
<b>Deductions</b>										
Total Benefits, Refunds and Transfers	212,140,527	3,236,680	2,977,170	199,511	218,553,888	224,265,853	3,476,894	3,340,691	216,966	231,300,404
Administrative expenses	2,639,036	11,752	62,343	16,628	2,729,759	2,475,682	7,207	70,701	15,596	2,569,186
Total deductions	214,779,563	3,248,432	3,039,513	216,139	221,283,647	226,741,535	3,484,101	3,411,392	232,562	233,869,590
Change in net position	47,318,666	818,085	7,145,662	2,337,645	57,620,058	741,254,318	11,983,330	37,616,710	4,517,203	795,371,561
<b>Net position restricted for pensions</b>										
Beginning of year	2,964,180,628	55,455,075	67,134,798	9,960,580	3,096,731,081	3,011,499,294	56,273,160	74,280,460	12,298,225	3,154,351,139
End of year	\$ 3,011,499,294	\$ 56,273,160	\$ 74,280,460	\$ 12,298,225	\$ 3,154,351,139	\$ 3,752,753,612	\$ 68,256,490	\$ 111,897,170	\$ 16,815,428	\$ 3,949,722,700

Numbers may not add due to rounding.





## Development of Actuarial Value of Assets (Total PERS)

Fiscal Year Ending	2020	2021	2022	2023	2024	2025
Beginning of Year:						
(1) Market Value of Assets	\$ 3,096,731,081	\$ 3,154,351,139				
(2) Actuarial Value of Assets <sup>1</sup>	3,081,881,908	3,260,582,816				
End of Year:						
(3) Market Value of Assets	3,154,351,139	3,949,722,700				
(4a) Contributions (Incl. repurchase svc credit)	177,797,707	184,307,942				
(4b) Net Disbursements	221,283,647	233,869,590				
(5) Total Investment Income	101,105,998	844,933,209				
=(3)-(1)-(4a)+(4b)						
(6) Projected Rate of Return	7.50%	7.00%				
(7) Projected Investment Income						
=(1)x(6)+[(1+(6)) <sup>5</sup> -1]x(4a-4b)	230,653,589	219,099,260				
(8) Asset Adjustment	-	-				
(9) Investment Income in Excess of Projected Income	(129,547,591)	625,833,949				
(10) Excess Investment Income Recognized This Year (5-year recognition)						
(10a) From This Year	\$ (25,909,518)	\$ 125,166,790				
(10b) From One Year Ago	(13,819,919)	(25,909,518)	\$ 125,166,790			
(10c) From Two Years Ago	7,603,457	(13,819,919)	(25,909,518)	\$ 125,166,790		
(10d) From Three Years Ago	23,659,239	7,603,457	(13,819,919)	(25,909,518)	\$ 125,166,790	
(10e) From Four Years Ago	0	23,659,240	7,603,458	(13,819,921)	(25,909,519)	\$ 125,166,789
(10f) Total Recognized Investment Gain/(Loss)	(8,466,741)	116,700,050	93,040,811	85,437,351	99,257,271	125,166,789
(11) Change in Actuarial Value of Assets						
=(4a)-(4b)+(7)+(8)+(10f)	178,700,908	286,237,662				
End of Year:						
<b>(3) Market Value of Assets</b>	<b>\$ 3,154,351,139</b>	<b>\$ 3,949,722,700</b>				
<b>(12) Final Actuarial Value of Assets as of 6/30 = (2)+(11)</b>	<b>\$ 3,260,582,816</b>	<b>\$ 3,546,820,478</b>				
(13) Difference between Market & Actuarial Values	(106,231,677)	402,902,222				
(14) Estimated Market Value Rate of Return on Total Plan Assets	3.29%	27.00%				
(15) Actuarial Value Rate of Return	7.26%	10.38%				
(16) Ratio of Actuarial Value to Market Value	103.4%	89.8%				

<sup>1</sup>Asset gains and losses in FY 2016 and prior were fully recognized as of July 1, 2017, and subsequent asset gains/losses are smoothed in over a five-year period.



## Actuarial Value of Assets by Plan (Total PERS)

Valuation as of July 1, 2021					
	Main System	Judges	Public Safety with Prior	Public Safety without Prior	Total
Market Value of Assets	\$ 3,752,753,612	\$ 68,256,490	\$ 111,897,170	\$ 16,815,428	\$ 3,949,722,700
% of Total	95.01%	1.73%	2.83%	0.43%	100.00%
Actuarial Value of Assets	\$ 3,369,943,759	\$ 61,293,801	\$ 100,482,794	\$ 15,100,124	\$ 3,546,820,478
% of Total	95.01%	1.73%	2.83%	0.43%	100.00%
Ratio of Actuarial Value to Market Value	89.80%	89.80%	89.80%	89.80%	89.80%
Difference between Market Value and Actuarial Value	\$ 382,809,853	\$ 6,962,689	\$ 11,414,376	\$ 1,715,304	\$ 402,902,222

Valuation as of July 1, 2020					
	Main System	Judges	Public Safety with Prior	Public Safety without Prior	Total
Market Value of Assets	\$ 3,011,499,294	\$ 56,273,160	\$ 74,280,460	\$ 12,298,225	\$ 3,154,351,139
% of Total	95.47%	1.78%	2.35%	0.39%	100.00%
Actuarial Value of Assets	\$ 3,112,920,033	\$ 58,168,317	\$ 76,782,064	\$ 12,712,402	\$ 3,260,582,816
% of Total	95.47%	1.78%	2.35%	0.39%	100.00%
Ratio of Actuarial Value to Market Value	103.37%	103.37%	103.37%	103.37%	103.37%
Difference between Market Value and Actuarial Value	\$ (101,420,739)	\$ (1,895,157)	\$ (2,501,604)	\$ (414,177)	\$ (106,231,677)

*Market value of assets by plan provided by NDPERS Staff.*

*Actuarial value of assets by plan allocated based on the proportion of the market value of assets as of the actuarial valuation date.*

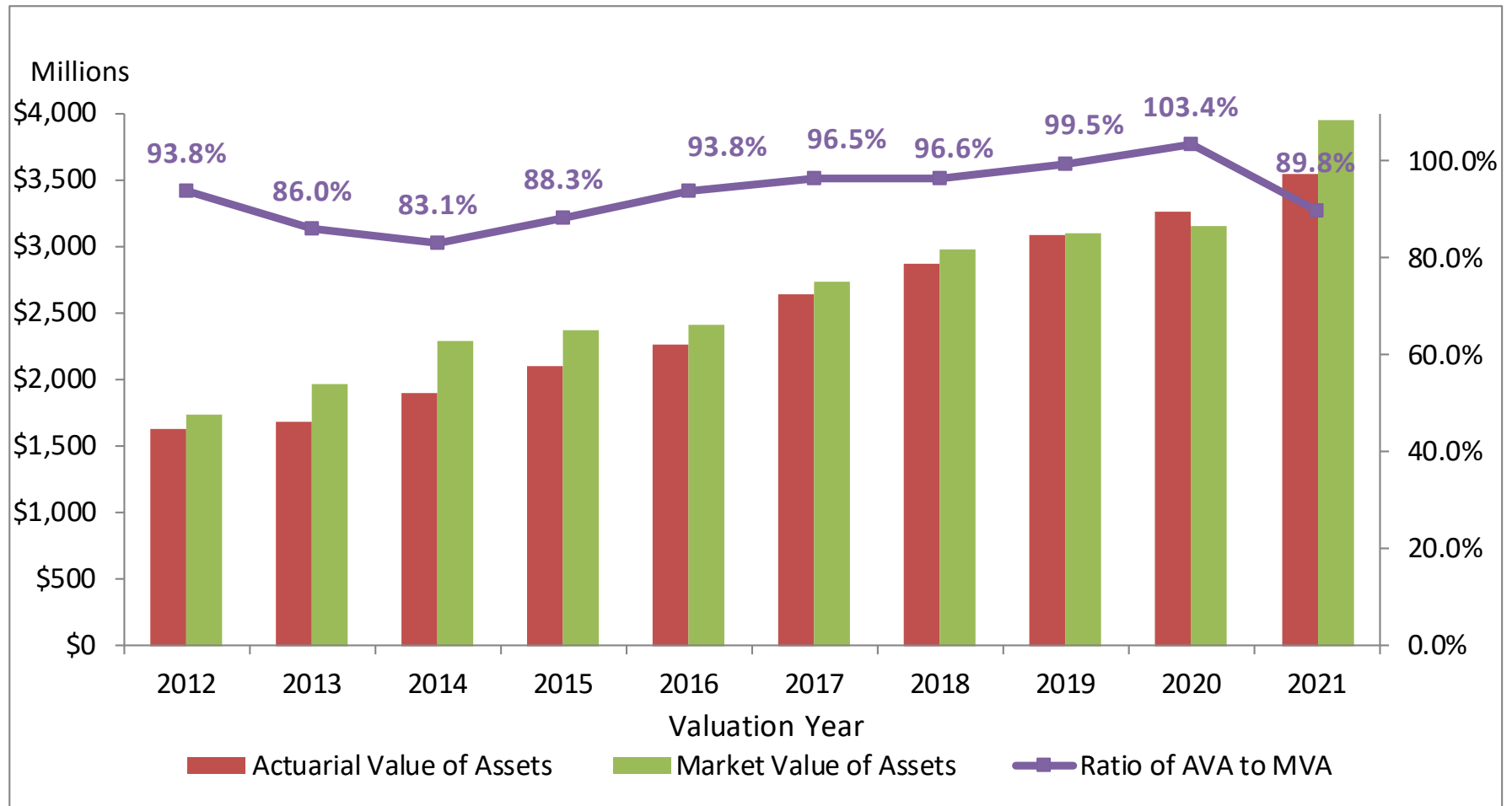
## Changes in Actuarial Value of Assets (Total PERS)

Date	Employer Contributions	Member Contributions <sup>1</sup>	Transfers from/(to) Other Funds	Administrative Expenses	Benefit Payments and Refunds	Actuarial Value Investment Income	Actuarial Value of Assets at End of Year	Market Value of Assets at End of Year
7/1/2012	\$38,005,854	\$42,587,266	(\$412,993)	\$(1,856,915)	\$(98,968,562)	(\$2,422,725)	\$1,627,395,636	\$1,734,039,896
7/1/2013	48,846,796	54,285,278	(212,500)	(2,059,315)	(109,079,601)	63,782,233	1,682,958,527	1,957,670,026
7/1/2014	61,661,050	67,719,340	(347,783)	(2,158,712)	(119,538,541)	205,543,853	1,895,837,734	2,281,582,863
7/1/2015	70,842,535	75,043,940	(584,727)	(2,365,357)	(134,397,090)	189,874,321	2,094,251,356	2,371,710,809
7/1/2016	77,080,576	83,397,439	23,176,288	(2,537,799)	(149,265,492)	139,175,273	2,265,277,641	2,414,895,657
7/1/2017	78,933,571	87,812,526	(239,609)	(2,607,243)	(162,752,359)	366,774,105	2,633,198,632	2,727,835,589
7/1/2018	80,727,209	97,446,721	(190,727)	(2,472,761)	(182,330,936)	242,410,591	2,868,788,729	2,970,180,276
7/1/2019	81,588,318	85,427,636	(330,963)	(2,531,304)	(197,426,974)	246,366,466	3,081,881,908	3,096,731,081
7/1/2020	85,504,033	92,293,674	(118,721)	(2,729,759)	(218,435,167)	222,186,848	3,260,582,816	3,154,351,139
7/1/2021	91,265,640	93,042,302	(93,418)	(2,569,186)	(231,206,986)	335,799,310	3,546,820,478	3,949,722,700
10-Year Total	714,455,582	779,056,122	20,644,847	(23,888,351)	(1,603,401,708)	2,009,490,275		

<sup>1</sup> Includes repurchases of service credit and miscellaneous income.



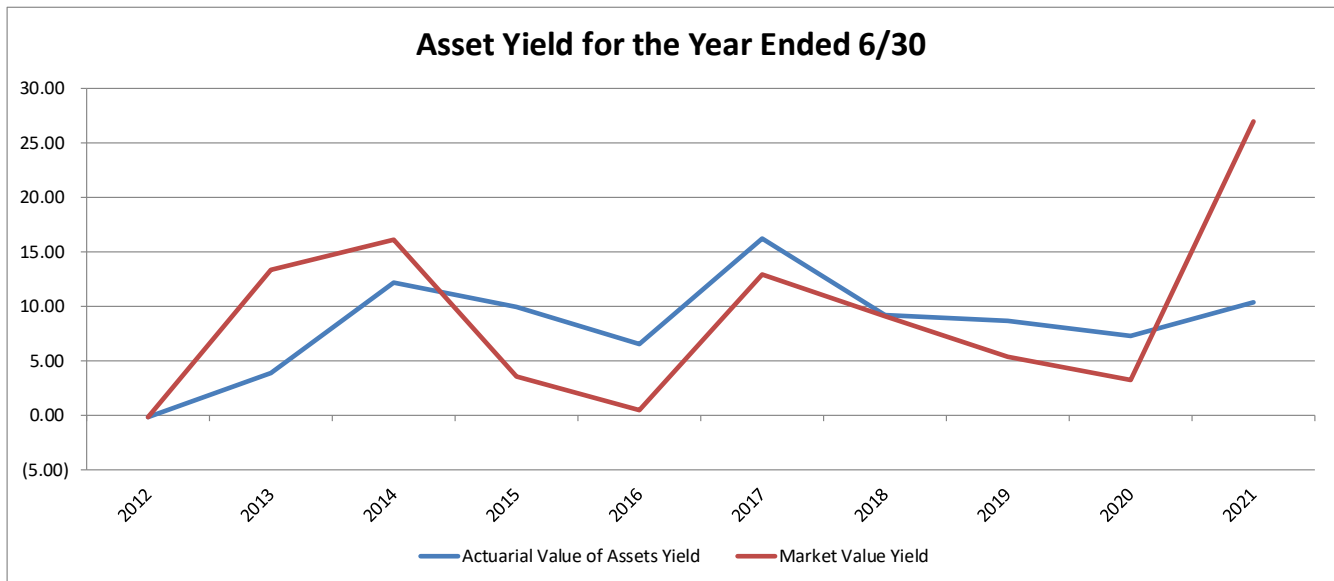
## Historical Comparison of Actuarial Value of Assets to Market Value of Assets (Total PERS)



*Values prior to July 1, 2016, were calculated by the prior actuary.*

# Historical Comparison of Total Investment Income (Total PERS)

Actuarial Valuation Date	Non Investment Income Amount	Total Investment Income (Actuarial Assets Basis)			Total Investment Income (Market Assets Basis)		
		Amount	Yield	Actuarial Value of Assets	Amount	Yield	Market Value of Assets
7/1/2012	\$ (20,645,350)	\$ (2,422,725)	(0.15)	\$ 1,627,395,636	\$ (3,371,352)	(0.19)	\$ 1,734,039,896
7/1/2013	(8,219,342)	63,782,233	3.93	1,682,958,527	231,849,472	13.40	1,957,670,026
7/1/2014	7,335,354	205,543,853	12.19	1,895,837,734	316,577,483	16.14	2,281,582,863
7/1/2015	8,539,301	189,874,321	9.99	2,094,251,356	81,588,645	3.57	2,371,710,809
7/1/2016	31,851,012	139,175,273	6.60	2,265,277,641	11,333,836	0.47	2,414,895,657
7/1/2017	1,146,886	366,774,105	16.19	2,633,198,632	311,793,046	12.91	2,727,835,589
7/1/2018	(6,820,494)	242,410,591	9.22	2,868,788,729	249,165,181	9.15	2,970,180,276
7/1/2019	(33,273,287)	246,366,466	8.64	3,081,881,908	159,824,092	5.41	3,096,731,081
7/1/2020	(43,485,940)	222,186,848	7.26	3,260,582,816	101,105,998	3.29	3,154,351,139
7/1/2021	(49,561,648)	335,799,310	10.38	3,546,820,478	844,933,209	27.00	3,949,722,700
10-Year Total	(113,133,508)	2,009,490,275	8.42		2,304,799,610	9.11	



Values prior to July 1, 2016, were calculated by the prior actuary.



## SECTION C

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### ACTUARIAL VALUATION DATA

# Summary of Participant Data (July 1, 2020, and July 1, 2021)

	Valuation as of July 1, 2021				
	Main System	Judges	Public Safety w/ Prior Main	Public Safety w/o Prior Main	Total
			System Service	System Service	
<b>Active Members</b>					
Number	23,370	57	967	200	24,594
Average Age	46.2	56.4	36.5	37.8	45.7
Average Vesting Service	9.5	15.4	7.6	5.8	9.4
Total Payroll	\$ 1,132,390,738	\$ 8,654,665	\$ 61,533,502	\$ 11,097,033	\$ 1,213,675,937
<b>Inactive Members<sup>1</sup></b>					
Number	6,838	1	181	74	7,094
Total Benefits	\$ 43,437,177	\$ 24,051	\$ 1,238,971	\$ 253,160	\$ 44,953,360
<b>Inactive Members Elected Refunds<sup>1</sup></b>					
Number	7,639	-	174	64	7,877
Total Account Balance	\$ 31,518,682	\$ -	\$ 1,031,133	\$ 199,716	\$ 32,749,531
<b>Retired, Disabled and Beneficiary Members</b>					
Number	13,361	63	137	14	13,575
Total Benefits	\$ 215,323,434	\$ 3,637,743	\$ 2,948,915	\$ 139,708	\$ 222,049,800
<b>Total Membership</b>	51,208	121	1,459	352	53,140

	Valuation as of July 1, 2020				
	Main System	Judges	Public Safety w/ Prior Main	Public Safety w/o Prior Main	Total
			System Service	System Service	
<b>Active Members</b>					
Number	23,487	57	745	200	24,489
Average Age	46.3	56.4	36.4	37.6	45.9
Average Vesting Service	9.5	15.3	7.1	5.1	9.4
Total Payroll	\$ 1,103,120,694	\$ 8,438,678	\$ 45,383,846	\$ 10,824,717	\$ 1,167,767,935
<b>Inactive Members<sup>1</sup></b>					
Number	6,473	1	166	68	6,708
Total Benefits	\$ 39,443,195	\$ 24,051	\$ 1,012,029	\$ 219,206	\$ 40,698,481
<b>Inactive Members Elected Refunds<sup>1</sup></b>					
Number	6,910	-	170	55	7,135
Total Account Balance	\$ 26,911,361	\$ -	\$ 1,048,173	\$ 148,502	\$ 28,108,036
<b>Retired, Disabled and Beneficiary Members</b>					
Number	12,748	60	125	12	12,945
Total Benefits	\$ 201,061,227	\$ 3,343,965	\$ 2,593,195	\$ 125,358	\$ 207,123,745
<b>Total Membership</b>	49,618	118	1,206	335	51,277

<sup>1</sup>Includes transferred members.



# Age/Service/Salary by Group as of July 1, 2021

## Main System

Current Age	Vesting Service as of Valuation Date								Totals	Valuation Payroll	Contribution Account Balance *
	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 and Over			
Under 20	59	-	-	-	-	-	-	-	59	\$ 1,475,528	\$ 65,812
20-24	935	8	-	-	-	-	-	-	943	30,613,414	3,158,193
25-29	1,548	283	3	-	-	-	-	-	1,834	75,661,514	16,912,691
30-34	1,468	776	147	4	-	-	-	-	2,395	111,476,760	45,200,281
35-39	1,365	873	495	113	3	-	-	-	2,849	140,518,800	83,944,223
40-44	1,083	796	478	337	116	4	-	-	2,814	142,656,701	113,074,177
45-49	921	637	471	316	305	85	6	-	2,741	141,228,879	145,960,471
50-54	760	605	489	305	287	237	126	9	2,818	146,557,385	192,770,606
55-59	722	604	459	394	344	248	215	131	3,117	159,280,771	247,372,036
60-64	542	478	466	363	340	174	157	223	2,743	136,295,836	236,604,538
65-69	169	157	157	104	67	51	44	59	808	37,362,517	62,350,158
70-74	57	22	34	20	19	8	10	14	184	7,264,804	10,615,493
75 and Over	19	11	10	13	-	1	3	8	65	1,997,829	2,878,724
<b>Total</b>	<b>9,648</b>	<b>5,250</b>	<b>3,209</b>	<b>1,969</b>	<b>1,481</b>	<b>808</b>	<b>561</b>	<b>444</b>	<b>23,370</b>	<b>\$ 1,132,390,738</b>	<b>\$ 1,160,907,404</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

	Previous Valuation	Current Valuation	Change
Average Age:	46.3	46.2	(0.1)
Average Vesting Service:	9.5	9.5	0.0
Average Annual Pay:	\$46,967	\$48,455	\$1,488
Average Account Balance:	\$47,364	\$49,675	\$2,311
Vested Participants	16,504	16,281	(223)
Nonvested Participants	6,983	7,089	106
Total Participants	23,487	23,370	(117)

Current Age	Annualized Salary as of Valuation Date										Totals
	Less Than \$20,000	\$20,000-\$29,999	\$30,000-\$39,999	\$40,000-\$49,999	\$50,000-\$59,999	\$60,000-\$69,999	\$70,000-\$79,999	\$80,000-\$89,999	\$90,000-\$99,999	\$100,000 & Over	
Under 20	21	22	9	6	1	-	-	-	-	-	59
20-24	197	248	179	227	73	15	2	2	-	-	943
25-29	177	304	315	502	355	132	34	8	4	3	1,834
30-34	195	295	365	583	446	267	143	57	24	20	2,395
35-39	242	386	353	546	556	347	171	117	60	71	2,849
40-44	219	371	386	498	481	359	235	104	71	90	2,814
45-49	195	366	368	524	468	305	201	124	73	117	2,741
50-54	156	412	405	511	458	346	193	119	83	135	2,818
55-59	189	439	452	628	539	334	208	112	75	141	3,117
60-64	166	410	471	535	446	273	187	105	50	100	2,743
65-69	116	130	136	122	128	50	55	26	10	35	808
70-74	47	38	28	23	24	11	4	2	2	5	184
75 and Over	26	17	7	6	4	2	-	1	1	1	65
<b>Total</b>	<b>1,946</b>	<b>3,438</b>	<b>3,474</b>	<b>4,711</b>	<b>3,979</b>	<b>2,441</b>	<b>1,433</b>	<b>777</b>	<b>453</b>	<b>718</b>	<b>23,370</b>

\*Contribution account balance includes Portability Enhancement Provision (PEP) balance.





# Age/Service/Salary by Group as of July 1, 2021

## Judges

Current Age	Vesting Service as of Valuation Date								Totals	Valuation Payroll	Contribution Account Balance
	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 and Over			
Under 20	-	-	-	-	-	-	-	-	0	\$ -	\$ -
20-24	-	-	-	-	-	-	-	-	0	-	-
25-29	-	-	-	-	-	-	-	-	0	-	-
30-34	-	-	-	-	-	-	-	-	0	-	-
35-39	1	1	-	-	-	-	-	-	2	299,856	74,828
40-44	1	4	1	1	-	-	-	-	7	1,053,756	437,631
45-49	2	2	2	2	2	-	-	-	10	1,517,623	614,617
50-54	-	1	1	-	2	2	-	-	6	903,828	1,123,275
55-59	-	1	1	4	3	-	1	-	10	1,530,828	1,337,698
60-64	1	-	3	2	-	1	-	-	7	1,071,480	1,462,078
65-69	1	4	2	3	-	-	2	-	12	1,814,046	2,138,126
70-74	-	1	-	-	-	1	-	-	2	299,856	221,354
75 and Over	-	-	-	-	-	-	-	1	1	163,392	1,151,678
<b>Total</b>	<b>6</b>	<b>14</b>	<b>10</b>	<b>12</b>	<b>7</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>57</b>	<b>\$ 8,654,665</b>	<b>\$ 8,561,284</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

	Previous Valuation	Current Valuation	Change
Average Age:	56.4	56.4	0.0
Average Vesting Service:	15.3	15.4	0.1
Average Annual Pay:	\$148,047	\$151,836	\$3,789
Average Account Balance:	\$148,515	\$150,198	\$1,683
Vested Participants	52	55	3
Nonvested Participants	5	2	(3)
Total Participants	57	57	0

Current Age	Annualized Salary as of Valuation Date										Totals
	Less Than \$20,000	\$20,000-\$29,999	\$30,000-\$39,999	\$40,000-\$49,999	\$50,000-\$59,999	\$60,000-\$69,999	\$70,000-\$79,999	\$80,000-\$89,999	\$90,000-\$99,999	\$100,000 & Over	
Under 20	-	-	-	-	-	-	-	-	-	-	0
20-24	-	-	-	-	-	-	-	-	-	-	0
25-29	-	-	-	-	-	-	-	-	-	-	0
30-34	-	-	-	-	-	-	-	-	-	-	0
35-39	-	-	-	-	-	-	-	-	-	2	2
40-44	-	-	-	-	-	-	-	-	-	7	7
45-49	-	-	-	-	-	-	-	-	-	10	10
50-54	-	-	-	-	-	-	-	-	-	6	6
55-59	-	-	-	-	-	-	-	-	-	10	10
60-64	-	-	-	-	-	-	-	-	-	7	7
65-69	-	-	-	-	-	-	-	-	-	12	12
70-74	-	-	-	-	-	-	-	-	-	2	2
75 and Over	-	-	-	-	-	-	-	-	-	1	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>57</b>	<b>57</b>



# Age/Service/Salary by Group as of July 1, 2021

## Public Safety with Prior Main System Service

Current Age	Vesting Service as of Valuation Date									Totals	Valuation Payroll	Contribution Account Balance *
	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 and Over				
Under 20	1	-	-	-	-	-	-	-	-	1	\$ 24,072	\$ 111
20-24	86	-	-	-	-	-	-	-	-	86	4,584,376	481,128
25-29	131	55	-	-	-	-	-	-	-	186	10,742,386	2,355,886
30-34	78	109	22	-	-	-	-	-	-	209	12,727,600	5,129,104
35-39	52	75	51	8	1	-	-	-	-	187	12,128,090	6,676,960
40-44	26	25	33	19	6	-	-	-	-	109	7,638,930	5,633,673
45-49	20	14	15	20	15	3	-	-	-	87	6,365,918	6,671,228
50-54	12	6	6	11	7	3	3	-	-	48	3,495,399	4,705,948
55-59	9	3	5	6	3	6	4	-	-	36	2,583,337	3,628,369
60-64	1	5	2	3	1	1	2	-	-	15	1,026,771	1,405,103
65-69	-	-	-	1	1	-	-	-	1	3	216,624	613,855
70-74	-	-	-	-	-	-	-	-	-	0	-	-
75 and Over	-	-	-	-	-	-	-	-	-	0	-	-
<b>Total</b>	<b>416</b>	<b>292</b>	<b>134</b>	<b>68</b>	<b>34</b>	<b>13</b>	<b>9</b>	<b>1</b>	<b>967</b>	<b>\$ 61,533,502</b>	<b>\$ 37,301,365</b>	

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

	Previous Valuation	Current Valuation	Change
Average Age:	36.4	36.5	0.1
Average Vesting Service:	7.1	7.6	0.5
Average Annual Pay:	\$60,918	\$63,633	\$2,715
Average Account Balance:	\$30,717	\$38,574	\$7,857
Vested Participants	514	715	201
Nonvested Participants	231	252	21
Total Participants	745	967	222

Current Age	Annualized Salary as of Valuation Date										Totals
	Less Than \$20,000	\$20,000-\$29,999	\$30,000-\$39,999	\$40,000-\$49,999	\$50,000-\$59,999	\$60,000-\$69,999	\$70,000-\$79,999	\$80,000-\$89,999	\$90,000-\$99,999	\$100,000 & Over	
Under 20	-	1	-	-	-	-	-	-	-	-	1
20-24	1	1	5	23	39	12	5	-	-	-	86
25-29	-	4	7	40	56	42	35	2	-	-	186
30-34	3	5	2	34	57	53	37	10	5	3	209
35-39	1	1	1	23	40	63	39	13	1	5	187
40-44	-	-	2	9	14	34	32	9	4	5	109
45-49	-	1	-	10	12	16	22	15	5	6	87
50-54	-	-	-	5	5	14	9	6	5	4	48
55-59	-	-	-	7	4	5	13	1	1	5	36
60-64	-	-	-	1	3	5	3	2	1	-	15
65-69	-	-	-	-	1	-	1	1	-	-	3
70-74	-	-	-	-	-	-	-	-	-	-	0
75 and Over	-	-	-	-	-	-	-	-	-	-	0
<b>Total</b>	<b>5</b>	<b>13</b>	<b>17</b>	<b>152</b>	<b>231</b>	<b>244</b>	<b>196</b>	<b>59</b>	<b>22</b>	<b>28</b>	<b>967</b>

\*Contribution account balance includes Portability Enhancement Provision (PEP) balance.



# Age/Service/Salary by Group as of July 1, 2021

## Public Safety without Prior Main System Service

Current Age	Vesting Service as of Valuation Date								Totals	Valuation Payroll	Contribution Account Balance *
	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 and Over			
Under 20	1	-	-	-	-	-	-	-	1	\$ 40,355	\$ 1,897
20-24	20	-	-	-	-	-	-	-	20	871,905	65,458
25-29	27	8	-	-	-	-	-	-	35	1,599,902	242,415
30-34	22	10	-	-	-	-	-	-	32	1,572,216	310,907
35-39	19	11	7	1	-	-	-	-	38	2,112,790	1,034,189
40-44	9	13	3	2	-	-	-	-	27	1,731,866	849,535
45-49	7	4	5	-	2	-	-	-	18	1,143,188	850,960
50-54	2	1	5	2	1	-	-	-	11	649,965	684,129
55-59	5	2	2	3	1	-	-	-	13	984,542	1,561,166
60-64	-	1	-	2	1	-	-	-	4	323,949	863,668
65-69	-	-	-	-	1	-	-	-	1	66,355	345,942
70-74	-	-	-	-	-	-	-	-	0	-	-
75 and Over	-	-	-	-	-	-	-	-	0	-	-
<b>Total</b>	<b>112</b>	<b>50</b>	<b>22</b>	<b>10</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>200</b>	<b>\$ 11,097,033</b>	<b>\$ 6,810,267</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Previous Valuation		Current Valuation		Change
Average Age:	37.6	Average Age:	37.8	0.2
Average Vesting Service:	5.1	Average Vesting Service:	5.8	0.7
Average Annual Pay:	\$54,124	Average Annual Pay:	\$55,485	\$1,361
Average Account Balance:	\$29,265	Average Account Balance:	\$34,051	\$4,786
Vested Participants	104	Vested Participants	109	5
Nonvested Participants	96	Nonvested Participants	91	(5)
Total Participants	200	Total Participants	200	0

Current Age	Annualized Salary as of Valuation Date										Totals
	Less Than \$20,000	\$20,000-\$29,999	\$30,000-\$39,999	\$40,000-\$49,999	\$50,000-\$59,999	\$60,000-\$69,999	\$70,000-\$79,999	\$80,000-\$89,999	\$90,000-\$99,999	\$100,000 & Over	
Under 20	-	-	-	1	-	-	-	-	-	-	1
20-24	1	-	3	12	4	-	-	-	-	-	20
25-29	2	-	2	23	7	1	-	-	-	-	35
30-34	1	1	1	10	17	1	1	-	-	-	32
35-39	1	-	1	11	12	9	3	-	1	-	38
40-44	-	-	-	-	12	8	3	4	-	-	27
45-49	-	-	-	1	7	7	2	1	-	-	18
50-54	-	-	-	2	4	3	2	-	-	-	11
55-59	-	-	-	-	2	4	3	2	1	1	13
60-64	-	-	-	-	1	-	-	2	1	-	4
65-69	-	-	-	-	-	1	-	-	-	-	1
70-74	-	-	-	-	-	-	-	-	-	-	0
75 and Over	-	-	-	-	-	-	-	-	-	-	0
<b>Total</b>	<b>5</b>	<b>1</b>	<b>7</b>	<b>60</b>	<b>66</b>	<b>34</b>	<b>14</b>	<b>9</b>	<b>3</b>	<b>1</b>	<b>200</b>

\*Contribution account balance includes Portability Enhancement Provision (PEP) balance.



# Age/Service/Salary by Group as of July 1, 2021

## Combined Main System, Judges and Public Safety

Current Age	Vesting Service as of Valuation Date									Totals	Valuation Payroll	Contribution Account Balance *
	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 and Over				
Under 20	61	-	-	-	-	-	-	-	-	61	\$ 1,539,955	\$ 67,820
20-24	1,041	8	-	-	-	-	-	-	-	1,049	36,069,695	3,704,779
25-29	1,706	346	3	-	-	-	-	-	-	2,055	88,003,802	19,510,993
30-34	1,568	895	169	4	-	-	-	-	-	2,636	125,776,576	50,640,292
35-39	1,437	960	553	122	4	-	-	-	-	3,076	155,059,536	91,730,200
40-44	1,119	838	515	359	122	4	-	-	-	2,957	153,081,253	119,995,016
45-49	950	657	493	338	324	88	6	-	-	2,856	150,255,607	154,097,276
50-54	774	613	501	318	297	242	129	9	2,883	151,606,577	199,283,958	
55-59	736	610	467	407	351	254	220	131	3,176	164,379,478	253,899,270	
60-64	544	484	471	370	342	176	159	223	2,769	138,718,036	240,335,387	
65-69	170	161	159	108	69	51	46	60	824	39,459,542	65,448,080	
70-74	57	23	34	20	19	9	10	14	186	7,564,660	10,836,847	
75 and Over	19	11	10	13	-	1	3	9	66	2,161,221	4,030,402	
<b>Total</b>	<b>10,182</b>	<b>5,606</b>	<b>3,375</b>	<b>2,059</b>	<b>1,528</b>	<b>825</b>	<b>573</b>	<b>446</b>	<b>24,594</b>	<b>\$ 1,213,675,937</b>	<b>\$ 1,213,580,321</b>	

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Previous Valuation		Current Valuation		Change
Average Age:	45.9	Average Age:	45.7	(0.2)
Average Vesting Service:	9.4	Average Vesting Service:	9.4	0.0
Average Annual Pay:	\$47,685	Average Annual Pay:	\$49,348	\$1,663
Average Account Balance:	\$46,946	Average Account Balance:	\$49,345	\$2,399
Vested Participants	17,174	Vested Participants	17,160	(14)
Nonvested Participants	7,315	Nonvested Participants	7,434	119
Total Participants	24,489	Total Participants	24,594	105

Current Age	Annualized Salary as of Valuation Date										Totals
	Less Than \$20,000	\$20,000- \$29,999	\$30,000- \$39,999	\$40,000- \$49,999	\$50,000- \$59,999	\$60,000- \$69,999	\$70,000- \$79,999	\$80,000- \$89,999	\$90,000- \$99,999	\$100,000 & Over	
Under 20	21	23	9	7	1	-	-	-	-	-	61
20-24	199	249	187	262	116	27	7	2	-	-	1,049
25-29	179	308	324	565	418	175	69	10	4	3	2,055
30-34	199	301	368	627	520	321	181	67	29	23	2,636
35-39	244	387	355	580	608	419	213	130	62	78	3,076
40-44	219	371	388	507	507	401	270	117	75	102	2,957
45-49	195	367	368	535	487	328	225	140	78	133	2,856
50-54	156	412	405	518	467	363	204	125	88	145	2,883
55-59	189	439	452	635	545	343	224	115	77	157	3,176
60-64	166	410	471	536	450	278	190	109	52	107	2,769
65-69	116	130	136	122	129	51	56	27	10	47	824
70-74	47	38	28	23	24	11	4	2	2	7	186
75 and Over	26	17	7	6	4	2	-	1	1	2	66
<b>Total</b>	<b>1,956</b>	<b>3,452</b>	<b>3,498</b>	<b>4,923</b>	<b>4,276</b>	<b>2,719</b>	<b>1,643</b>	<b>845</b>	<b>478</b>	<b>804</b>	<b>24,594</b>

\*Contribution account balance includes Portability Enhancement Provision (PEP) balance.



## Historical Schedule of Active Member Data through July 1, 2021

Main System				
Valuation Date 7/1	Number	Annual Payroll (\$ in Millions)	Average Annual Pay <sup>1</sup>	% Increase in Avg Pay
2012	20,738	\$781.6	\$37,690	(2.3)%
2013	21,201	865.9	40,841	8.4%
2014	21,814	946.2	43,376	9.3%
2015	22,381	993.6	43,395	0.0%
2016	22,762	1,007.8	44,274	2.0%
2017	22,574	1,020.8	45,222	2.1%
2018	22,711	1,027.3	45,234	0.0%
2019	22,826	1,040.2	45,570	0.7%
2020	23,487	1,103.1	46,967	3.1%
2021	23,370	1,132.4	48,455	3.2%

Judges				
Valuation Date 7/1	Number	Annual Payroll (\$ in Millions)	Average Annual Pay <sup>1</sup>	% Increase in Avg Pay
2012	49	\$6.1	\$124,645	(1.4)%
2013	49	6.6	134,673	8.0%
2014	50	7.0	139,290	3.4%
2015	51	7.3	142,636	2.4%
2016	56	7.9	141,733	(0.6)%
2017	54	7.9	145,668	2.8%
2018	55	8.0	145,615	(0.0)%
2019	56	8.2	145,791	0.1%
2020	57	8.4	148,047	1.5%
2021	57	8.7	151,836	2.6%

<sup>1</sup> Prior to the actuarial valuation as of July 1, 2016, annual payroll is based on projected annual compensation for the upcoming year. Beginning with the actuarial valuation as of July 1, 2016, annual payroll and average annual pay are based on annualized payroll as of the actuarial valuation date.

Values prior to July 1, 2016, were calculated by the prior actuary.



## Historical Schedule of Active Member Data through July 1, 2021

Public Safety with Prior Main System Service				
Valuation Date 7/1	Number	Annual Payroll (\$ in Millions)	Average Annual Pay <sup>1</sup>	% Increase in Avg Pay
2012	239	\$10.8	\$45,074	0.4%
2013	268	13.4	49,981	10.9%
2014	315	16.7	53,121	6.3%
2015	318	18.7	58,781	10.7%
2016	498	28.2	56,678	(3.6)%
2017	498	28.8	57,762	1.9%
2018	598	34.5	57,728	(0.1)%
2019	732	43.0	58,731	1.7%
2020	745	45.4	60,918	3.7%
2021	967	61.5	63,633	4.5%

Public Safety without Prior Main System Service				
Valuation Date 7/1	Number	Annual Payroll (\$ in Millions)	Average Annual Pay <sup>1</sup>	% Increase in Avg Pay
2012	65	\$2.4	\$36,588	(8.3)%
2013	70	2.6	36,998	1.1%
2014	83	3.6	43,872	18.6%
2015	95	4.6	48,204	9.9%
2016	100	4.6	46,217	(4.1)%
2017	117	5.9	50,400	9.0%
2018	119	6.1	51,352	1.9%
2019	140	7.1	50,646	(1.4)%
2020	200	10.8	54,124	6.9%
2021	200	11.1	55,485	2.5%

<sup>1</sup>Prior to the actuarial valuation as of July 1, 2016, annual payroll is based on projected annual compensation for the upcoming year. Beginning with the actuarial valuation as of July 1, 2016, annual payroll and average annual pay are based on annualized payroll as of the actuarial valuation date.

Values prior to July 1, 2016, were calculated by the prior actuary.

## Summary of Active Member Data as of July 1, 2021

Active Members Eligible For:	Main System	Judges	Public Safety with Prior Main Service	Public Safety without Prior Main Service	Total
Retirement					
Normal	1,057	15	47	14	1,133
Rule of 85*	1,239	2	0	0	1,241
Early Retirement	<u>3,859</u>	<u>15</u>	<u>40</u>	<u>9</u>	<u>3,923</u>
Total Retirement	6,155	32	87	23	6,297
Deferred Retirement	<u>10,126</u>	<u>23</u>	<u>628</u>	<u>86</u>	<u>10,863</u>
Total Vested	16,281	55	715	109	17,160
Non-Vested	7,089	2	252	91	7,434
<b>Grand Total</b>	<b>23,370</b>	<b>57</b>	<b>967</b>	<b>200</b>	<b>24,594</b>

*\*Includes Rule of 85, Rule of 88 and Rule of 90.*

# Schedule of Members in Pay Status as of July 1, 2021

## Main System

Monthly Amount	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Under \$200	702	507	1	41	212	1,463	1,251
\$200 - \$400	745	803	20	59	265	1,892	1,627
\$400 - \$600	631	634	33	63	197	1,558	1,361
\$600 - \$800	461	362	36	119	136	1,114	978
\$800 - \$1,000	413	195	18	244	77	947	870
\$1,000 - \$1,200	319	156	7	340	71	893	822
\$1,200 - \$1,400	233	77	1	360	55	726	671
\$1,400 - \$1,600	200	42	3	334	30	609	579
\$1,600 - \$1,800	157	22	3	365	24	571	547
\$1,800 - \$2,000	145	16	0	332	25	518	493
\$2,000 - \$2,200	105	8	0	288	17	418	401
\$2,200 - \$2,400	93	7	0	264	19	383	364
\$2,400 - \$2,600	71	3	1	253	7	335	328
\$2,600 - \$2,800	69	5	0	219	7	300	293
\$2,800 - \$3,000	43	3	0	173	9	228	219
\$3,000 and Over	320	4	0	1,044	38	1,406	1,368
<b>Total</b>	<b>4,707</b>	<b>2,844</b>	<b>123</b>	<b>4,498</b>	<b>1,189</b>	<b>13,361</b>	<b>12,172</b>
Payment Option	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Life	2,926	2,012	99	2,112	230	7,379	7,149
Life 1% Graduated Benefits	5	0	0	4	0	9	9
Life 2% Graduated Benefits	10	0	0	9	0	19	19
Level Social Security Payment	1	18	0	89	0	108	108
Joint & 100% Survivor	1,163	535	18	1,410	613	3,739	3,126
Joint & 100% Survivor 1% Graduated Benefits	1	0	0	3	0	4	4
Joint & 100% Survivor 2% Graduated Benefits	8	0	0	7	1	16	15
Joint & 50% Survivor	484	192	6	780	276	1,738	1,462
Joint & 50% Survivor 1% Graduated Benefits	4	0	0	2	0	6	6
Joint & 50% Survivor 2% Graduated Benefits	0	0	0	2	0	2	2
20 Year C & L	53	25	0	27	33	138	105
10 Year C & L	49	56	0	42	30	177	147
10 Year C & L 1% Graduated Benefits	0	0	0	1	0	1	1
5 Year C & L	3	6	0	10	6	25	19
<b>Total</b>	<b>4,707</b>	<b>2,844</b>	<b>123</b>	<b>4,498</b>	<b>1,189</b>	<b>13,361</b>	<b>12,172</b>
Age	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Under 50	0	0	17	0	35	52	17
50 - 54	0	0	18	20	31	69	38
55 - 59	0	24	35	241	45	345	300
60 - 64	0	316	52	840	96	1,304	1,208
65 - 69	1,414	730	1	1,351	143	3,639	3,496
70 - 74	1,482	704	0	975	197	3,358	3,161
75 and Over	1,811	1,070	0	1,071	642	4,594	3,952
<b>Total</b>	<b>4,707</b>	<b>2,844</b>	<b>123</b>	<b>4,498</b>	<b>1,189</b>	<b>13,361</b>	<b>12,172</b>

	Previous Valuation	Current Valuation	Change
Average Age	72.9	72.9	0.0
Average Monthly Benefit	\$1,314	\$1,343	\$29
Total Members in Pay Status	12,748	13,361	613

\* Includes Rule of 85, Rule of 88 and Rule of 90.

\*\* Includes alternate payees.

\*\*\* Total excluding beneficiaries.





## Schedule of Members in Pay Status as of July 1, 2021

### Judges

Monthly Amount	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Under \$400	0	0	0	0	0	0	0
\$400 - \$800	0	0	0	0	1	1	0
\$800 - \$1,200	2	0	0	0	0	2	2
\$1,200 - \$1,600	0	0	0	2	1	3	2
\$1,600 - \$2,000	1	2	0	0	3	6	3
\$2,000 - \$2,400	0	0	0	0	0	0	0
\$2,400 - \$2,800	1	0	0	0	1	2	1
\$2,800 - \$3,200	2	0	0	0	3	5	2
\$3,200 - \$3,600	1	1	0	0	1	3	2
\$3,600 - \$4,000	3	1	0	0	0	4	4
\$4,000 - \$4,400	0	0	0	0	1	1	0
\$4,400 - \$4,800	3	0	0	2	1	6	5
\$4,800 - \$5,200	0	0	0	0	2	2	0
\$5,200 - \$5,600	2	0	0	2	0	4	4
\$5,600 - \$6,000	1	0	0	1	0	2	2
\$6,000 and Over	11	0	1	8	2	22	20
<b>Total</b>	<b>27</b>	<b>4</b>	<b>1</b>	<b>15</b>	<b>16</b>	<b>63</b>	<b>47</b>
Payment Option	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Life	1	1	0	1	4	7	3
Level Social Security Payment	0	0	0	0	0	0	0
Joint & 100% Survivor	20	1	0	8	10	39	29
Joint & 50% Survivor	6	2	1	6	2	17	15
10 Year C & L	0	0	0	0	0	0	0
5 Year C & L	0	0	0	0	0	0	0
<b>Total</b>	<b>27</b>	<b>4</b>	<b>1</b>	<b>15</b>	<b>16</b>	<b>63</b>	<b>47</b>
Age	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Under 50	0	0	0	0	0	0	0
50 - 54	0	0	0	0	0	0	0
55 - 59	0	0	0	0	0	0	0
60 - 64	0	0	1	4	1	6	5
65 - 69	1	1	0	2	1	5	4
70 - 74	15	1	0	4	6	26	20
75 and Over	11	2	0	5	8	26	18
<b>Total</b>	<b>27</b>	<b>4</b>	<b>1</b>	<b>15</b>	<b>16</b>	<b>63</b>	<b>47</b>

	Previous Valuation	Current Valuation	Change
Average Age	74.9	75.5	0.6
Average Monthly Benefit	\$4,644	\$4,812	\$168
Total Members in Pay Status	60	63	3

\* Includes Rule of 85, Rule of 88 and Rule of 90.

\*\* Includes alternate payees.

\*\*\* Total excluding beneficiaries.



# Schedule of Members in Pay Status as of July 1, 2021

## Public Safety with prior Main System Service

Monthly Amount	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Under \$200	5	0	0	0	3	8	5
\$200 - \$400	7	1	0	0	2	10	8
\$400 - \$600	10	4	0	0	1	15	14
\$600 - \$800	7	1	0	0	3	11	8
\$800 - \$1,000	7	0	0	0	0	7	7
\$1,000 - \$1,200	9	0	0	0	2	11	9
\$1,200 - \$1,400	5	0	0	0	0	5	5
\$1,400 - \$1,600	8	0	1	1	1	11	10
\$1,600 - \$1,800	6	0	0	0	0	6	6
\$1,800 - \$2,000	5	1	0	0	0	6	6
\$2,000 - \$2,200	3	0	0	1	2	6	4
\$2,200 - \$2,400	3	0	0	1	0	4	4
\$2,400 - \$2,600	1	1	0	0	0	2	2
\$2,600 - \$2,800	2	0	0	0	0	2	2
\$2,800 - \$3,000	2	0	0	1	0	3	3
\$3,000 and Over	24	1	0	5	0	30	30
<b>Total</b>	<b>104</b>	<b>9</b>	<b>1</b>	<b>9</b>	<b>14</b>	<b>137</b>	<b>123</b>
Payment Option	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Life	52	4	1	1	0	58	58
Level Social Security Payment	2	1	0	1	0	4	4
Joint & 100% Survivor	29	4	0	6	7	46	39
Joint & 100% Survivor 1% Graduated Benefits	0	0	0	0	0	0	0
Joint & 50% Survivor	20	0	0	1	1	22	21
20 Year C & L	0	0	0	0	6	6	0
10 Year C & L	0	0	0	0	0	0	0
5 Year C & L	0	0	0	0	0	0	0
20 Year Certain	0	0	0	0	0	0	0
<b>Total</b>	<b>104</b>	<b>9</b>	<b>1</b>	<b>9</b>	<b>14</b>	<b>137</b>	<b>123</b>
Age	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Under 50	0	0	1	0	4	5	1
50 - 54	0	2	0	0	1	3	2
55 - 59	20	2	0	2	0	24	24
60 - 64	25	4	0	6	1	36	35
65 - 69	31	0	0	0	4	35	31
70 - 74	20	0	0	1	4	25	21
75 and Over	8	1	0	0	0	9	9
<b>Total</b>	<b>104</b>	<b>9</b>	<b>1</b>	<b>9</b>	<b>14</b>	<b>137</b>	<b>123</b>

	Previous Valuation	Current Valuation	Change
Average Age	64.8	65.1	0.3
Average Monthly Benefit	\$1,729	\$1,794	\$65
Total Members in Pay Status	125	137	12

\* Includes Rule of 85, Rule of 88 and Rule of 90.

\*\* Includes alternate payees.

\*\*\* Total excluding beneficiaries.



# Schedule of Members in Pay Status as of July 1, 2021

## Public Safety without Prior Main System Service

Monthly Amount	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Under \$200	1	0	0	0	0	1	1
\$200 - \$400	1	0	0	0	0	1	1
\$400 - \$600	5	1	0	0	0	6	6
\$600 - \$800	1	0	0	0	0	1	1
\$800 - \$1,000	0	0	1	0	0	1	1
\$1,000 - \$1,200	0	0	0	0	1	1	0
\$1,200 - \$1,400	1	0	0	0	0	1	1
\$1,400 - \$1,600	1	0	0	0	0	1	1
\$1,600 - \$1,800	0	0	0	0	0	0	0
\$1,800 - \$2,000	0	0	0	0	0	0	0
\$2,000 - \$2,200	0	0	0	0	0	0	0
\$2,200 - \$2,400	0	0	0	0	0	0	0
\$2,400 - \$2,600	0	0	0	0	0	0	0
\$2,600 - \$2,800	0	0	0	0	0	0	0
\$2,800 - \$3,000	0	0	0	0	0	0	0
\$3,000 and Over	1	0	0	0	0	1	1
<b>Total</b>	<b>11</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>14</b>	<b>13</b>
Payment Option	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Life	3	0	1	0	1	5	4
Level Social Security Payment	0	0	0	0	0	0	0
Joint & 100% Survivor	6	1	0	0	0	7	7
Joint & 50% Survivor	2	0	0	0	0	2	2
10 Year C & L	0	0	0	0	0	0	0
5 Year C & L	0	0	0	0	0	0	0
<b>Total</b>	<b>11</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>14</b>	<b>13</b>
Age	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Under 50	0	0	1	0	0	1	1
50 - 54	0	0	0	0	0	0	0
55 - 59	4	1	0	0	1	6	5
60 - 64	1	0	0	0	0	1	1
65 - 69	6	0	0	0	0	6	6
70 - 74	0	0	0	0	0	0	0
75 and Over	0	0	0	0	0	0	0
<b>Total</b>	<b>11</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>14</b>	<b>13</b>

	Previous Valuation	Current Valuation	Change
Average Age	59.8	61.0	1.2
Average Monthly Benefit	\$871	\$832	(\$39)
Total Members in Pay Status	12	14	2

\* Includes Rule of 85, Rule of 88 and Rule of 90.

\*\* Includes alternate payees.

\*\*\* Total excluding beneficiaries.



# Schedule of New Pensions Awarded during the Year as of July 1, 2021

## Main System, Judges, Public Safety

Monthly Amount	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Under \$200	71	8	0	4	17	100	83
\$200 - \$400	82	22	2	5	23	134	111
\$400 - \$600	71	32	4	2	15	124	109
\$600 - \$800	53	17	8	3	12	93	81
\$800 - \$1,000	46	11	4	3	13	77	64
\$1,000 - \$1,200	36	13	0	11	9	69	60
\$1,200 - \$1,400	29	6	0	13	8	56	48
\$1,400 - \$1,600	27	3	2	14	5	51	46
\$1,600 - \$1,800	15	3	1	11	4	34	30
\$1,800 - \$2,000	15	3	0	10	4	32	28
\$2,000 - \$2,200	8	2	0	11	1	22	21
\$2,200 - \$2,400	8	0	0	17	3	28	25
\$2,400 - \$2,600	10	0	0	6	1	17	16
\$2,600 - \$2,800	7	1	0	16	0	24	24
\$2,800 - \$3,000	6	1	0	13	1	21	20
\$3,000 and Over	52	1	0	101	9	163	154
<b>Total</b>	<b>536</b>	<b>123</b>	<b>21</b>	<b>240</b>	<b>125</b>	<b>1,045</b>	<b>920</b>
Payment Option	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Life	299	68	14	92	12	485	473
Life 1% Graduated Benefits	2	0	0	1	0	3	3
Life 2% Graduated Benefits	0	0	0	0	0	0	0
Level Social Security Payment	0	0	0	0	0	0	0
Joint & 100% Survivor	161	42	6	81	66	356	290
Joint & 100% Survivor 1% Graduated Benefits	0	0	0	0	0	0	0
Joint & 100% Survivor 2% Graduated Benefits	0	0	0	0	1	1	0
Joint & 50% Survivor	65	12	1	58	34	170	136
Joint & 50% Survivor 1% Graduated Benefits	0	0	0	0	0	0	0
Joint & 50% Survivor 2% Graduated Benefits	0	0	0	0	0	0	0
20 Year C & L	7	1	0	7	7	22	15
10 Year C & L	2	0	0	1	5	8	3
10-Year C & L 1% Graduated Benefits	0	0	0	0	0	0	0
<b>Total</b>	<b>536</b>	<b>123</b>	<b>21</b>	<b>240</b>	<b>125</b>	<b>1,045</b>	<b>920</b>
Age	Normal	Early	Disability	Service*	Beneficiary**	Total	Total***
Under 50	0	0	4	0	5	9	4
50 - 54	0	0	4	12	5	21	16
55 - 59	9	9	5	44	8	75	67
60 - 64	5	98	8	153	18	282	264
65 - 69	417	16	0	31	21	485	464
70 - 74	80	0	0	0	16	96	80
75 and Over	25	0	0	0	52	77	25
<b>Total</b>	<b>536</b>	<b>123</b>	<b>21</b>	<b>240</b>	<b>125</b>	<b>1,045</b>	<b>920</b>

	Previous Valuation	Current Valuation	Change
New Pensions Awarded	1,049	1,045	-4
Average Age	68.1	65.9	-2.2
Average Monthly Benefit	\$1,600	\$1,534	(\$66)

\* Includes Rule of 85, Rule of 88 and Rule of 90.

\*\* Includes alternate payees.

\*\*\* Total excluding beneficiaries.



## Schedule of Average Benefit Payments as of July 1, 2021

Main System		Years of Vesting Service						Total
		<10	10-14	15-19	20-24	25-29	>=30	
2017	Number of Retirees	1,940	1,529	1,324	1,395	1,557	2,252	9,997
	Average Monthly Benefit	\$260	\$484	\$714	\$1,184	\$1,657	\$2,507	\$1,207
	Average Years of Service	6.26	12.33	17.28	22.57	27.29	35.33	20.75
2018	Number of Retirees	2,052	1,577	1,388	1,451	1,629	2,436	10,533
	Average Monthly Benefit	\$267	\$506	\$747	\$1,223	\$1,709	\$2,637	\$1,269
	Average Years of Service	6.27	12.33	17.29	22.57	27.31	35.45	20.88
2019	Number of Retirees	2,175	1,627	1,440	1,540	1,712	2,588	11,082
	Average Monthly Benefit	\$273	\$523	\$780	\$1,274	\$1,773	\$2,735	\$1,321
	Average Years of Service	6.26	12.31	17.30	22.56	27.33	35.53	20.94
2020	Number of Retirees	2,322	1,689	1,481	1,618	1,778	2,752	11,640
	Average Monthly Benefit	\$282	\$550	\$814	\$1,316	\$1,812	\$2,823	\$1,367
	Average Years of Service	6.26	12.30	17.31	22.57	27.34	35.60	20.96
2021	Number of Retirees	2,467	1,746	1,545	1,708	1,824	2,882	12,172
	Average Monthly Benefit	\$288	\$570	\$844	\$1,353	\$1,845	\$2,885	\$1,397
	Average Years of Service	6.25	12.32	17.34	22.56	27.35	35.64	20.94
<b>Judges</b>		<b>&lt;10</b>	<b>10-14</b>	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>&gt;=30</b>	<b>Total</b>
2017	Number of Retirees	3	3	5	10	8	8	37
	Average Monthly Benefit	\$2,467	\$2,773	\$3,545	\$5,380	\$4,598	\$6,644	\$4,789
	Average Years of Service	6.92	11.58	17.62	23.07	26.92	36.77	23.89
2018	Number of Retirees	4	2	6	11	7	10	40
	Average Monthly Benefit	\$2,274	\$2,739	\$4,123	\$5,452	\$4,845	\$6,141	\$4,865
	Average Years of Service	6.29	10.54	17.81	23.17	26.80	35.81	23.84
2019	Number of Retirees	4	3	6	11	7	11	42
	Average Monthly Benefit	\$2,274	\$3,588	\$4,123	\$5,452	\$4,891	\$6,276	\$4,949
	Average Years of Service	6.29	11.92	17.81	23.17	26.80	35.44	23.81
2020	Number of Retirees	4	3	6	11	7	13	44
	Average Monthly Benefit	\$2,274	\$3,588	\$4,123	\$5,452	\$4,891	\$6,589	\$5,102
	Average Years of Service	6.29	11.92	17.81	23.17	26.80	35.58	24.38
2021	Number of Retirees	4	3	6	11	8	15	47
	Average Monthly Benefit	\$2,274	\$3,643	\$4,123	\$5,452	\$5,261	\$6,808	\$5,297
	Average Years of Service	6.29	11.92	17.81	23.17	26.70	35.27	24.79

*Includes retired and disabled members.*



## Schedule of Average Benefit Payments as of July 1, 2021

		Years of Vesting Service						Total
		<10	10-14	15-19	20-24	25-29	>=30	
<b>Public Safety with Main Service</b>								
2017	Number of Retirees	12	11	7	17	17	18	82
	Average Monthly Benefit	\$528	\$790	\$1,291	\$1,770	\$2,180	\$3,261	\$1,828
	Average Years of Service	6.22	12.58	18.13	22.09	27.38	33.03	21.65
2018	Number of Retirees	15	11	10	18	17	23	94
	Average Monthly Benefit	\$481	\$915	\$1,452	\$1,839	\$2,180	\$3,317	\$1,896
	Average Years of Service	6.18	12.47	17.25	22.19	27.38	33.29	21.63
2019	Number of Retirees	20	13	11	20	15	25	104
	Average Monthly Benefit	\$630	\$947	\$1,466	\$1,733	\$2,018	\$3,464	\$1,852
	Average Years of Service	6.27	12.27	17.05	22.12	27.49	33.24	20.75
2020	Number of Retirees	24	14	12	19	16	28	113
	Average Monthly Benefit	595.95	814.73	1,491.38	1,702.89	2,138.32	3,452.40	1,830.45
	Average Years of Service	5.99	12.26	17.27	22.15	27.44	33.19	20.46
2021	Number of Retirees	29	15	12	17	19	31	123
	Average Monthly Benefit	\$627	\$851	\$1,491	\$1,865	\$2,266	\$3,554	\$1,900
	Average Years of Service	5.99	12.37	17.27	22.23	27.28	33.40	20.31
<b>Public Safety without Main Service</b>								
2017	Number of Retirees	4	1	0	0	1	0	6
	Average Monthly Benefit	\$390	\$1,204	\$0	\$0	\$3,126	\$0	\$981
	Average Years of Service	4.12	12.58	0.00	0.00	26.17	0.00	9.21
2018	Number of Retirees	5	1	0	0	1	0	7
	Average Monthly Benefit	\$401	\$1,204	\$0	\$0	\$3,126	\$0	\$905
	Average Years of Service	4.01	12.58	0.00	0.00	26.17	0.00	8.40
2019	Number of Retirees	7	1	0	0	1	0	9
	Average Monthly Benefit	\$410	\$1,204	\$0	\$0	\$3,126	\$0	\$800
	Average Years of Service	4.44	12.58	0.00	0.00	26.17	0.00	7.76
2020	Number of Retirees	8	1	0	0	2	0	11
	Average Monthly Benefit	421.06	1,204.35	0.00	0.00	2,345.12	0.00	842.09
	Average Years of Service	4.79	12.58	0.00	0.00	27.05	0.00	9.54
2021	Number of Retirees	10	1	0	0	2	0	13
	Average Monthly Benefit	\$456	\$1,204	\$0	\$0	\$2,345	\$0	\$805
	Average Years of Service	5.06	12.58	0.00	0.00	27.05	0.00	9.02

*Includes retired and disabled members.*



## Schedule of Retirees and Beneficiaries Added to and Removed from the Rolls

### Main System

Plan Year	Beg. of Year		Added to Rolls		Removed from Rolls		End of Year Balance		Average Annual Benefit	% Increase in Annual Benefit
	No.	Ann. Benefits*	No.	Ann. Benefits*	No.	Ann. Benefits*	No.**	Ann. Benefits*		
<b>Retirement</b>										
2012	7,760	\$ 84.6	698	\$ 12.5	(216)	\$ (1.8)	8,242	\$ 95.3	\$ 11,566	12.6%
2013	8,242	95.3	708	10.9	(284)	(4.0)	8,666	102.2	11,798	7.2%
2014	8,666	102.2	855	13.2	(291)	(2.4)	9,230	113.0	12,243	10.6%
2015	9,230	113.0	992	19.3	(243)	(2.4)	9,979	129.9	13,017	15.0%
2016	9,979	129.9	703	12.3	(288)	(2.6)	10,394	139.6	13,435	7.5%
2017	10,394	139.6	870	16.1	(307)	(3.0)	10,957	152.8	13,943	9.4%
2018	10,957	152.8	953	19.7	(372)	(3.6)	11,538	169.0	14,645	10.6%
2019	11,538	169.0	913	18.8	(334)	(3.0)	12,117	184.9	15,257	9.4%
2020	12,117	184.9	1,032	20.5	(401)	(4.3)	12,748	201.1	15,772	8.8%
2021	12,748	201.1	1,025	18.6	(412)	(4.3)	13,361	215.3	16,116	7.1%

\* \$ in millions

\*\* Excludes 24 pensioners as of June 30, 2014, 28 pensioners as of June 30, 2015, 35 pensioners as of June 30, 2016, 41 pensioners as of June 30, 2017, 37 pensioners as of June 30, 2018, 37 pensioners as of June 30, 2019, 42 pensioners as of June 30, 2020, and 35 pensioners as of June 30, 2021 in suspended status.

### Judges

Plan Year	Beg. of Year		Added to Rolls		Removed from Rolls		End of Year Balance		Average Annual Benefit	% Increase in Annual Benefit
	No.	Ann. Benefits	No.	Ann. Benefits	No.	Ann. Benefits	No.	Ann. Benefits		
<b>Retirement</b>										
2012	34	\$ 1,471,232	0	\$ 0	0	(\$648)	34	\$ 1,470,584	\$ 43,252	0.0%
2013	34	1,470,584	2	60,181	0	0	36	1,530,765	42,521	4.1%
2014	36	1,530,765	2	190,156	0	0	38	1,720,921	45,287	12.4%
2015	38	1,720,921	6	462,888	0	0	44	2,183,809	49,632	26.9%
2016	44	2,183,809	2	85,597	(3)	(147,638)	43	2,121,768	49,343	-2.8%
2017	43	2,121,768	10	674,619	(3)	(156,433)	50	2,639,954	52,799	24.4%
2018	50	2,639,954	7	331,377	(2)	(68,572)	55	2,902,760	52,777	10.0%
2019	55	2,902,760	3	241,678	0	0	58	3,144,438	54,214	8.3%
2020	58	3,144,438	3	293,611	(1)	(94,084)	60	3,343,965	55,733	6.3%
2021	60	3,343,965	3	293,778	0	0	63	3,637,743	57,742	8.8%

Values prior to July 1, 2016, were calculated by the prior actuary.

Totals may not add due to rounding.



## Schedule of Retirees and Beneficiaries Added to and Removed from the Rolls

### Public Safety with prior Main System Service

Plan Year	Beg of Year		Added to Rolls		Removed from Rolls		End of Year Balance		Average Annual Benefit	% Increase in Annual Benefit
	No.	Ann. Benefits	No.	Ann. Benefits	No.	Ann. Benefits	No.	Ann. Benefits		
<b>Retirement</b>										
2012	41	\$ 758,815	6	\$ 105,606	0	\$ 0	47	\$ 864,421	\$ 18,392	13.9%
2013	47	864,421	9	225,057	0	(13,776)	56	1,075,702	19,209	24.4%
2014	56	1,075,702	7	83,168	(1)	(57,253)	62	1,101,617	17,768	2.4%
2015	62	1,101,617	11	301,041	0	0	73	1,402,658	19,215	27.3%
2016	73	1,402,658	7	53,522	(1)	(10,529)	79	1,445,651	18,299	3.1%
2017	79	1,445,651	11	390,805	0	0	90	1,836,456	20,405	27.0%
2018	90	1,836,456	15	371,954	(2)	(22,510)	103	2,185,900	21,222	19.0%
2019	103	2,185,900	15	309,766	(3)	(87,471)	115	2,408,195	20,941	10.2%
2020	115	2,408,195	12	223,956	(2)	(38,955)	125	2,593,195	20,746	7.7%
2021	125	2,593,195	15	399,735	(3)	(44,015)	137	2,948,915	21,525	13.7%

### Public Safety without prior Main System Service

Plan Year	Beg of Year		Added to Rolls		Removed from Rolls		End of Year Balance		Average Annual Benefit	% Increase in Annual Benefit
	No.	Ann. Benefits	No.	Ann. Benefits	No.	Ann. Benefits	No.	Ann. Benefits		
<b>Retirement</b>										
2012	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0	\$ 0	NA
2013	0	0	1	9,792	0	0	1	9,792	9,792	100.0%
2014	1	9,792	0	0	0	0	1	9,792	9,792	0.0%
2015	1	9,792	0	0	0	0	1	9,792	9,792	0.0%
2016	1	9,792	1	3,264	0	0	2	13,056	6,528	33.3%
2017	2	13,056	4	57,609	0	0	6	70,665	11,778	441.2%
2018	6	70,665	2	19,573	0	0	8	90,238	11,280	27.7%
2019	8	90,238	2	10,405	0	0	10	100,643	10,064	11.5%
2020	10	100,643	2	24,715	0	0	12	125,358	10,447	24.6%
2021	12	125,358	2	14,349	0	0	14	139,708	9,979	11.4%

Values prior to July 1, 2016, were calculated by the prior actuary.

Totals may not add due to rounding.





## SECTION D

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### **GASB STATEMENT NO. 67 SCHEDULES**

## Discussion

### Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain non-actuarial information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

### Financial Statements

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The *statement of fiduciary net position* presents the assets and liabilities of the pension plan at the end of the pension plan’s reporting period. The *statement of changes in fiduciary net position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

### Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer’s financial statements to disclose the total pension expense, the pension plan’s liabilities and assets, and deferred outflows and inflows of resources related to pensions.

GASB Statement Nos. 67 and 68 require the notes of the financial statements for the employers and pension plans to include certain additional information. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The type of employees and number of members covered by the pension plan;
- A description of the plan’s funding policy, which includes member and employer contribution requirements;
- The pension plan’s investment policies;
- The pension plan’s fiduciary net position, net pension liability and the pension plan’s fiduciary net position as a percentage of the total pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

# GASB Statement No. 67

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Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan’s board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

## Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan’s fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- A comparison of the actual employer contributions to the actuarially determined contributions based on the plan’s funding policy.

## Timing of the Actuarial Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan’s fiscal year end (measurement date) on a date that is within the employer’s prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2021, and a measurement date of June 30, 2021.

## Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan’s fiduciary net position is projected to be sufficient to pay benefits) and (2) a tax-exempt municipal bond rate based on an index of 20-year mixed maturity general obligation bonds with an average Standard & Poor’s Corp.’s AA credit rating (which is published by Fidelity) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this actuarial valuation, the expected rate of return on pension plan investments is 7.00%; the municipal bond rate is 1.92% (based on the most recent date available on or before the measurement date of the “20-year Municipal GO Index” from Fidelity); and the resulting Single Discount Rate is 7.00%.



# GASB Statement No. 67

## Executive Summary as of June 30, 2021

	Main System	Judges	Public Safety with Prior Main Service	Public Safety without Prior Main Service	Total
Actuarial Valuation Date	7/1/2021	7/1/2021	7/1/2021	7/1/2021	7/1/2021
Measurement Date of the Net Pension Liability	7/1/2021	7/1/2021	7/1/2021	7/1/2021	7/1/2021
Plan's Fiscal Year Ending Date (Reporting Date) for GASB 67	6/30/2021	6/30/2021	6/30/2021	6/30/2021	6/30/2021
<b>Membership</b>					
Number of					
- Retirees and Beneficiaries	13,361	63	137	14	13,575
- Inactive, Nonretired Members	14,477	1	355	138	14,971
- Active Members	23,370	57	967	200	24,594
- Total	51,208	121	1,459	352	53,140
Covered Payroll	\$ 1,132,390,738	\$ 8,654,665	\$ 61,533,502	\$ 11,097,033	\$ 1,213,675,937
<b>Net Pension Liability</b>					
Total Pension Liability	\$ 4,795,054,158	\$ 53,424,304	\$ 128,468,679	\$ 14,595,856	\$ 4,991,542,997
Plan Fiduciary Net Position	3,752,753,612	68,256,490	111,897,170	16,815,428	3,949,722,700
Net Pension Liability	\$ 1,042,300,546	\$ (14,832,186)	\$ 16,571,509	\$ (2,219,572)	\$ 1,041,820,297
Plan Fiduciary Net Position as a Percentage					
of Total Pension Liability	78.26 %	127.76 %	87.10 %	115.21 %	79.13 %
Net Pension Liability as a Percentage					
of Covered Payroll	92.04 %	(171.38)%	26.93 %	(20.00)%	85.84 %
<b>Development of the Single Discount Rate</b>					
Single Discount Rate	7.00 %	7.00 %	7.00 %	7.00 %	7.00 %
Long-Term Expected Rate of Investment Return	7.00 %	7.00 %	7.00 %	7.00 %	7.00 %
Long-Term Municipal Bond Rate*	1.92 %	1.92 %	1.92 %	1.92 %	1.92 %
Last year ending June 30 in the 2022 to 2121 projection period					
for which projected benefit payments are fully funded	2121	2121	2121	2121	2121

\*Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 25, 2021. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax exempt securities.



# GASB Statement No. 67

## Schedules of Required Supplementary Information Schedule of Net Pension Liability and Related Ratios Multiyear

Last 10 Fiscal Years (which may be built prospectively)

FY Ending 30-Jun	System	Total Pension Liability <sup>1</sup>	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll <sup>2</sup>	Net Pension Liability as a % of Covered Payroll
2014	Main	\$ 2,846,579,777	\$ 2,211,858,402	\$ 634,721,375	77.70 %	\$ 865,868,265	73.30 %
2014	Judges	38,989,792	42,713,635	(3,723,843)	109.55 %	6,598,981	(56.43)%
2014	Public Safety with prior Main System service	30,791,599	24,806,508	5,985,091	80.56 %	13,394,927	44.68 %
2014	Public Safety without prior Main System service	2,190,975	2,204,318	(13,343)	100.61 %	2,589,887	(0.52) %
2014	Total PERS	2,918,552,143	2,281,582,863	636,969,280	78.18 %	888,452,060	71.69 %
2015	Main	\$ 2,976,071,808	\$ 2,296,088,880	\$ 679,982,928	77.15 %	\$ 946,197,522	71.86 %
2015	Judges	39,381,443	44,137,412	(4,755,969)	112.08 %	6,964,502	(68.29)%
2015	Public Safety with prior Main System service	34,317,782	28,691,976	5,625,806	83.61 %	16,732,974	33.62 %
2015	Public Safety without prior Main System service	2,675,506	2,792,541	(117,035)	104.37 %	3,641,404	(3.21) %
2015	Total PERS	3,052,446,539	2,371,710,809	680,735,730	77.70 %	973,536,402	69.92 %
2016	Main	\$ 3,299,381,100	\$ 2,324,783,623	\$ 974,597,477	70.46 %	\$ 1,007,764,043	96.71 %
2016	Judges	39,819,443	44,269,616	(4,450,173)	111.18 %	7,937,062	(56.07)%
2016	Public Safety with prior Main System service	53,865,148	42,406,694	11,458,454	78.73 %	28,225,868	40.60 %
2016	Public Safety without prior Main System service	3,499,776	3,435,724	64,052	98.17 %	4,621,494	1.39 %
2016	Total PERS	3,396,565,467	2,414,895,657	981,669,810	71.10 %	1,048,548,467	93.62 %
2017	Main	\$ 4,227,873,933	\$ 2,620,545,753	\$ 1,607,328,180	61.98 %	\$ 1,020,843,253	157.45 %
2017	Judges	45,789,468	49,576,578	(3,787,110)	108.27 %	7,866,090	(48.14)%
2017	Public Safety with prior Main System service	73,040,417	51,024,228	22,016,189	69.86 %	28,765,678	76.54 %
2017	Public Safety without prior Main System service	7,667,872	6,689,031	978,841	87.23 %	5,896,777	16.60 %
2017	Total PERS	4,354,371,690	2,727,835,589	1,626,536,101	62.65 %	1,063,371,798	152.96 %
2018	Main	\$ 4,536,928,161	\$ 2,849,319,075	\$ 1,687,609,086	62.80 %	\$ 1,027,317,202	164.27 %
2018	Judges	47,011,600	53,493,730	(6,482,130)	113.79 %	8,008,841	(80.94)%
2018	Public Safety with prior Main System service	82,162,213	58,857,977	23,304,236	71.64 %	34,521,069	67.51 %
2018	Public Safety without prior Main System service	9,479,781	8,509,494	970,287	89.76 %	6,110,843	15.88 %
2018	Total PERS	4,675,581,755	2,970,180,276	1,705,401,479	63.53 %	1,075,957,954	158.50 %
2019	Main	4,136,252,987	2,964,180,628	1,172,072,359	71.66 %	1,040,170,174	112.68 %
2019	Judges	44,558,881	55,455,075	(10,896,194)	124.45 %	8,164,306	(133.46)%
2019	Public Safety with prior Main System service	79,501,182	67,134,798	12,366,384	84.45 %	42,991,270	28.76 %
2019	Public Safety without prior Main System service	9,026,915	9,960,580	(933,665)	110.34 %	7,090,395	(13.17)%
2019	Total PERS	4,269,339,965	3,096,731,081	1,172,608,884	72.53 %	1,098,416,146	106.75 %
2020	Main	6,157,520,698	3,011,499,294	3,146,021,404	48.91 %	1,103,120,694	285.19 %
2020	Judges	63,768,454	56,273,160	7,495,294	88.25 %	8,438,678	88.82 %
2020	Public Safety with prior Main System service	139,828,360	74,280,460	65,547,900	53.12 %	45,383,846	144.43 %
2020	Public Safety without prior Main System service	18,682,804	12,298,225	6,384,579	65.83 %	10,824,717	58.98 %
2020	Total PERS	6,379,800,316	3,154,351,139	3,225,449,177	49.44 %	1,167,767,935	276.21 %
2021	Main	\$ 4,795,054,158	\$ 3,752,753,612	\$ 1,042,300,546	78.26 %	\$ 1,132,390,738	92.04 %
2021	Judges	53,424,304	68,256,490	(14,832,186)	127.76 %	8,654,665	(171.38)%
2021	Public Safety with prior Main System service	128,468,679	111,897,170	16,571,509	87.10 %	61,533,502	26.93 %
2021	Public Safety without prior Main System service	14,595,856	16,815,428	(2,219,572)	115.21 %	11,097,033	(20.00)%
2021	Total PERS	4,991,542,997	3,949,722,700	1,041,820,297	79.13 %	1,213,675,937	85.84 %

<sup>1</sup> The total pension liability is based on a single discount rate of 8.00% for fiscal years prior to 2017, 6.44% for fiscal year 2017, 6.32% for fiscal year 2018, 7.50% for fiscal year 2019, 4.64% for fiscal year 2020, and 7.00% for fiscal year 2021.

<sup>2</sup> Prior to the actuarial valuation as of July 1, 2016, annual payroll is based on projected annual compensation for the upcoming year. Beginning with the actuarial valuation as of July 1, 2016, annual payroll and average annual pay are based on annualized payroll as of the actuarial valuation date.

Values prior to July 1, 2016, were calculated by the prior actuary.



# GASB Statement No. 67

## Schedule of Changes in Net Pension Liability and Related Ratios Current Report Period Fiscal Year Ended June 30, 2021

	Main System	Judges	Public Safety		Total PERS
			with Prior Main System Service	without Prior Main System Service	
<b>Total pension liability</b>					
Service cost	\$ 226,377,574	\$ 3,041,091	\$ 10,658,465	\$ 2,674,013	\$ 242,751,143
Interest on the total pension liability	285,757,397	2,948,860	6,655,883	923,239	296,285,379
Changes of benefit terms	-	-	-	-	-
Difference between expected and actual experience <sup>1</sup>	11,275,311	119,091	36,443,893	(502,566)	47,335,729
Changes of assumptions <sup>2</sup>	(1,661,610,969)	(12,976,298)	(61,777,231)	(6,964,668)	(1,743,329,166)
Benefit payments and refunds	(224,265,853)	(3,476,894)	(3,340,691)	(216,966)	(231,300,404)
<b>Net change in total pension liability</b>	<b>(1,362,466,540)</b>	<b>(10,344,150)</b>	<b>(11,359,681)</b>	<b>(4,086,948)</b>	<b>(1,388,257,319)</b>
<b>Total pension liability - beginning<sup>3</sup></b>	<b>6,157,520,698</b>	<b>63,768,454</b>	<b>139,828,360</b>	<b>18,682,804</b>	<b>6,379,800,316</b>
<b>Total pension liability - ending (a)<sup>3</sup></b>	<b>\$ 4,795,054,158</b>	<b>\$ 53,424,304</b>	<b>\$ 128,468,679</b>	<b>\$ 14,595,856</b>	<b>\$ 4,991,542,997</b>
<b>Plan fiduciary net position</b>					
Contributions - Employer	\$ 83,508,849	\$ 1,389,483	\$ 5,470,675	\$ 896,633	\$ 91,265,640
Contributions - Employee	81,568,186	634,464	3,093,634	618,472	85,914,756
Contributions - Service credit repurchases	6,894,649	-	100,219	134,401	7,129,269
Pension plan net investment income	808,621,416	13,443,484	19,768,050	3,100,259	844,933,209
Benefit payments and refunds	(224,265,853)	(3,476,894)	(3,340,691)	(216,966)	(231,300,404)
Pension plan administrative expense	(2,475,682)	(7,207)	(70,701)	(15,596)	(2,569,186)
Transfers and Other Income	(12,597,247)	-	12,595,524	-	(1,723)
<b>Net change in plan fiduciary net position</b>	<b>741,254,318</b>	<b>11,983,330</b>	<b>37,616,710</b>	<b>4,517,203</b>	<b>795,371,561</b>
<b>Plan fiduciary net position - beginning</b>	<b>3,011,499,294</b>	<b>56,273,160</b>	<b>74,280,460</b>	<b>12,298,225</b>	<b>3,154,351,139</b>
<b>Plan fiduciary net position - ending (b)</b>	<b>\$ 3,752,753,612</b>	<b>\$ 68,256,490</b>	<b>\$ 111,897,170</b>	<b>\$ 16,815,428</b>	<b>\$ 3,949,722,700</b>
<b>Net pension liability - ending (a) - (b)</b>	<b>\$ 1,042,300,546</b>	<b>\$ (14,832,186)</b>	<b>\$ 16,571,509</b>	<b>\$ (2,219,572)</b>	<b>\$ 1,041,820,297</b>
<b>Plan fiduciary net position as a percentage</b>					
of total pension liability	78.26 %	127.76 %	87.10 %	115.21 %	79.13 %
<b>Covered-employee payroll</b>	<b>\$ 1,132,390,738</b>	<b>\$ 8,654,665</b>	<b>\$ 61,533,502</b>	<b>\$ 11,097,033</b>	<b>\$ 1,213,675,937</b>
<b>Net pension liability as a percentage</b>					
of covered-employee payroll	92.04 %	(171.38)%	26.93 %	(20.00)%	85.84 %

<sup>1</sup> Includes liability attributable to transfer of members.

<sup>2</sup> Includes difference in liability due to changes in the single discount rate assumption.

<sup>3</sup> The total pension liability is based on a single discount rate of 4.64% for the beginning of the fiscal year and 7.00% for the end of the fiscal year.

## GASB Statement No. 67

### Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

The following presents the net pension liability/(asset) of the PERS, calculated using the current single discount rate of 7.00%, as well as what the PERS' net pension liability/(asset) would be if it were calculated using a discount rate that is 1-percentage point lower (6.00%) or is 1-percentage point higher (8.00%) than the current rate.

System	Current Single Discount		
	1% Decrease 6.00%	Rate Assumption 7.00%	1% Increase 8.00%
Main System	\$1,657,608,174	\$1,042,300,546	\$529,960,252
Judges	(9,893,629)	(14,832,186)	(19,086,450)
Public Safety			
With Main System Service	38,785,445	16,571,509	(1,254,318)
Without Main System Service	274,463	(2,219,572)	(4,130,143)
Total PERS	1,686,774,453	1,041,820,297	505,489,341

# GASB Statement No. 67

## System Asset Allocation

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return</u>	<u>Allocation-Weighted Long-Term Expected Real Rate of Return</u>
Domestic Equities	30.00 %	6.00 %	1.80 %
International Equities	21.00 %	6.70 %	1.41 %
Private Equity	7.00 %	9.50 %	0.67 %
Domestic Fixed Income	23.00 %	0.73 %	0.17 %
Global Real Assets	19.00 %	4.77 %	0.91 %
Cash Equivalents	0.00 %	0.00 %	0.00 %
<b>Total</b>	<u>100.00 %</u>		<u>4.95 %</u>

*Asset allocation and long-term expected arithmetic returns were provided by NDPERS and are net of inflation of 2.00%.*

The discount rate used to measure the total pension liability of the total PERS plan was 7.00%. The projection of cash flows used to determine the discount rate assumed plan member and statutory/Board approved employer contributions will be made at the statutory rates described in this report. For this purpose, only employer contributions that are intended to fund benefits of current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs of future plan members and their beneficiaries are not included. Based on those assumptions, the total PERS pension plan's fiduciary net position was projected to be sufficient to make all projected future benefit payments. Therefore, the long-term expected rate of return on pension plan investments was applied to all projected benefit payments.



# GASB Statement No. 67

## Schedule of Contributions Multiyear

FY Ending 30-Jun	System	Actuarially Determined Contribution <sup>1</sup>	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll <sup>2</sup>	Actual Contribution as a % of Covered Payroll
2014	Main	\$ 105,092,504	\$ 58,872,974	\$ 46,219,530	\$ 865,868,265	6.80%
2014	Judges	1,099,249	1,159,604	(60,355)	6,598,981	17.57%
2014	Public Safety with prior Main System service	1,449,458	1,385,958	63,500	13,394,927	10.35%
2014	Public Safety without prior Main System service	210,115	242,514	(32,399)	2,589,887	9.36%
2014	Total PERS	107,851,326	61,661,050	46,190,276	888,452,060	6.94%
2015	Main	\$ 104,636,238	\$ 67,669,374	\$ 36,966,864	\$ 946,197,522	7.15%
2015	Judges	1,030,705	1,225,358	(194,653)	6,964,502	17.59%
2015	Public Safety with prior Main System service	1,577,004	1,638,384	(61,380)	16,732,974	9.79%
2015	Public Safety without prior Main System service	270,026	309,419	(39,393)	3,641,404	8.50%
2015	Total PERS	107,513,973	70,842,535	36,671,438	973,536,402	7.28%
2016	Main	\$ 121,358,455	\$ 72,960,487	\$ 48,397,968	\$ 1,007,764,043	7.24%
2016	Judges	781,713	1,364,327	(582,614)	7,937,062	17.19%
2016	Public Safety with prior Main System service	1,828,196	2,384,097	(555,901)	28,225,868	8.45%
2016	Public Safety without prior Main System service	367,803	371,664	(3,861)	4,621,494	8.04%
2016	Total PERS	124,336,167	77,080,576	47,255,591	1,048,548,467	7.35%
2017	Main	\$ 112,981,892	\$ 74,023,555	\$ 38,958,337	\$ 1,020,843,253	7.25%
2017	Judges	734,399	1,407,326	(672,927)	7,866,090	17.89%
2017	Public Safety with prior Main System service	2,514,672	3,005,338	(490,666)	28,765,678	10.45%
2017	Public Safety without prior Main System service	333,237	497,352	(164,115)	5,896,777	8.43%
2017	Total PERS	116,564,200	78,933,571	37,630,629	1,063,371,798	7.42%
2018	Main	\$ 122,272,212	\$ 75,666,300	\$ 46,605,912	\$ 1,027,317,202	7.37%
2018	Judges	393,904	1,413,703	(1,019,799)	8,008,841	17.65%
2018	Public Safety with prior Main System service	2,602,245	3,175,608	(573,363)	34,521,069	9.20%
2018	Public Safety without prior Main System service	445,737	471,598	(25,861)	6,110,843	7.72%
2018	Total PERS	125,714,098	80,727,209	44,986,889	1,075,957,954	7.50%
2019	Main	123,630,789	75,730,260	47,900,529	1,040,170,174	7.28%
2019	Judges	168,596	1,425,454	(1,256,858)	8,164,306	17.46%
2019	Public Safety with prior Main System service	2,911,194	3,762,300	(851,106)	42,991,270	8.75%
2019	Public Safety without prior Main System service	418,346	670,304	(251,958)	7,090,395	9.45%
2019	Total PERS	127,128,925	81,588,318	45,540,607	1,098,416,146	7.43%
2020	Main	135,980,074	78,110,561	57,869,513	1,103,120,694	7.08%
2020	Judges	240,210	1,570,506	(1,330,296)	8,438,678	18.61%
2020	Public Safety with prior Main System service	3,817,846	4,845,254	(1,027,408)	45,383,846	10.68%
2020	Public Safety without prior Main System service	499,195	977,712	(478,517)	10,824,717	9.03%
2020	Total PERS	140,537,325	85,504,033	55,033,292	1,167,767,935	7.32%
2021	Main	\$ 151,280,352	\$ 83,508,849	\$ 67,771,503	\$ 1,132,390,738	7.37%
2021	Judges	765,599	1,389,483	(623,884)	8,654,665	16.05%
2021	Public Safety with prior Main System service	4,581,035	5,470,675	(889,640)	61,533,502	8.89%
2021	Public Safety without prior Main System service	916,045	896,633	19,412	11,097,033	8.08%
2021	Total PERS	157,543,031	91,265,640	66,277,391	1,213,675,937	7.52%

<sup>1</sup> The actuarially determined contribution was based on an investment return assumption of 8.00% and a payroll growth assumption of 4.50% (4.00% for Judges) for fiscal years ending 2014 through 2017, an investment return assumption of 7.75% and a payroll growth assumption of 3.75% (3.25% for Judges) for fiscal year ending 2018, an investment return assumption of 7.50% and a payroll growth assumption of 3.75% (3.25% for Judges) for fiscal year ending 2019, and an investment return assumption of 7.00% and a payroll growth assumption of 3.50% (3.00% for Judges) for fiscal years ending 2020 and 2021.

<sup>2</sup> Prior to the actuarial valuation as of July 1, 2016, annual payroll is based on projected annual compensation for the upcoming year. Beginning with the actuarial valuation as of July 1, 2016, annual payroll and average annual pay are based on annualized payroll as of the actuarial valuation date. Values prior to July 1, 2016, were calculated by the prior actuary.



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Notes The actuarially determined contribution amount is calculated as of June 30, 12 months prior to the end of the fiscal year in which the contributions are reported.

**Methods and Assumptions Used to Determine Actuarially Determined Contribution Rates:**

Valuation Date	July 1, 2020
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Open Period Assumed annual payroll growth of 3.50% (3.00% for Judges)
Remaining Amortization Period	20 years
Asset Valuation Method	5-Year smoothed market
Inflation	2.25%
Salary Increases	3.50% to 17.75% including inflation
Investment Rate of Return	7.00%
Retirement Age	Age-based table of rates that are specific to the type of eligibility condition.
Mortality	Sex-distinct Pub-2010 tables for General Employees, with scaling based on actual experience. Respective corresponding tables were used for healthy retirees, disabled retirees, and active members. Mortality rates are projected from 2010 using the MP-2019 scale.

**Other Information:**

Notes The interest rate on member contributions decreased from 7.00% to 6.50% effective January 1, 2021.  
The benefit accrual rate for members first enrolled on or after January 1, 2020 in the Main and Public Safety Systems is 1.75% (compared to 2.00% for members enrolled before January 1, 2020).  
The investment return assumption was updated from 7.50% to 7.00% beginning with the actuarial valuation as of July 1, 2020. Other updates to actuarial assumptions since the July 1, 2019 valuation include changes to mortality tables used for the valuation as well as changes to rates of annual salary increases, separation for active membership, disability, and retirement. The actuarial assumptions were based on an experience review for the period from July 1, 2014 to July 1, 2019.  
The employer rates to the System are the statutory/Board approved contribution rates of 7.12% of payroll for the Main System (8.26% for members enrolled on or after January 1, 2020), 17.52% for the Judges System, 9.81% for Public Safety with prior Main System service System and 7.93% for Public Safety without prior Main System service System.

**Methods and Assumptions Used to Determine GASB 67/68 Net Pension Liability:**

Valuation Date	July 1, 2021
Actuarial Cost Method	Entry Age Normal
Asset Valuation Method	Plan Fiduciary Net Position (Market value of assets, no asset smoothing)
Inflation	2.25%
Salary Increases	3.50% to 17.75% including inflation
Single Discount Rate	7.00% (Based on an investment return assumption of 7.00% and a municipal bond rate of 1.92%)
Retirement Age	Age-based table of rates that are specific to the type of eligibility condition.
Mortality	Sex-distinct Pub-2010 tables for General Employees, with scaling based on actual experience. Respective corresponding tables were used for healthy retirees, disabled retirees, and active members. Mortality rates are projected from 2010 using the MP-2019 scale.

**Other Information:**

Notes The employer rates to the System are the statutory/Board approved contribution rates of 7.12% of payroll for the Main System (8.26% for members enrolled on or after January 1, 2020), 17.52% for the Judges System, 9.81% for Public Safety with prior Main System service System and 7.93% for Public Safety without prior Main System service System.  
The benefit accrual rate for members first enrolled on or after January 1, 2020 in the Main and Public Safety Systems is 1.75% (compared to 2.00% for members enrolled before January 1, 2020).  
The actuarial assumptions used in the actuarial valuation as of July 1, 2021 were based on an experience review for the period from July 1, 2014 to July 1, 2019, and were adopted for first use commencing with the actuarial valuation as of July 1, 2020



## **SECTION E**

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### **ACTUARIAL VALUATION PROCEDURES**

## Actuarial Assumptions in the Actuarial Valuation Process

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**Normal cost and the allocation of benefit values** between service rendered before and after the actuarial valuation date were determined using the **Individual Entry Age Normal** actuarial cost method having the following characteristics:

- The normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and
- Each annual normal cost is a constant percentage of the member's year by year projected covered pay.

**Financing of Unfunded Actuarial Accrued Liabilities.** The unfunded actuarial accrued liability is amortized using 20-year open level-percentage of pay amortization of the unfunded liability as of the actuarial valuation date for purposes of calculating the actuarial contribution rate.

**Actuarial Value of Pension Plan Assets.** The calculated value is determined by adjusting the market value of assets to reflect the investment gains and losses (the difference between the actual investment return and the expected investment return) during each of the last five years at the rate of 20 percent per year. This asset smoothing method was adopted by the Board for use beginning with the July, 1 2017 actuarial valuation. Net deferred asset gains attributable to fiscal years 2016 and prior were fully recognized as of July 1, 2017.

**Actuarial Valuation Assumptions.** The contribution and benefit values of the System are calculated by applying actuarial assumptions to the benefit provisions and census information furnished, using the actuarial cost method described above.

The principal areas of financial risk which require assumptions about future experiences are:

- Long-term rates of investment return to be generated by the assets of the Plan;
- Patterns of pay increases to members;
- Rates of mortality among members, retirees and beneficiaries;
- Rates of withdrawal of active members;
- Rates of disability among members; and
- The age patterns of actual retirement.

In an actuarial valuation, the monetary effect of each assumption is calculated for as long as a present covered person survives; a period of time which can be as long as a century.

Actual experience of the Plan will not coincide exactly with assumed experience. Each actuarial valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

## Actuarial Assumptions in the Actuarial Valuation Process

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From time-to-time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations). Thus, an experience review of the North Dakota Public Employees Retirement System for the period July 1, 2014 to July 1, 2019, was performed to compare the demographic and economic experience against the actuarial assumptions used in the actuarial valuations. Most of the actuarial assumptions described in this section were adopted by the Board for use beginning with the July 1, 2020 actuarial valuation.

All actuarial assumptions are expectations of future experience, not current market measures.

The actuarial assumptions were provided by, and are the responsibility of, the NDPERS Board.

# Actuarial Valuation Assumptions

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## Current Actuarial Valuation Assumptions and Methods

The assumed rate of investment return used is 7.00 percent, net of investment expenses, annually. This assumption was adopted by the Board for use beginning with the July 1, 2020 actuarial valuation.

The assumed rate of price inflation is 2.25 percent. This assumption was adopted by the Board for use beginning with the July 1, 2020 actuarial valuation.

No Cost of Living Adjustments (COLA) are provided to benefit recipients. Therefore, there is no COLA assumption for this actuarial valuation.

The rates of annual salary increase used for individual members are in accordance with the following table. This assumption is used to project a member’s current salary to the salaries upon which benefit amounts will be based.

Service At Beginning of Year	Main System			
	State Employee	Non-State Employee	Public Safety	Judges
0	10.75%	13.25%	17.75%	
1	7.50%	8.00%	15.00%	
2	5.75%	7.25%	12.75%	
3			7.25%	
4			7.25%	
Age*				
Under 30	5.75%	7.25%	6.75%	3.00%
30-34	5.75%	6.75%	6.75%	3.00%
35-39	5.75%	6.75%	6.25%	3.00%
40-44	5.25%	6.25%	6.25%	3.00%
45-49	5.25%	6.25%	5.25%	3.00%
50-54	4.75%	5.75%	5.25%	3.00%
55-59	4.50%	5.50%	5.25%	3.00%
60-64	4.00%	4.75%	5.25%	3.00%
65-69	4.00%	4.75%	4.50%	3.00%
70+	3.50%	4.50%	4.25%	3.00%

*\*Age-based salary increase rates apply for employees with three or more years of service in the Main System, five or more years of service in the Public Safety Systems and for all employees in the Judges System.*

The assumed rate of total payroll growth used in amortizing the unfunded liability as a level percentage of pay is:

Main System and Public Safety: 3.50 percent

Judges: 3.00 percent

This assumption was adopted by the Board for use beginning with the July 1, 2020 actuarial valuation.



# Actuarial Valuation Assumptions

The mortality assumptions are as follows:

Type	Assumption	Male Scaling Factor	Female Scaling Factor
Post-Retirement Non-Disabled	Pub-2010 Healthy Retiree Mortality Table (for General Employees), sex distinct	103%	101%
Post-Retirement Disabled	Pub-2010 Disabled Retiree Mortality Table (for General Employees), sex distinct	117%	112%
Pre-Retirement	Pub-2010 Employee Mortality Table (for General Employees), sex distinct	92%	92%

Mortality is projected from 2010 with generational mortality improvement using the MP-2019 two-dimensional mortality improvement scales.

Following is a table with the life expectancies by age as of the actuarial valuation date.

Age	Healthy Mortality		Disabled Mortality	
	Future Life		Future Life	
	Expectancy (years) in 2021		Expectancy (years) in 2021	
	Male	Female	Male	Female
20	67.10	70.58	49.60	54.20
25	61.72	65.18	44.88	49.07
30	56.35	59.77	40.13	43.98
35	51.03	54.40	35.76	39.31
40	45.75	49.06	31.67	35.02
45	40.50	43.74	27.75	31.01
50	35.38	38.53	24.08	27.30
55	30.49	33.55	20.81	24.01
60	25.79	28.68	17.91	20.99
65	21.30	23.94	15.25	17.94
70	17.05	19.39	12.65	14.72
75	13.11	15.12	10.07	11.57
80	9.65	11.29	7.68	8.76
85	6.82	8.06	5.65	6.51
90	4.75	5.60	4.04	4.85
95	3.34	3.90	2.92	3.53
100	2.39	2.74	2.09	2.47
105	1.81	2.01	1.55	1.78

# Actuarial Valuation Assumptions

**Rates of separation from active membership** are represented by the following table (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members terminating employment.

Service Beginning of Year	Service and Age-Based Rates for First Five Years of Service					
	Main System			Public Safety		
	Age					
	Under 30	30-39	40+	Under 30	30-39	40+
0	28.00%	20.00%	17.00%	27.00%	19.00%	16.00%
1	24.00%	17.00%	14.00%	25.00%	19.00%	16.00%
2	18.00%	14.00%	12.00%	20.00%	16.00%	14.00%
3	16.00%	13.00%	12.00%	17.00%	14.00%	14.00%
4	13.00%	11.00%	11.00%	17.00%	10.00%	10.00%

Age	Age-Based Rates Only after First Five Years of Service	
	Main System	Public Safety
20-24	11.00%	10.00%
25-29	10.00%	10.00%
30-34	6.50%	7.50%
35-39	5.50%	7.50%
40-44	4.50%	5.00%
45-49	4.20%	5.00%
50-54	3.90%	5.00%
55-59	3.60%	5.00%
60+	3.30%	5.00%

No pre-retirement termination is assumed for Judges.

*Vested participants who terminate are assumed to elect the option with the greater present value:*

- 1) *A refund of their accumulated contributions with interest or*
- 2) *A deferred benefit.*

Withdrawal rates end upon eligibility for early retirement.

Early retirement eligibility is as follows:

**Main System:** Earlier of (i) age 55 and 3 years of service, and (ii) eligibility for Rule of 85. For members hired on or after 1/1/2016, earlier of (i) age 60 and 3 years of service, and (ii) eligibility for Rule of 90.

**Public Safety:** Age 50 and 3 years of service.

**Account Balance Due to Vested Employer Contribution (PEP):** Participation Under Chapter 54-52.2: If not elected: None. If elected: 100% of active members of the Main System and Public Safety. Contribution: Maximum allowed, based on service at the beginning of the Plan year.





# Actuarial Valuation Assumptions

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## Rates of disability:

Before age 65: Males: 15.00% of OASDI disability incidence rates.  
Females: 8.50% of OASDI disability incidence rates.

Age 65 and later: 0.15% per year.

Rates of disability were as follows:

Age	All Plans	
	Male	Female
20	0.0090%	0.0051%
25	0.0128%	0.0073%
30	0.0165%	0.0094%
35	0.0221%	0.0125%
40	0.0330%	0.0187%
45	0.0539%	0.0306%
50	0.0909%	0.0515%
55	0.1513%	0.0858%
60	0.2440%	0.1383%
65	0.1500%	0.1500%

## Social Security Disability (for Judges' disability benefit offset):

Eligibility: 50%  
Consumer Price Index Increases: 2.25% per annum  
Wage Base Increases: 3.00% per annum

## Workers' Compensation (for Judges' disability benefit offset):

None assumed.

# Actuarial Valuation Assumptions

Rates of retirement for members eligible to retire during the next year were as follows:

Age	Main System			Public Safety		Judges	
	Reduced	Unreduced - Rule of 85	Unreduced - Not Rule of 85	Rule of 85	Not Rule of 85	Rule of 85	Not Rule of 85
50		50%		25%	4%		
51		20%		25%	4%		
52		20%		25%	4%		
53		20%		25%	4%		
54		20%		25%	4%		
55	1%	8%		25%	10%	10%	2%
56	1%	8%		25%	10%	10%	2%
57	1%	8%		25%	10%	10%	2%
58	1%	9%		25%	10%	10%	2%
59	2%	9%		25%	10%	10%	2%
60	2%	9%		25%	10%	10%	2%
61	4%	15%		25%	10%	10%	2%
62	8%	20%		50%	25%	10%	2%
63	8%	20%		50%	25%	10%	2%
64	8%	20%		50%	25%	10%	2%
65		35%	20%	50%	50%	100%	10%
66		35%	20%	50%	50%	100%	10%
67		20%	15%	50%	50%	100%	10%
68		20%	15%	50%	50%	100%	10%
69		20%	15%	50%	50%	100%	10%
70		20%	15%	100%	50%	100%	20%
71		20%	15%	100%	50%	100%	20%
72		20%	15%	100%	50%	100%	20%
73		20%	15%	100%	50%	100%	20%
74		20%	15%	100%	50%	100%	20%
75		50%	50%	100%	100%	100%	100%
76		50%	50%				
77		50%	50%				
78		50%	50%				
79		50%	50%				
80+		100%	100%				

Rates of retirement for Terminated Vested members eligible to retire during the next year were as follows:

Age	Main System			Public Safety		Judges	
	Reduced	Unreduced - Rule of 85	Unreduced - Not Rule of 85	Rule of 85	Not Rule of 85	Rule of 85	Not Rule of 85
50		70%		25%	10%		
51		70%		25%	10%		
52		70%		25%	10%		
53		70%		25%	10%		
54		70%		25%	10%		
55	1%	70%		25%	10%	10%	2%
56	1%	70%		25%	10%	10%	2%
57	1%	70%		25%	10%	10%	2%
58	1%	70%		25%	10%	10%	2%
59	2%	70%		25%	10%	10%	2%
60	2%	70%		25%	25%	10%	2%
61	4%	70%		25%	25%	10%	2%
62	8%	70%		50%	25%	10%	2%
63	8%	70%		50%	25%	10%	2%
64	8%	70%		50%	25%	10%	2%
65		70%	25%	50%	50%	100%	10%
66		70%	25%	50%	50%	100%	10%
67		70%	25%	50%	50%	100%	10%
68		70%	25%	50%	50%	100%	10%
69		70%	25%	50%	50%	100%	10%
70		70%	25%	100%	50%	100%	20%
71		70%	25%	100%	50%	100%	20%
72		70%	25%	100%	50%	100%	20%
73		70%	25%	100%	50%	100%	20%
74		70%	25%	100%	50%	100%	20%
75		70%	50%	100%	100%	100%	100%
76		70%	50%				
77		70%	50%				
78		70%	50%				
79		70%	50%				
80+		100%	100%				



# Actuarial Valuation Assumptions

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**Assumed Service**

**Credit:**

All active members (full time and part time) are assumed to earn one full year of service for each assumed future year of service.

**Marital Status:**

It is assumed that 75 percent of participants in the Main System and Public Safety and 100 percent of Judges have an eligible spouse at the time of retirement or pre-retirement death. The male spouse is assumed to be three years older than the female spouse.

Spouses are assumed to be the opposite sex of the employees and retirees. The relatively low rate of same-sex spouses does not have a material actuarial impact on the actuarial valuation results.

Form of Payment Election Assumption:	Main System and Public Safety		
	Form of Payment	Main System and Public Safety	Judges
Life Annuity		50%	0%
50% Joint and Survivor		45%	100%
Refund of Member Contributions		5%	0%

**Benefit Service:**

Exact fractional years of service are used to determine the amount of benefit payable.

**Decrement Timing:**

All decrements are assumed to occur at the middle of the year.

**Decrement Operation:**

Turnover decrements do not operate after the member reaches retirement eligibility (early or normal).

**Eligibility Testing:**

Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.

**Pay Increase Timing:**

Beginning of (fiscal) year.

## Actuarial Valuation Assumptions

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**Expenses:** Assumed administrative expenses were added to the Normal Cost and are based on the prior year’s expenses, adjusted for inflation. The assumed amount added to the Normal Cost is:

Expenses	Main System	Judges	Public Safety		Total
			With Prior	Without Prior	
Assumed FY 2021	\$ 2,698,413	\$ 12,017	\$ 63,746	\$ 17,002	\$ 2,791,178
Actual FY 2021	2,475,682	7,207	70,701	15,596	2,569,186
Assumed FY 2022	2,531,385	7,369	72,292	15,947	2,626,993

**Assumptions for Missing or Incomplete Data:** Pay was annualized for active members who have an entry date after the last actuarial valuation date of July 1, 2020. Pay was annualized by dividing the provided pay by the maximum of one month and calculated service (based on entry date). A minimum pay amount of \$10,000 was assumed for all members. Active members in the Main System with \$0 pay provided were assumed to have pay of \$35,226, the average of non-zero annualized salary of newly hired members. Active members in the Public Safety with Prior Service System with \$0 pay provided were assumed to have pay of \$48,444, the average of non-zero annualized salary of newly hired members. Active members in the Public Safety Without Prior Service System with \$0 pay provided were assumed to have pay of \$45,184, the average of non-zero annualized salary of newly hired members.

### Changes in Actuarial Valuation Assumptions and Methods since the Previous Actuarial Valuation

There have been no changes in actuarial assumptions since the previous actuarial valuation as of June 30, 2020.

## **SECTION F**

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### **BENEFIT PROVISIONS**

## Brief Summary of Plan Provisions

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This Section summarizes the major benefit provisions of the North Dakota Public Employees Retirement System as included in the actuarial valuation. It is not intended to be, nor should it be, interpreted as a complete statement of all plan provisions.

### 1. Normal Service Retirement:

#### ➤ Eligibility:

##### *Main System:*

Attainment of age 65, or at any age with age plus service equal to at least 85 (Rule of 85).

For members enrolled after December 31, 2015, into the Main System, attainment of age 65, or at age 60 with age plus service equal to at least 90 (Rule of 90).

##### *Judges:*

Attainment of age 65, or at any age with age plus service equal to at least 85 (Rule of 85).

##### *Public Safety:*

Attainment of age 55 and three consecutive years of service, or if not former National Guard, at any age with age plus service equal to at least 85 (Rule of 85). Former National Guard is eligible for Rule of 85 on August 1, 2015.

#### ➤ Benefit:

##### *Main System and Public Safety:*

2.00% of final average salary multiplied by service. (1.75% for members hired on or after January 1, 2020)

##### *Judges:*

3.50% of final average salary for each of the first ten years of service, 2.80% for each of the next 10 years of service and 1.25% for service in excess of 20 years.

### 2. Early Retirement:

#### ➤ Eligibility:

##### *Main System:*

Attainment of age 55 with three years of service. (Age 60 for members enrolled after December 31, 2015.)

##### *Judges:*

Attainment of age 55 with five years of service.



## Brief Summary of Plan Provisions

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### *Public Safety:*

Attainment of age 50 with three years of service.

#### ➤ Benefit:

### *Main System:*

The Normal Service Retirement Benefit as determined in the preceding section. A benefit that begins before age 65 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before the earlier of age 65 or the age at which the Rule of 85 is met.

For members enrolled after December 31, 2015, into the Main System, a benefit that begins before age 65 (or Rule of 90, if earlier) is reduced by 2/3% of one percent for each month before the earlier of age 65 or the age at which the Rule of 90 is met.

### *Judges:*

The Normal Service Retirement Benefit as determined in the preceding section. A benefit that begins before age 65 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before age 65 or the age at which the Rule of 85 is met.

### *Public Safety:*

The Normal Service Retirement Benefit as determined in the preceding section. A benefit that begins before age 55 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before age 55 or the age at which the Rule of 85 is met.

### **3. Disability Benefit:**

#### ➤ Eligibility:

Six months of service and inability to engage in any substantial gainful activity.

#### ➤ Benefit:

### *Main System and Public Safety:*

25% of the member's final average salary at disability minus workers' compensation benefits, with a minimum of \$100 per month.

### *Judges:*

70% of the member's final average salary at disability minus Social Security and Workers' Compensation benefits paid.



## Brief Summary of Plan Provisions

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### 4. Deferred Vested Retirement:

➤ Eligibility:

*Main System and Public Safety:*

Three years of service.

*Judges:*

Five years of service.

➤ Benefit:

*Main System and Judges:*

The Normal Service Retirement Benefit payable at age 65 or the Rule of 85 (Rule of 90 for members enrolled after December 31, 2015), if earlier. Reduced early retirement benefits can be elected upon attainment of age 55 (age 60 for members enrolled after December 31, 2015).

*Public Safety:*

The Normal Service Retirement Benefit payable at age 55 or the Rule of 85, if earlier. Reduced early retirement benefit can be selected upon attainment of age 50.

### 5. Pre-Retirement Death Benefits:

(a) Vested participants with a surviving spouse

➤ Eligibility:

*Main System and Public Safety:*

Three years of service.

*Judges:*

Five years of service.



## Brief Summary of Plan Provisions

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➤ Benefit:

*Main System and Public Safety:*

One of the following options:

- Lump sum payment of member's accumulated contributions with interest.
- 50% of the member's accrued benefit (not reduced on account of age) payable for the surviving spouse's lifetime.
- Continuation portion of 100% joint and survivor annuity (only if participant was eligible for normal retirement).

*Judges:*

One of the following options:

- Lump sum payment of member's accumulated contributions with interest.
- 100% of the member's accrued benefit (not reduced on account of age) payable for the spouse's lifetime.

(b) Non-vested members or vested members without a surviving spouse

➤ Eligibility:

*Main System, Judges and Public Safety:*

Non-vested or no surviving spouse.

➤ Benefit:

*Main System, Judges and Public Safety:*

Lump sum payment of member's accumulated contributions with interest.

**6. Refund of Member Contributions:**

Paid to terminated non-vested members and terminated vested members who choose a refund of employee contributions in lieu of a monthly retirement benefit.

## Brief Summary of Plan Provisions

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### 7. Accumulated Member Contributions:

Member contributions accumulate with interest at the following rates:

<u>Time Period</u>	<u>Per Annum Interest Rate</u>
Through June 30, 1981	5.0%
July 1, 1981 to June 30, 1986	6.0%
After June 30, 1986	0.5% less than the actuarial interest rate assumption

### 8. Standard and Optional Forms of Payment:

Standard form of payment:

*Main System and Public Safety:*

Monthly benefit for life with a refund to beneficiary at death of the remaining balance (if any) of accumulated member contributions.

*Judges:*

Monthly benefit for life, with 50% payable to an eligible survivor.

Optional forms of payment:

- Life annuity (for Judges).
- 50% joint and survivor annuity with pop-up (for Main System and Public Safety).
- 100% joint and survivor annuity with pop-up.
- 20-year certain and life annuity.
- 10-year certain and life annuity.
- A partial lump sum payment in addition to one of the annuity options above.
- An actuarially equivalent graduated benefit option with either a one percent or two percent increase to be applied the first day of January of each year. Not available for disability or early retirements or in combination with a partial lump sum option, a deferred normal retirement option or a Social Security level income annuity.

## Brief Summary of Plan Provisions

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### 9. Final Average Salary:

Average of the highest salary received by the member for any 36 months employed during the last 180 months of employment. For members who terminate after December 31, 2019, final average salary is the higher of the final average salary calculated on December 31, 2019 or the average salary earned in the three highest periods of twelve consecutive months employed during the last 180 months of employment.

### 10. Contributions:

Contribution rates specified in the Century Code (except employer rate for Public Safety); differ between permanent employees and temporary employees. Rates are as follows:

	<u>Rates Set by Statute</u>		<u>Rates</u>
	<u>Member</u>	<u>Employer</u>	<u>Determined by the Board of Retirement</u>
			<u>Employer</u>
Main System Permanent Employees*	7.00%	7.12%	
Main System Temporary Employees**	14.12%	0.00%	
Judges	8.00%	17.52%	
Public Safety with prior Main System service	5.50%		9.81%
➤ BCI Employees	6.00%		9.81%
➤ National Guard members	5.50%		9.81%
Public Safety without prior Main System service	5.50%		7.93%

\* The statutory employer contribution for members hired on or after January 1, 2020 increases to 8.26% of pay.

\*\* The statutory member contribution for temporary employees hired on or after January 1, 2020 increases to 15.26% of pay.

Effective January 1, 2000:

A member's account balance includes vested employer contributions equal to the member's contributions to the deferred compensation Plan under chapter 54-52.2. The vested employer contribution may not exceed:

1. For months one through 12 of service credit, \$25 or 1% of the member's monthly salary, whichever is greater.
2. For months 13 through 24 of service credit, \$25 or 2% of the member's monthly salary, whichever is greater.



## Brief Summary of Plan Provisions

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3. For months 25 through 36 of service credit, \$25 or 3% of the member's monthly salary, whichever is greater.
4. For service exceeding 36 months, \$25 or 4% of the member's monthly salary, whichever is greater.

Vested employer contributions are credited monthly to the member's account balance.

### 11. Rollovers:

The fund may accept rollovers from other qualified plans under rules adopted by the Board for the purchase of additional service credit.

## Changes in Plan Provisions Since the Previous Actuarial Valuation

There have been no changes in plan provisions since the previous actuarial valuation as of June 30, 2020.

## **SECTION G**

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### **CALCULATION OF THE SINGLE DISCOUNT RATE**

## Calculation of the Single Discount Rate

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GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the System to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The current employer and employee fixed rate contributions are assumed to be made in each future year. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed actuarial valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The Single Discount Rate (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) a tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this actuarial valuation, the expected rate of return on pension plan investments is 7.00%; the municipal bond rate is 1.92%; and the resulting Single Discount Rate is 7.00%.

The tables in this section provide detailed information on the development of the Single Discount Rate for the total PERS plan.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

# Projection of Contributions by Plan

Year	Main System			Judges			Public Safety with Prior Service			Public Safety without Prior Service			Total		
	Projected Contributions from Current Employees	Projected Contributions from Employer	Projected Total Contributions	Projected Contributions from Current Employees	Projected Contributions from Employer	Projected Total Contributions	Projected Contributions from Current Employees	Projected Contributions from Employer	Projected Total Contributions	Projected Contributions from Current Employees	Projected Contributions from Employer	Projected Total Contributions	Projected Contributions from Current Employees	Projected Contributions from Employer	Projected Total Contributions
2022	\$ 83,991,302	\$ 86,839,300	\$ 170,830,602	\$ 713,144	\$ 1,560,775	\$ 2,273,919	\$ 3,668,522	\$ 6,499,243	\$ 10,167,765	\$ 663,293	\$ 954,759	\$ 1,618,052	\$ 89,036,261	\$ 95,854,077	\$ 184,890,338
2023	79,949,867	97,310,478	177,260,345	631,968	1,703,281	2,335,249	3,476,531	7,050,899	10,527,430	618,968	1,063,423	1,682,390	84,677,334	107,128,080	191,805,414
2024	76,795,564	96,244,780	173,040,343	612,315	1,516,055	2,128,370	3,333,232	6,895,043	10,228,275	586,720	999,510	1,586,230	81,327,831	105,655,388	186,983,218
2025	74,202,511	98,345,231	172,547,743	576,214	1,507,761	2,083,975	3,225,787	6,961,648	10,187,435	563,196	981,892	1,545,088	78,567,709	107,796,531	186,364,240
2026	72,007,876	99,320,245	171,328,121	535,422	1,463,795	1,999,217	3,147,648	6,958,105	10,105,752	545,925	954,067	1,499,991	76,236,870	108,696,212	184,933,082
2027	70,128,720	100,683,988	170,812,708	507,898	1,391,881	1,899,779	3,085,590	7,000,505	10,086,094	529,636	936,041	1,465,676	74,251,844	110,012,414	184,264,258
2028	68,284,516	102,458,401	170,742,917	481,485	1,351,862	1,833,346	3,028,927	7,064,679	10,093,606	514,876	920,925	1,435,801	72,309,803	111,795,866	184,105,670
2029	66,398,892	104,413,039	170,811,931	453,838	1,339,905	1,775,743	2,967,803	7,139,746	10,107,549	498,917	908,974	1,407,891	70,301,450	113,801,663	184,103,113
2030	64,512,089	106,445,505	170,957,594	398,099	1,265,387	1,663,486	2,902,345	7,212,749	10,115,094	483,608	895,117	1,378,725	68,296,141	115,818,758	184,114,898
2031	62,591,328	108,560,332	171,151,660	375,391	1,197,271	1,572,662	2,841,099	7,281,759	10,122,858	470,502	881,855	1,352,357	66,278,320	117,921,217	184,199,536
2032	60,627,608	110,714,399	171,342,008	372,094	1,151,090	1,523,184	2,770,329	7,352,292	10,122,621	457,557	871,449	1,329,006	64,227,588	120,089,231	184,316,819
2033	58,614,357	112,943,403	171,557,760	361,831	1,165,368	1,527,199	2,702,003	7,417,618	10,119,620	446,652	860,893	1,307,545	62,124,843	122,387,282	184,512,124
2034	56,566,325	115,214,397	171,780,722	335,034	1,172,222	1,507,256	2,631,851	7,490,022	10,121,872	435,936	852,158	1,288,094	59,969,146	124,728,799	184,697,945
2035	54,493,052	117,536,055	172,029,107	318,063	1,124,863	1,442,926	2,561,790	7,561,830	10,123,620	422,761	842,048	1,264,809	57,795,666	127,064,796	184,860,461
2036	52,348,486	119,960,880	172,309,366	307,396	1,094,012	1,401,408	2,488,262	7,636,605	10,124,867	409,204	828,163	1,237,367	55,553,348	129,519,660	185,073,008
2037	50,175,796	122,400,786	172,576,582	278,749	1,112,939	1,391,687	2,414,797	7,710,561	10,125,357	394,933	814,896	1,209,829	53,264,274	132,039,181	185,303,455
2038	47,942,028	124,900,828	172,842,855	269,796	1,038,113	1,307,909	2,333,927	7,785,153	10,119,080	379,462	800,991	1,180,453	50,925,212	134,525,085	185,450,297
2039	45,670,969	127,434,785	173,105,754	202,957	1,089,102	1,292,059	2,238,291	7,844,181	10,082,473	362,482	783,073	1,145,555	48,474,699	137,151,141	185,625,841
2040	43,330,566	130,010,685	173,341,251	182,336	970,710	1,153,046	2,136,763	7,888,248	10,025,012	343,214	759,413	1,102,627	45,992,880	139,629,056	185,621,936
2041	40,968,406	132,599,370	173,567,777	154,059	907,802	1,061,861	2,023,912	7,927,701	9,951,613	322,440	731,734	1,054,174	43,468,816	142,166,607	185,635,423
2042	38,586,699	135,199,278	173,785,975	131,457	835,556	967,013	1,908,641	7,948,447	9,849,088	299,238	704,124	1,003,362	40,918,034	144,687,406	185,605,441
2043	36,239,190	137,854,857	174,094,047	102,579	852,895	955,474	1,762,462	7,952,889	9,715,352	275,658	669,403	945,061	38,379,889	147,330,044	185,709,933
2044	33,875,932	140,602,434	174,478,367	73,906	827,059	900,965	1,605,733	7,924,080	9,529,813	252,047	632,999	885,046	36,307,618	149,986,572	185,794,191
2045	31,486,258	143,371,895	174,858,154	58,269	772,316	830,585	1,446,284	7,876,927	9,323,211	227,639	597,547	825,186	33,218,451	152,618,685	185,837,136
2046	29,080,269	146,218,873	175,299,142	53,725	636,092	689,817	1,292,118	7,831,021	9,123,139	203,865	553,274	757,139	30,629,977	155,239,259	185,869,236
2047	26,666,404	149,153,851	175,820,255	29,103	592,907	622,009	1,137,835	7,785,059	8,922,894	181,060	508,400	689,460	28,014,401	158,040,217	186,054,619
2048	24,235,399	152,037,054	176,272,453	26,823	555,441	582,264	978,405	7,722,895	8,701,300	156,696	463,122	619,817	25,397,323	160,778,511	186,175,834
2049	21,891,710	154,753,302	176,645,013	-	580,329	580,329	821,308	7,639,370	8,460,678	131,616	418,590	550,206	22,844,635	163,391,592	186,236,227
2050	19,661,561	157,402,894	177,064,456	-	539,873	539,873	676,161	7,555,533	8,231,693	107,008	372,831	479,840	20,444,731	165,871,131	186,315,867
2051	17,544,459	160,062,093	177,606,552	-	584,495	584,495	545,166	7,488,909	8,034,075	86,710	328,249	414,960	18,176,336	168,463,746	186,640,082
2052	15,541,054	162,742,296	178,283,349	-	588,787	588,787	429,692	7,433,069	7,862,761	69,427	285,995	355,422	16,040,173	171,050,147	187,090,320
2053	13,671,263	165,452,726	179,123,990	-	560,368	560,368	328,445	7,389,186	7,717,631	54,268	248,973	303,241	14,053,977	173,651,253	187,705,230
2054	11,944,295	168,311,482	180,255,777	-	606,734	606,734	242,090	7,382,543	7,624,633	40,334	220,393	260,727	12,226,719	176,521,152	188,747,872
2055	10,346,662	171,322,710	181,669,372	-	697,492	697,492	176,295	7,416,151	7,592,447	28,675	195,143	223,819	10,551,633	179,631,496	190,183,129
2056	8,853,150	174,473,845	183,326,994	-	762,048	762,048	125,749	7,494,527	7,620,275	20,235	176,149	196,383	8,999,133	182,906,568	191,905,701
2057	7,482,926	177,815,033	185,297,959	-	755,777	755,777	88,537	7,616,101	7,704,639	13,989	164,033	178,022	7,585,452	186,350,945	193,936,397
2058	6,247,725	181,318,008	187,565,733	-	769,556	769,556	60,309	7,777,106	7,837,415	9,760	156,889	166,649	6,317,794	190,021,560	196,339,353
2059	5,147,623	185,073,923	190,221,546	-	836,005	836,005	39,903	7,971,933	8,011,836	6,782	153,896	160,678	5,194,308	194,035,758	199,230,066
2060	4,184,757	189,124,391	193,309,147	-	853,277	853,277	25,863	8,196,046	8,221,909	4,631	154,055	158,686	4,215,250	198,327,769	202,543,019
2061	3,351,130	193,595,361	196,946,491	-	877,831	877,831	15,974	8,444,598	8,460,571	2,965	156,780	159,745	3,370,068	203,074,569	206,444,638
2062	2,648,928	198,671,849	201,320,777	-	846,103	846,103	9,215	8,715,377	8,724,592	1,678	161,271	162,949	2,659,821	208,394,600	211,054,422
2063	1,477,127	2,390,785	3,867,911	-	871,032	871,032	4,897	9,008,331	9,013,228	894	167,194	168,088	1,482,918	212,437,342	213,920,260
2064	1,141,797	1,402,504	2,544,301	-	957,841	957,841	2,506	9,320,149	9,322,655	487	174,377	174,864	1,144,790	215,854,872	219,999,662
2065	877,086	767,015	1,644,101	-	971,144	971,144	1,263	9,649,116	9,650,379	245	182,549	182,794	878,594	218,569,825	224,448,419
2066	669,688	449,110	1,118,799	-	984,342	984,342	614	9,994,431	9,995,045	125	191,753	191,878	670,427	220,248,201	224,928,628
2067	508,529	393,889	902,418	-	1,016,580	1,016,580	291	10,355,752	10,356,043	62	201,916	201,978	508,882	221,757,079	225,765,957
2068	383,070	552,667	935,737	-	1,094,908	1,094,908	134	10,731,696	10,731,831	30	213,013	213,043	383,234	223,140,313	227,973,547
2069	286,166	897,352	1,183,519	-	1,164,030	1,164,030	55	11,122,107	11,122,161	12	225,082	225,095	286,233	225,366,546	228,632,779
2070	211,404	1,409,458	1,620,861	-	1,176,097	1,176,097	17	11,527,727	11,527,744	3	238,140	238,143	211,425	227,587,971	230,209,416
2071	152,510	2,069,556	2,222,065	-	1,213,918	1,213,918	3	11,949,508	11,949,511	1	252,288	252,289	152,513	229,740,484	232,732,997
2072	107,440	2,853,273	2,960,713	-	1,243,567	1,243,567	0	12,388,437	12,388,437	0	267,614	267,614	107,440	231,007,928	234,885,368
2073	72,876	3,771,983	3,844,859	-	1,295,611	1,295,611	-	12,845,730	12,845,730	-	284,358	284,358	72,876	232,230,804	236,052,684
2074	47,244	4,812,838	4,860,081	-	1,389,468	1,389,468	-	13,323,092	13,323,092	-	302,697	302,697	47,244	233,560,747	239,373,041
2075	28,955	5,973,733	6,002,688	-	1,475,379	1,475,379	-	13,822,195	13,822,195	-	322,791	322,791	28,955	235,000,438	242,323,393
2076	16,816	7,258,257	7,275,072	-	1,538,340	1,538,340	-	14,344,293	14,344,293	-	344,635	344,635	16,816	236,346,683	245,691,348
2077	9,087	8,667,149	8,676,236	-	1,566,632	1,566,632	-	14,890,299	14,890,299	-	368,054	368,054	9,087	237,714,737	249,103,824
2078	4,456	10,196,535	10,												

# Projection of Benefit Payments and Administrative Expenses by Plan

Year	Main System		Judges		Public Safety with Prior Service		Public Safety without Prior Service		Total	
	Projected Benefit Payments	Projected Administrative Expenses	Projected Benefit Payments	Projected Administrative Expenses	Projected Benefit Payments	Projected Administrative Expenses	Projected Benefit Payments	Projected Administrative Expenses	Projected Benefit Payments	Projected Administrative Expenses
2022	\$ 235,334,512	\$ 2,329,580	\$ 3,944,187	\$ 6,358	\$ 3,572,847	\$ 66,276	\$ 272,044	\$ 14,358	\$ 243,123,590	\$ 2,416,572
2023	251,277,772	2,205,987	4,264,697	6,120	3,980,671	62,568	344,333	13,363	259,867,473	2,288,039
2024	264,396,365	2,100,178	4,374,606	5,726	4,351,568	59,385	408,934	12,544	273,531,473	2,177,834
2025	279,729,928	2,007,795	4,534,530	5,286	4,749,574	56,646	485,819	11,848	289,499,851	2,081,574
2026	295,306,588	1,926,554	4,666,788	4,980	5,159,034	54,309	574,741	11,228	305,707,151	1,997,071
2027	311,501,844	1,849,371	4,760,246	4,693	5,575,624	52,170	665,154	10,662	322,502,868	1,916,895
2028	328,175,136	1,773,103	4,902,466	4,218	6,069,127	50,087	769,545	10,107	339,916,275	1,837,515
2029	344,894,949	1,698,687	5,055,262	3,825	6,665,803	48,041	886,767	9,584	357,502,780	1,760,137
2030	361,746,245	1,625,304	5,137,904	3,581	7,282,203	46,134	1,003,355	9,122	375,169,707	1,684,141
2031	378,869,399	1,552,888	5,121,922	3,525	8,039,652	44,204	1,121,600	8,680	393,152,573	1,609,298
2032	396,158,941	1,481,149	5,054,604	3,404	8,874,589	42,373	1,242,241	8,290	411,330,376	1,535,216
2033	413,489,496	1,410,381	5,063,957	3,133	9,779,545	40,588	1,382,466	7,921	429,715,465	1,462,024
2034	431,007,906	1,340,827	5,102,564	2,954	10,773,833	38,863	1,539,219	7,532	448,423,522	1,390,177
2035	448,899,089	1,271,430	5,089,092	2,834	11,853,162	37,154	1,715,770	7,156	467,557,113	1,318,574
2036	466,718,852	1,203,060	5,107,378	2,552	13,047,856	35,496	1,907,573	6,784	486,781,659	1,247,891
2037	478,061,124	1,135,088	5,109,243	2,452	14,144,009	33,800	2,066,855	6,408	499,381,230	1,177,748
2038	495,523,744	1,067,911	5,239,927	1,832	15,560,211	31,979	2,273,154	6,023	518,597,036	1,107,745
2039	513,049,559	1,000,900	5,412,203	1,634	17,041,950	30,130	2,499,171	5,617	538,002,883	1,038,282
2040	530,655,090	934,982	5,453,409	1,372	18,682,674	28,190	2,736,828	5,203	557,528,001	969,746
2041	548,050,651	870,255	5,496,923	1,162	20,498,934	26,165	3,013,404	4,765	577,059,912	902,347
2042	564,902,982	807,656	5,540,742	900	22,361,210	24,004	3,336,151	4,333	596,141,085	836,894
2043	581,113,498	746,153	5,604,686	644	24,378,886	21,662	3,639,839	3,913	614,736,909	772,372
2044	596,606,663	685,514	5,608,408	504	26,438,898	19,322	3,935,119	3,491	632,589,087	708,831
2045	611,473,120	625,928	5,511,660	461	28,469,171	17,085	4,216,362	3,089	649,670,313	646,563
2046	625,893,536	567,464	5,457,261	248	30,449,761	14,890	4,474,084	2,710	666,274,643	585,313
2047	639,620,426	509,916	5,390,604	227	32,307,229	12,676	4,741,548	2,320	682,059,806	525,138
2048	651,785,199	455,363	5,329,501	-	34,085,115	10,535	5,014,487	1,928	696,214,303	467,826
2049	661,919,173	404,285	5,256,336	-	35,705,532	8,582	5,286,265	1,551	708,167,307	414,419
2050	670,647,737	356,610	5,065,094	-	37,083,035	6,844	5,507,708	1,243	718,303,574	364,697
2051	678,151,371	312,274	4,876,061	-	38,174,280	5,333	5,665,893	984	726,867,604	318,591
2052	684,243,057	271,533	4,689,464	-	39,003,881	4,029	5,788,205	760	733,724,608	276,322
2053	688,870,428	234,482	4,505,401	-	39,611,275	2,935	5,887,999	559	738,875,104	237,975
2054	691,766,494	200,770	4,323,857	-	39,978,858	2,111	5,955,263	393	742,024,472	203,274
2055	693,284,618	169,819	4,144,771	-	40,129,279	1,487	5,986,093	274	743,544,761	171,580
2056	692,998,424	141,888	3,968,065	-	40,091,259	1,034	5,983,773	187	743,041,522	143,109
2057	690,584,875	117,097	3,793,611	-	39,904,623	696	5,953,150	129	740,236,258	117,921
2058	685,961,646	95,365	3,621,238	-	39,588,901	455	5,899,721	88	735,071,506	95,908
2059	678,677,411	76,624	3,450,733	-	39,161,073	291	5,829,902	60	727,119,119	76,974
2060	668,807,120	60,646	3,281,821	-	38,640,582	178	5,747,299	38	716,476,822	60,862
2061	656,445,531	47,378	3,114,184	-	38,044,632	101	5,653,852	21	703,258,199	47,500
2062	642,016,556	36,551	2,947,524	-	37,382,150	53	5,549,129	11	687,895,360	36,616
2063	625,687,439	27,918	2,781,596	-	36,658,682	27	5,433,691	6	670,561,408	27,951
2064	607,764,646	21,191	2,616,259	-	35,882,035	13	5,309,823	3	651,572,763	21,208
2065	588,685,840	15,989	2,451,480	-	35,058,814	6	5,178,656	1	631,374,789	15,997
2066	568,684,305	11,997	2,287,346	-	34,192,462	3	5,040,856	1	610,204,969	12,001
2067	547,927,144	8,930	2,124,114	-	33,284,622	1	4,896,856	0	588,232,736	8,932
2068	526,541,121	6,591	1,962,215	-	32,336,061	1	4,746,882	0	565,586,279	6,592
2069	504,653,618	4,811	1,802,222	-	31,347,118	0	4,591,054	0	542,394,012	4,811
2070	482,397,758	3,429	1,644,797	-	30,318,058	0	4,429,477	0	518,790,089	3,429
2071	459,834,148	2,386	1,490,738	-	29,249,506	0	4,262,387	0	494,836,778	2,387
2072	437,055,065	1,599	1,340,970	-	28,142,562	-	4,090,118	-	470,628,715	1,599
2073	414,130,351	1,024	1,196,506	-	26,998,863	-	3,913,088	-	446,238,808	1,024
2074	391,137,412	620	1,058,354	-	25,820,780	-	3,731,814	-	421,748,360	620
2075	368,157,805	356	927,440	-	24,611,350	-	3,546,890	-	397,243,486	356
2076	345,277,896	190	804,661	-	23,374,410	-	3,358,999	-	372,815,966	190
2077	322,590,493	92	690,805	-	22,114,457	-	3,168,925	-	348,564,680	92
2078	300,183,011	41	586,471	-	20,836,544	-	2,977,531	-	324,583,558	41
2079	278,148,412	17	492,023	-	19,546,459	-	2,785,712	-	300,972,606	17





# Projection of Contributions

Year	Projected Contributions from Current Employees	Projected Service Cost and Expense Contributions	Projected UAL Contributions	Projected Total Contributions
2022	\$ 89,036,261	\$ (86,619,689)	\$ 182,473,766	\$ 184,890,338
2023	84,677,334	(82,389,295)	189,517,375	191,805,414
2024	81,327,831	(79,149,997)	184,805,384	186,983,218
2025	78,567,709	(76,486,135)	184,282,666	186,364,240
2026	76,236,870	(74,239,799)	182,936,011	184,933,082
2027	74,251,844	(72,334,949)	182,347,363	184,264,258
2028	72,309,803	(70,472,289)	182,268,155	184,105,670
2029	70,301,450	(68,541,312)	182,342,976	184,103,113
2030	68,296,141	(66,611,999)	182,430,757	184,114,898
2031	66,278,320	(64,669,022)	182,590,239	184,199,536
2032	64,227,588	(62,692,372)	182,781,603	184,316,819
2033	62,124,843	(60,662,819)	183,050,101	184,512,124
2034	59,969,146	(58,578,970)	183,307,768	184,697,945
2035	57,795,666	(56,477,091)	183,541,887	184,860,461
2036	55,553,348	(54,305,457)	183,825,117	185,073,008
2037	53,264,274	(52,086,526)	184,125,707	185,303,455
2038	50,925,212	(49,817,467)	184,342,552	185,450,297
2039	48,474,699	(47,436,418)	184,587,559	185,625,841
2040	45,992,880	(45,023,134)	184,652,190	185,621,936
2041	43,468,816	(42,566,469)	184,733,076	185,635,423
2042	40,918,034	(40,081,141)	184,768,547	185,605,441
2043	38,379,889	(37,607,517)	184,937,562	185,709,933
2044	35,807,618	(35,098,787)	185,085,359	185,794,191
2045	33,218,451	(32,571,887)	185,190,573	185,837,136
2046	30,629,977	(30,044,664)	185,283,923	185,869,236
2047	28,014,401	(27,489,263)	185,529,480	186,054,619
2048	25,397,323	(24,929,497)	185,708,008	186,175,834
2049	22,844,635	(22,430,216)	185,821,807	186,236,227
2050	20,444,731	(20,080,034)	185,951,165	186,315,862
2051	18,176,336	(17,857,745)	186,321,491	186,640,082
2052	16,040,173	(15,763,851)	186,813,998	187,090,320
2053	14,053,977	(13,816,001)	187,467,255	187,705,230
2054	12,226,719	(12,023,445)	188,544,597	188,747,872
2055	10,551,633	(10,380,053)	190,011,549	190,183,129
2056	8,999,133	(8,856,023)	191,762,591	191,905,701
2057	7,585,452	(7,467,531)	193,818,476	193,936,397
2058	6,317,794	(6,221,885)	196,243,445	196,339,353
2059	5,194,308	(5,117,334)	199,153,092	199,230,066
2060	4,215,250	(4,154,388)	202,482,158	202,543,019
2061	3,370,068	(3,322,568)	206,397,137	206,444,638
2062	2,659,821	(2,623,206)	211,017,806	211,054,422
2063	1,482,918	(1,454,967)	13,892,310	13,920,260
2064	1,144,790	(1,123,583)	12,978,454	12,999,662
2065	878,594	(862,597)	12,432,422	12,448,419
2066	670,427	(658,426)	12,278,063	12,290,064
2067	508,882	(499,950)	12,468,087	12,477,018
2068	383,234	(376,642)	12,968,926	12,975,519
2069	286,233	(281,422)	13,689,994	13,694,805
2070	211,425	(207,996)	14,559,416	14,562,845
2071	152,513	(150,127)	15,635,397	15,637,783
2072	107,441	(105,842)	16,858,733	16,860,332
2073	72,876	(71,852)	18,269,534	18,270,558
2074	47,244	(46,624)	19,874,719	19,875,339
2075	28,955	(28,599)	21,622,697	21,623,052
2076	16,816	(16,626)	23,502,150	23,502,340
2077	9,087	(8,995)	25,501,129	25,501,221
2078	4,456	(4,415)	27,693,464	27,693,505
2079	2,012	(1,995)	30,048,728	30,048,745
2080	833	(826)	32,549,420	32,549,426



# Projection of Plan Fiduciary Net Position

Year	Projected		Projected		Projected		Projected Ending Plan Fiduciary Net Position
	Beginning Plan Fiduciary Net Position	Total Contributions	Projected Benefit Payments	Administrative Expenses	Projected Investment Earnings at 7.000%		
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)	
2022	\$ 3,949,722,700	\$ 184,890,338	\$ 243,123,590	\$ 2,416,572	\$ 274,393,747	\$ 4,163,466,623	
2023	4,163,466,623	191,805,414	259,867,473	2,288,039	289,022,054	4,382,138,580	
2024	4,382,138,580	186,983,218	273,531,473	2,177,834	303,696,809	4,597,109,300	
2025	4,597,109,300	186,364,240	289,499,851	2,081,574	318,177,334	4,810,069,448	
2026	4,810,069,448	184,933,082	305,707,151	1,997,071	332,480,547	5,019,778,855	
2027	5,019,778,855	184,264,258	322,502,868	1,916,895	346,562,043	5,226,185,393	
2028	5,226,185,393	184,105,670	339,916,275	1,837,515	360,408,614	5,428,945,887	
2029	5,428,945,887	184,103,113	357,502,780	1,760,137	373,999,306	5,627,785,388	
2030	5,627,785,388	184,114,898	375,169,707	1,684,141	387,313,207	5,822,359,645	
2031	5,822,359,645	184,199,536	393,152,573	1,609,298	400,320,137	6,012,117,447	
2032	6,012,117,447	184,316,819	411,330,376	1,535,216	412,984,305	6,196,552,980	
2033	6,196,552,980	184,512,124	429,715,465	1,462,024	425,271,436	6,375,159,051	
2034	6,375,159,051	184,697,945	448,423,522	1,390,177	437,139,019	6,547,182,317	
2035	6,547,182,317	184,860,461	467,557,113	1,318,574	448,530,354	6,711,697,445	
2036	6,711,697,445	185,073,008	486,781,659	1,247,891	459,394,679	6,868,135,583	
2037	6,868,135,583	185,303,455	499,381,230	1,177,748	469,922,165	7,022,802,224	
2038	7,022,802,224	185,450,297	518,597,036	1,107,745	480,095,113	7,168,642,853	
2039	7,168,642,853	185,625,841	538,002,883	1,038,282	489,644,670	7,304,872,200	
2040	7,304,872,200	185,621,936	557,528,001	969,746	498,511,127	7,430,507,516	
2041	7,430,507,516	185,635,423	577,059,912	902,347	506,636,327	7,544,817,008	
2042	7,544,817,008	185,605,441	596,141,085	836,894	513,982,666	7,647,427,137	
2043	7,647,427,137	185,709,933	614,736,909	772,372	520,531,345	7,738,159,134	
2044	7,738,159,134	185,794,191	632,589,087	708,831	526,273,412	7,816,928,818	
2045	7,816,928,818	185,837,136	649,670,313	646,563	531,203,178	7,883,652,256	
2046	7,883,652,256	185,869,236	666,274,643	585,313	535,305,708	7,937,967,245	
2047	7,937,967,245	186,054,619	682,059,806	525,138	538,573,070	7,980,009,990	
2048	7,980,009,990	186,175,834	696,214,303	467,826	541,035,177	8,010,538,871	
2049	8,010,538,871	186,236,227	708,167,307	414,419	542,764,834	8,030,958,206	
2050	8,030,958,206	186,315,862	718,303,574	364,697	543,849,870	8,042,455,667	
2051	8,042,455,667	186,640,082	726,867,604	318,591	544,372,763	8,046,282,317	
2052	8,046,282,317	187,090,320	733,724,608	276,322	544,421,638	8,043,793,346	
2053	8,043,793,346	187,705,230	738,875,104	237,975	544,092,669	8,036,478,166	
2054	8,036,478,166	188,747,872	742,024,472	203,274	543,509,312	8,026,507,604	
2055	8,026,507,604	190,183,129	743,544,761	171,580	542,809,538	8,015,783,930	
2056	8,015,783,930	191,905,701	743,041,522	143,109	542,136,446	8,006,641,445	
2057	8,006,641,445	193,936,397	740,236,258	117,921	541,663,734	8,001,887,397	
2058	8,001,887,397	196,339,353	735,071,506	95,908	541,592,099	8,004,651,435	
2059	8,004,651,435	199,230,066	727,119,119	76,974	542,159,323	8,018,844,730	
2060	8,018,844,730	202,543,019	716,476,822	60,862	543,633,580	8,048,483,646	
2061	8,048,483,646	206,444,638	703,258,199	47,500	546,297,838	8,097,920,423	
2062	8,097,920,423	211,054,422	687,895,360	36,616	550,446,006	8,171,488,874	
2063	8,171,488,874	13,920,260	670,561,408	27,951	549,409,522	8,064,229,299	
2064	8,064,229,299	12,999,662	651,572,763	21,208	542,523,270	7,968,158,261	
2065	7,968,158,261	12,448,419	631,374,789	15,997	536,474,482	7,885,690,376	
2066	7,885,690,376	12,290,064	610,204,969	12,001	531,424,831	7,819,188,301	
2067	7,819,188,301	12,477,018	588,232,736	8,932	527,532,246	7,770,955,897	
2068	7,770,955,897	12,975,519	565,586,279	6,592	524,952,431	7,743,290,976	
2069	7,743,290,976	13,694,805	542,394,012	4,811	523,838,698	7,738,425,655	
2070	7,738,425,655	14,562,845	518,790,089	3,429	524,340,205	7,758,535,187	
2071	7,758,535,187	15,637,783	494,836,778	2,387	526,609,081	7,805,942,887	



# Projection of Plan Fiduciary Net Position

Year	Projected Beginning Plan Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.000%	Projected Ending Plan Fiduciary Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2072	7,805,942,887	16,860,332	470,628,715	1,599	530,802,665	7,882,975,569
2073	7,882,975,569	18,270,558	446,238,808	1,024	537,082,705	7,992,089,000
2074	7,992,089,000	19,875,339	421,748,360	620	545,618,544	8,135,833,903
2075	8,135,833,903	21,623,052	397,243,486	356	556,583,997	8,316,797,111
2076	8,316,797,111	23,502,340	372,815,966	190	570,156,593	8,537,639,888
2077	8,537,639,888	25,501,221	348,564,680	92	586,518,808	8,801,095,145
2078	8,801,095,145	27,693,505	324,583,558	41	605,861,253	9,110,066,305
2079	9,110,066,305	30,048,745	300,972,606	17	628,382,681	9,467,525,108
2080	9,467,525,108	32,549,426	277,830,807	6	654,287,105	9,876,530,827
2081	9,876,530,827	35,162,736	255,254,384	2	683,784,235	10,340,223,412
2082	10,340,223,412	37,915,468	233,335,452	0	717,091,620	10,861,895,047
2083	10,861,895,047	40,828,676	212,162,998	0	754,437,375	11,444,998,099
2084	11,444,998,099	43,854,501	191,823,082	0	796,058,558	12,093,088,076
2085	12,093,088,076	47,005,967	172,397,223	0	842,201,698	12,809,898,517
2086	12,809,898,517	50,268,125	153,959,833	0	893,125,067	13,599,331,877
2087	13,599,331,877	53,685,211	136,574,807	0	949,101,163	14,465,543,444
2088	14,465,543,444	57,233,620	120,294,451	0	1,010,418,241	15,412,900,854
2089	15,412,900,854	60,874,178	105,158,833	0	1,077,379,311	16,445,995,511
2090	16,445,995,511	64,624,551	91,195,356	0	1,150,305,436	17,569,730,142
2091	17,569,730,142	68,480,049	78,417,738	0	1,229,539,174	18,789,331,627
2092	18,789,331,627	72,455,532	66,824,931	0	1,315,446,952	20,110,409,181
2093	20,110,409,181	76,516,401	56,401,852	0	1,408,420,745	21,538,944,474
2094	21,538,944,474	80,655,231	47,120,046	0	1,508,879,993	23,081,359,651
2095	23,081,359,651	84,879,336	38,938,437	0	1,617,275,912	24,744,576,463
2096	24,744,576,463	89,167,286	31,804,616	0	1,734,094,090	26,536,033,222
2097	26,536,033,222	93,539,434	25,656,465	0	1,859,858,046	28,463,774,237
2098	28,463,774,237	97,999,547	20,423,878	0	1,995,133,424	30,536,483,328
2099	30,536,483,328	102,538,061	16,030,206	0	2,140,530,399	32,763,521,582
2100	32,763,521,582	107,132,544	12,393,846	0	2,296,706,284	35,154,966,564
2101	35,154,966,564	111,781,092	9,430,366	0	2,464,369,348	37,721,686,638
2102	37,721,686,638	116,522,306	7,054,838	0	2,644,284,626	40,475,438,732
2103	40,475,438,732	121,348,473	5,183,862	0	2,837,277,708	43,428,881,051
2104	43,428,881,051	126,263,656	3,737,481	0	3,044,237,559	46,595,644,785
2105	46,595,644,785	131,262,614	2,641,159	0	3,266,120,748	49,990,386,988
2106	49,990,386,988	136,373,097	1,827,404	0	3,503,956,543	53,628,889,225
2107	53,628,889,225	141,611,445	1,236,635	0	3,758,852,268	57,528,116,303
2108	57,528,116,303	146,972,676	817,616	0	4,031,997,051	61,706,268,413
2109	61,706,268,413	152,475,783	527,614	0	4,324,667,028	66,182,883,611
2110	66,182,883,611	158,131,252	332,020	0	4,638,231,416	70,978,914,259
2111	70,978,914,259	163,973,786	203,604	0	4,974,159,010	76,116,843,450
2112	76,116,843,450	170,002,231	121,602	0	5,334,024,302	81,620,748,380
2113	81,620,748,380	176,222,274	70,700	0	5,719,513,418	87,516,413,371
2114	87,516,413,371	182,652,237	40,018	0	6,132,432,265	93,831,457,855
2115	93,831,457,855	189,301,704	22,060	0	6,574,714,792	100,595,452,291
2116	100,595,452,291	196,189,880	11,846	0	7,048,431,763	107,840,062,087
2117	107,840,062,087	203,317,087	6,199	0	7,555,799,876	115,599,172,851
2118	115,599,172,851	210,699,246	3,157	0	8,099,191,740	123,909,060,679
2119	123,909,060,679	218,340,962	1,562	0	8,681,146,879	132,808,546,957
2120	132,808,546,957	226,245,120	750	0	9,304,382,913	142,339,174,240



# Discount Rate Development

## Present Values of Projected Benefits Ending June 30 for 2022 to 2071

Year	Projected Beginning Plan Fiduciary Net Position		Funded Portion of Projected Benefit Payments		Unfunded Portion of Projected Benefit Payments		Present Value of Funded Benefit Payments Using Expected Return Rate of 7.00% (v)	Present Value of Unfunded Benefit Payments Using Municipal Bond Rate of 1.92% (vf)	Present Value of All Benefit Payments Using Single Discount Rate (SDR) of 7.00% (h)	
	(a)	(b)	(c)	(d)	(e)	(f)=(d)*(v)^(a)-.5	(g)=(e)*vf^(a)-.5	(h)=(c)/((1+SDR)^(a)-.5)		
2022	\$	3,949,722,700	\$	243,123,590	\$	0	\$	235,036,446	\$	235,036,446
2023		4,163,466,623		259,867,473		0		234,788,195		234,788,195
2024		4,382,138,580		273,531,473		0		230,965,898		230,965,898
2025		4,597,109,300		289,499,851		0		228,457,344		228,457,344
2026		4,810,069,448		305,707,151		0		225,464,722		225,464,722
2027		5,019,778,855		322,502,868		0		222,291,473		222,291,473
2028		5,226,185,393		339,916,275		0		218,966,362		218,966,362
2029		5,428,945,887		357,502,780		0		215,229,150		215,229,150
2030		5,627,785,388		375,169,707		0		211,089,025		211,089,025
2031		5,822,359,645		393,152,573		0		206,735,584		206,735,584
2032		6,012,117,447		411,330,376		0		202,144,122		202,144,122
2033		6,196,552,980		429,715,465		0		197,363,819		197,363,819
2034		6,375,159,051		448,423,522		0		192,482,462		192,482,462
2035		6,547,182,317		467,557,113		0		187,565,807		187,565,807
2036		6,711,697,445		486,781,659		0		182,502,757		182,502,757
2037		6,868,135,583		499,381,230		0		174,978,086		174,978,086
2038		7,022,802,224		518,597,036		0		169,823,465		169,823,465
2039		7,168,642,853		538,002,883		0		164,652,562		164,652,562
2040		7,304,872,200		557,528,001		0		159,465,521		159,465,521
2041		7,430,507,516		577,059,912		0		154,254,286		154,254,286
2042		7,544,817,008		596,141,085		0		148,929,802		148,929,802
2043		7,647,427,137		614,736,909		0		143,528,475		143,528,475
2044		7,738,159,134		632,589,087		0		138,034,198		138,034,198
2045		7,816,928,818		649,670,313		0		132,487,299		132,487,299
2046		7,883,652,256		666,274,643		0		126,984,505		126,984,505
2047		7,937,967,245		682,059,806		0		121,488,767		121,488,767
2048		7,980,009,990		696,214,303		0		115,897,170		115,897,170
2049		8,010,538,871		708,167,307		0		110,174,728		110,174,728
2050		8,030,958,206		718,303,574		0		104,440,842		104,440,842
2051		8,042,455,667		726,867,604		0		98,772,005		98,772,005
2052		8,046,282,317		733,724,608		0		93,181,107		93,181,107
2053		8,043,793,346		738,875,104		0		87,696,455		87,696,455
2054		8,036,478,166		742,024,472		0		82,308,645		82,308,645
2055		8,026,507,604		743,544,761		0		77,081,572		77,081,572
2056		8,015,783,930		743,041,522		0		71,990,096		71,990,096
2057		8,006,641,445		740,236,258		0		67,026,454		67,026,454
2058		8,001,887,397		735,071,506		0		62,204,486		62,204,486
2059		8,004,651,435		727,119,119		0		57,506,098		57,506,098
2060		8,018,844,730		716,476,822		0		52,957,406		52,957,406
2061		8,048,483,646		703,258,199		0		48,579,785		48,579,785
2062		8,097,920,423		687,895,360		0		44,409,858		44,409,858
2063		8,171,488,874		670,561,408		0		40,458,687		40,458,687
2064		8,064,229,299		651,572,763		0		36,741,118		36,741,118
2065		7,968,158,261		631,374,789		0		33,273,073		33,273,073
2066		7,885,690,376		610,204,969		0		30,053,678		30,053,678
2067		7,819,188,301		588,232,736		0		27,076,175		27,076,175
2068		7,770,955,897		565,586,279		0		24,330,622		24,330,622
2069		7,743,290,976		542,394,012		0		21,806,474		21,806,474
2070		7,738,425,655		518,790,089		0		19,492,990		19,492,990
2071		7,758,535,187		494,836,778		0		17,376,607		17,376,607



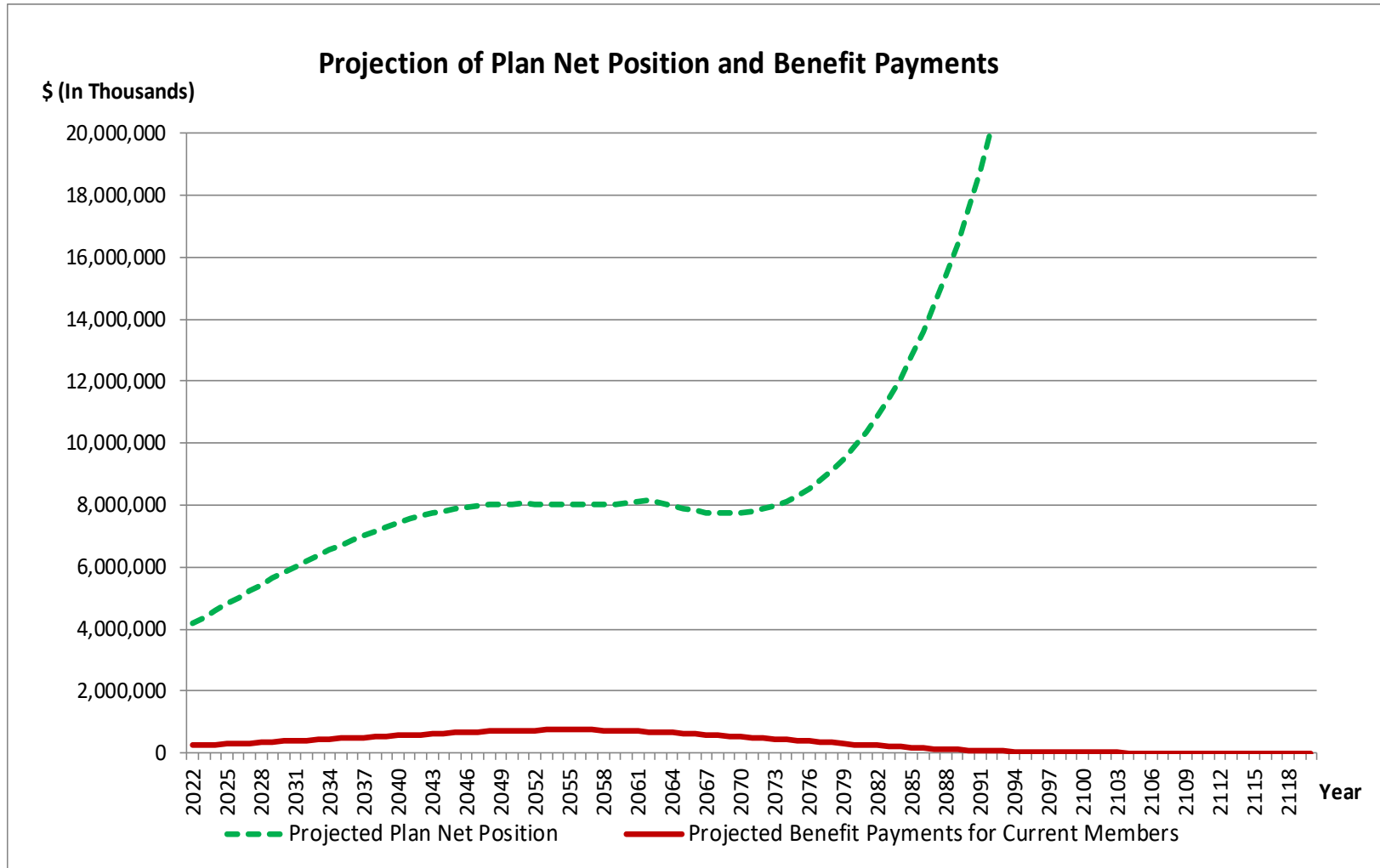
# Discount Rate Development

## Present Values of Projected Benefits Ending June 30 for 2072 to 2120

Year	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Projected Benefit Payments	Unfunded Portion of Projected Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate of 7.00%	Present Value of Unfunded Benefit Payments Using Municipal Bond Rate of 1.92%	Present Value of All Benefit Payments Using Single Discount Rate (SDR) of 7.00%
					(v)	(vf)	(h)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^(a)-.5	(g)=(e)*vf^(a)-.5	(h)=((c)/(1+SDR)^(a)-.5)
2072	\$ 7,805,942,887	\$ 494,836,778	\$ 494,836,778	\$ 0	\$ 15,445,346	\$ 0	\$ 15,445,346
2073	7,882,975,569	470,628,715	470,628,715	0	13,686,827	0	13,686,827
2074	7,992,089,000	446,238,808	446,238,808	0	12,089,409	0	12,089,409
2075	8,135,833,903	421,748,360	421,748,360	0	10,642,035	0	10,642,035
2076	8,316,797,111	397,243,486	397,243,486	0	9,334,233	0	9,334,233
2077	8,537,639,888	372,815,966	372,815,966	0	8,156,122	0	8,156,122
2078	8,801,095,145	348,564,680	348,564,680	0	7,098,116	0	7,098,116
2079	9,110,066,305	324,583,558	324,583,558	0	6,151,199	0	6,151,199
2080	9,467,525,108	300,972,606	300,972,606	0	5,306,759	0	5,306,759
2081	9,876,530,827	277,830,807	277,830,807	0	4,556,574	0	4,556,574
2082	10,340,223,412	255,254,384	255,254,384	0	3,892,801	0	3,892,801
2083	10,861,895,047	233,335,452	233,335,452	0	3,308,014	0	3,308,014
2084	11,444,998,099	212,162,998	212,162,998	0	2,795,212	0	2,795,212
2085	12,093,088,076	191,823,082	191,823,082	0	2,347,796	0	2,347,796
2086	12,809,898,517	172,397,223	172,397,223	0	1,959,538	0	1,959,538
2087	13,599,331,877	153,959,833	153,959,833	0	1,624,550	0	1,624,550
2088	14,465,543,444	136,574,807	136,574,807	0	1,337,286	0	1,337,286
2089	15,412,900,854	120,294,451	120,294,451	0	1,092,549	0	1,092,549
2090	16,445,995,511	105,158,833	105,158,833	0	885,491	0	885,491
2091	17,569,730,142	91,195,356	91,195,356	0	711,610	0	711,610
2092	18,789,331,627	78,417,738	78,417,738	0	566,738	0	566,738
2093	20,110,409,181	66,824,931	66,824,931	0	447,047	0	447,047
2094	21,538,944,474	56,401,852	56,401,852	0	349,045	0	349,045
2095	23,081,359,651	47,120,046	47,120,046	0	269,570	0	269,570
2096	24,744,576,463	38,938,437	38,938,437	0	205,778	0	205,778
2097	26,536,033,222	31,804,616	31,804,616	0	155,139	0	155,139
2098	28,463,774,237	25,656,465	25,656,465	0	115,420	0	115,420
2099	30,536,483,328	20,423,878	20,423,878	0	84,664	0	84,664
2100	32,763,521,582	16,030,206	16,030,206	0	61,176	0	61,176
2101	35,154,966,564	12,393,846	12,393,846	0	43,503	0	43,503
2102	37,721,686,638	9,430,366	9,430,366	0	30,415	0	30,415
2103	40,475,438,732	7,054,838	7,054,838	0	20,887	0	20,887
2104	43,428,881,051	5,183,862	5,183,862	0	14,074	0	14,074
2105	46,595,644,785	3,737,481	3,737,481	0	9,295	0	9,295
2106	49,990,386,988	2,641,159	2,641,159	0	6,010	0	6,010
2107	53,628,889,225	1,827,404	1,827,404	0	3,801	0	3,801
2108	57,528,116,303	1,236,635	1,236,635	0	2,349	0	2,349
2109	61,706,268,413	817,616	817,616	0	1,417	0	1,417
2110	66,182,883,611	527,614	527,614	0	833	0	833
2111	70,978,914,259	332,020	332,020	0	477	0	477
2112	76,116,843,450	203,604	203,604	0	267	0	267
2113	81,620,748,380	121,602	121,602	0	145	0	145
2114	87,516,413,371	70,700	70,700	0	77	0	77
2115	93,831,457,855	40,018	40,018	0	39	0	39
2116	100,595,452,291	22,060	22,060	0	20	0	20
2117	107,840,062,087	11,846	11,846	0	10	0	10
2118	115,599,172,851	6,199	6,199	0	5	0	5
2119	123,909,060,679	3,157	3,157	0	2	0	2
2120	132,808,546,957	1,562	1,562	0	1	0	1
					\$ 6,365,355,931	\$ 0	\$ 6,365,355,931



## Projection of Plan Net Position and Benefit Payments



## **SECTION H**

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### **GLOSSARY OF TERMS**

## Glossary of Terms

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**Actuarial Accrued Liability (AAL).** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

**Actuarial Assumptions.** Estimates of future plan experience such as investment return, expected lifetimes and the likelihood of receiving a pension from the Pension Plan. Demographic, or “people” assumptions, include rates of mortality, retirement and separation. Economic, or “money” assumptions, include expected investment return, inflation and salary increases.

**Actuarial Cost Method.** A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

**Actuarial Present Value of Future Plan Benefits.** The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

**Actuarial Value of Assets (AVA).** Smoothed value of assets that recognizes the difference between the expected investment return using the actuarial valuation assumption of 7.00 percent and the actual investment return over a five-year period. Dampens volatility of asset value over time.

**Amortization.** Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

**Annual Required Contribution.** The sum of the normal cost and amortization of the unfunded actuarial accrued liability.

**Asset Return.** The net investment return for the asset divided by the mean asset value. Example: if \$1.00 is invested and yields \$1.070 after a year, the asset return is 7.00 percent.

**Funded Ratio.** The actuarial value of assets divided by the actuarial accrued liability. Measures the portion of the actuarial accrued liability that is currently funded.

**Market Value of Assets (MVA).** The value of assets currently held in the trust available to pay for benefits of the Pension Plan. Each of the investments in the trust is valued at market price which is the price at which buyers and sellers trade similar items in the open market.

**Normal Cost (NC).** The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

**Unfunded Actuarial Accrued Liability (UAAL).** The difference between the actuarial accrued liability and actuarial valuation assets. Sometimes referred to as “unfunded accrued liability.”

