

# EMPLOYEES' RETIREMENT SYSTEM OF THE STATE OF HAWAII

REPORT TO BOARD OF TRUSTEES ON THE 98<sup>th</sup> ANNUAL  
ACTUARIAL VALUATION  
FOR THE YEAR ENDING JUNE 30, 2023





December 29, 2023

Board of Trustees  
Employees' Retirement System of  
The State of Hawaii  
City Financial Tower  
201 Merchant St., Ste. 1400  
Honolulu, HI 96813-2980

Dear Trustees:

**SUBJECT: ACTUARIAL VALUATION AS OF JUNE 30, 2023**

We certify that the information contained in the 2023 actuarial valuation report is accurate and fairly presents the actuarial position of the Employees' Retirement System of the State of Hawaii (ERS) as of June 30, 2023. There have been no adjustments for events which occurred after this date.

All calculations have been made in conformity with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice (ASOP) issued by the Actuarial Standards Board. In our opinion, the results presented comply with the requirements of the Hawaii statutes and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned are independent actuaries and consultants. One or more of them are an Enrolled Actuary and/or a Member of the American Academy of Actuaries. All are experienced in performing valuations for large public retirement systems.

This report was prepared at the request of the Board and is intended for use by ERS and those designated or approved by the Board. This report may be provided to parties other than ERS only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

#### **ACTUARIAL VALUATIONS**

The primary purpose of the valuation report is to determine the adequacy of the current employer contribution rate through measuring the resulting funding period, to describe the current financial condition of ERS, and to analyze changes in ERS's condition. In addition, the report provides various summaries of the data. This report may not be appropriate for other purposes. The information required by ERS in connection with Governmental Accounting Standards Board Statement Numbers 67 and 68 (GASB Nos. 67 and 68) will be provided in a separate report.

Valuations are prepared annually, as of June 30th of each year, the last day of ERS's plan year and fiscal year.

## **FINANCING OBJECTIVES**

The employee and employer contribution rates have been set by Law and are intended to provide for the normal costs of ERS and to amortize the unfunded actuarial accrued liability (UAAL) over a reasonable amount of time, which will ensure benefit security and intergenerational equity. Hawaii Revised Statutes §88-122(e)(1) state that the employer contribution rates are subject to adjustment when the funding period is in excess of 30 years.

## **PROGRESS TOWARD REALIZATION OF FINANCING OBJECTIVES**

The actuarial accrued liability (AAL), the unfunded actuarial accrued liability (UAAL), and the determination of the resulting funding period illustrate the progress toward the realization of financing objectives. ERS had a liability experience loss which was caused by individual salary increases being more than expected by the assumptions. On the asset side, ERS experienced an actuarial loss as well. This result was due to shortfall in returns in 2023 which completely offset deferred investment gains from previous years. In addition to these changes, ERS currently experiences negative amortization (interest on the UAAL is greater than the contributions towards the elimination of the UAAL). As a result, the UAAL increased (in dollars) based on this actuarial valuation as of June 30, 2023 and ERS's underfunded status as measured by the UAAL is now \$13.71 billion.

The 2017 Legislature passed legislation that made significant changes to the future employer contribution rates. The employer contribution rate for Police and Fire employees increased to 41% and the employer contribution rate for All Other Employees increased to 24%. The funding period assumes that these contribution rates will remain in effect throughout the funding period. Under current law, the contribution rates are expected to stay at these levels until ERS is fully funded. These increases have improved the outlook of ERS. As long as the contributions are made, ERS's funded status should improve and ERS should be able to absorb moderate adverse experience without a need to further increase the contribution rates.

The 2011 Legislature made changes to the benefits and member contribution rates for employees hired after June 30, 2012. Because these changes result in significantly higher contributions towards the unfunded liability in the future than in the current year, we believe it is more appropriate to determine the funding period using an open group projection rather than a static mathematical formula, which would instead assume that all amortization payments in the future will be the same percentage of pay as in the current year.

We have determined that the funding period for paying off the UAAL of ERS (in aggregate) is 23 years. Normally, we would expect the funding period to decrease by one each year if all assumptions are exactly met. Since the prior year's funding period was 24 years, we are at the expected funding period from last year. Given that the System experienced actuarial losses on both its assets and its liabilities, this result may be surprising. However, the UAAL was expected to increase slightly during this portion of the financing process and since the contributions to the System are a fixed percentage of payroll, an increase in the covered payroll that is larger than assumed implies a larger contribution stream in future years, which means larger payments towards the unfunded liabilities of ERS.



Hence, even though the total unfunded liabilities increased from last year, the end period (fiscal year) over which the unfunded liabilities are to be paid off did not change and the funding period decreased to 23 years. Because this period is less than 30 years, the minimum objectives set in State statute are currently being realized. In addition, when the current contribution rates were passed by the Legislature in 2017, it was expected that the funding period would be 23 years as of the 2023 valuation, thus ERS remains on track to achieve full funding in the same timeframe as originally set by the legislation.

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. The funded status alone is not appropriate for assessing the need for future contributions nor assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. However, the trend (historical and projected) of the funded ratio is a strong metric to use for assessing the dependability of the current funding policy and its ability to accumulate assets to pay benefits when due. The funded ratio is currently 62.2% compared with the 61.2% funded ratio in the previous valuation. The funded ratio improved due to the sizeable contributions towards the unfunded liabilities of the system as well as the contributions related to the excess pension costs.

Given the plan's current and future contribution rates and the new tier of benefits, if all actuarial assumptions are met (including the assumption of the plan earning 7.00% on the actuarial value of assets), it is expected that:

1. The employer normal cost as a percentage of pay will decrease to the level of the newest tier as the old tier population declines and is replaced by new tier members,
2. The employer contribution will remain level throughout the amortization period,
3. Thus, the net amount available to amortize the UAAL will increase over time,
4. The UAAL will increase in nominal dollars until the net amount for amortization is large enough to cover the interest charges, or approximately 2025, and then begin to decrease,
5. The UAAL will be fully amortized after 23 years, and
6. In the absence of benefit improvements and in consistent financial markets, the funded ratio should increase steadily until it reaches 100%.

The current projections expect the UAAL to begin to decline in FY 2026 (three years from the valuation date) with the annual amount of decline accelerating year over year thereafter. We believe three years is a reasonable amount of time as defined under the ASOP No. 4 (especially given that the UAAL has decreased in two of the last three valuation reports). All other parameters and methods used in the valuation also meet the requirements of a Reasonable Actuarially Determined Contribution (RADDC) under the ASOP.

Thus, the employer contribution rates of 41% of payroll for Police and Fire and 24% for All Other Employees meet the requirements of a RADDC.



However, it is important to again note that these statements are based on the actual experience meeting the current assumptions. Also, these statements depend upon the employers meeting the contribution requirements established by the 2017 Legislature. Future changes to the actuarial assumptions or future changes to reduce the contribution requirements could significantly change the outlook of ERS and the expectation on when ERS will reach a 100% funded level.

This valuation assumed the continuing ability of the plan sponsors 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.

#### **BENEFIT PROVISIONS AND LEGISLATIVE CHANGES**

This is the eleventh valuation with members covered under the new benefit tier.

There have been no changes in the benefit provisions since the prior valuation. See Table 16 of this report for more details on the benefit provisions for members of ERS.

#### **ASSUMPTIONS AND METHODS**

The actuarial assumptions used in this valuation were adopted by the Board in August of 2022 based on the recommendations provided by an Experience Study performed by GRS. There were no changes to the actuarial assumptions or methods since the prior valuation.

Further detail on the assumptions and methods may be found in Table 18 of this report and in our Experience Study Report dated June 14, 2022.

The actuarial assumptions represent estimates of future experience and are not market measures. The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. Based on the scope of this engagement, we have not performed analysis on the potential range of future measurements based on other factors. The actuarial calculations are intended to provide information for rational decision making.

In our opinion, the assumptions are internally consistent and are reasonably based on the actual experience of ERS.

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.



## DATA

Member data for retired, active, and inactive participants was supplied as of March 31, 2023, by ERS's staff. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information was supplied by ERS's staff.

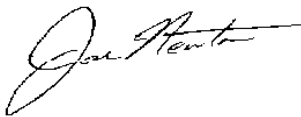
## RESPONSIBILITY FOR TABLES AND SCHEDULES

The actuary is responsible for the information with respect to years after 1999 in the Required Supplementary Information, and the Notes to Required Supplementary Information in the Financial Section of ERS's Annual Comprehensive Financial Report (ACFR). Information with respect to years prior to 2000 was supplied by ERS.

Tables and schedules in the Actuarial Section of the ACFR were generally prepared directly by the Actuary. However, certain of these tables were prepared by ERS utilizing information from this report. When the tables were prepared by ERS from our report, they are so noted.

The undersigned are independent actuaries and consultants. Mr. Newton is an Enrolled Actuary, a Member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries. Finally, all of the undersigned are experienced in performing valuations for large public retirement systems.

Sincerely,  
**Gabriel, Roeder, Smith & Company**



Joseph P. Newton, FSA, EA, MAAA  
Pension Market Leader & Actuary



Lewis Ward  
Consultant



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## SECTION A – EXECUTIVE SUMMARY

The following table summarizes the key results of the June 30, 2023 actuarial valuation of the Employees' Retirement System of the State of Hawaii (ERS).

Item	2023	2022
<b>Membership</b> <ul style="list-style-type: none"> <li>Number of <ul style="list-style-type: none"> <li>- Active members</li> <li>- Retirees and beneficiaries</li> <li>- Inactive, vested</li> <li>- Total</li> </ul> </li> <li>Covered payroll for active members</li> <li>Actual benefit payments and refunds</li> </ul>	<div>64,243</div> <div>54,973</div> <div>8,997</div> <div><u>128,213</u></div> <div>\$4,663 million</div> <div>\$1,822 million</div>	<div>64,234</div> <div>53,990</div> <div>9,031</div> <div><u>127,255</u></div> <div>\$4,537 million</div> <div>\$1,763 million</div>
<b>Assets</b> <ul style="list-style-type: none"> <li>Actuarial (smoothed) value</li> <li>Market value</li> <li>Return on actuarial value</li> <li>Return on market value</li> <li>Employer contributions during fiscal year</li> <li>External cash flow %</li> </ul>	<div>\$22,515 million</div> <div>\$22,425 million</div> <div>6.9%</div> <div>3.8%</div> <div>\$1,274 million</div> <div>(1.1%)</div>	<div>\$21,318 million</div> <div>\$21,855 million</div> <div>8.4%</div> <div>0.8%</div> <div>\$1,242 million</div> <div>(1.1%)</div>
<b>Actuarial Information</b> <ul style="list-style-type: none"> <li>Total normal cost % (employee + employer)</li> <li>Unfunded actuarial accrued liability (UAAL)</li> <li>Funded ratio (based on smoothed assets)</li> <li>Funded ratio (based on market assets)</li> <li>Funding period (years)*</li> <li>Employer contribution rate <ul style="list-style-type: none"> <li>% of projected payroll</li> <li>Police and Firefighters</li> <li>All Other Employees</li> </ul> </li> </ul>	<div>14.57%</div> <div>\$13,710 million</div> <div>62.2%</div> <div>61.9%</div> <div>23</div> <div></div> <div>41.00%</div> <div>24.00%</div>	<div>14.60%</div> <div>\$13,505 million</div> <div>61.2%</div> <div>62.8%</div> <div>24</div> <div></div> <div>41.00%</div> <div>24.00%</div>

\* Funding Period based on actuarial value of assets, scheduled employer contribution rates, and an open group projection reflecting the adopted changes in benefits and member contribution rates.



## SECTION B – INTRODUCTION

The results of the June 30, 2023 actuarial valuation of ERS are presented in this report.

The primary purpose of the valuation report is to determine the adequacy of the current employer contribution rates through measuring the resulting funding period, to describe the current financial condition of ERS, and to analyze changes in ERS's condition.

In preparing this valuation, Gabriel, Roeder, Smith & Company (GRS) has relied on employee data and asset information provided by the staff of ERS. While not verifying the data at their source, GRS has performed such tests for consistency and reasonableness as has been deemed necessary to be satisfied with the appropriateness of using the data supplied.

Section C discusses the funded status of ERS. Section D analyzes the change in the UAAL. Section G discusses the disclosure requirements of GASB No. 67.

Sections E, F, H, and I discuss background information used in the preparation of this report--benefit provisions, actuarial assumptions and methods, financial information, and membership data. Section J contains a discussion about risk and plan maturity measures and a table showing current and historical risk metrics. Section K contains a final summary and some closing comments about this year's valuation and Section L contains the actuarial certification.

All the tables referenced by the other sections appear in Section M.

## SECTION C – FUNDED STATUS

Table 1 shows the development of the Plan's liabilities and funded status for the current year and compares it with those of the prior year.

The calculation of the funded status involves the following steps and includes the following comments:

- The actuarial present value of future benefits is determined for the present members, including retired members, beneficiaries, inactive members, and active members. This amounts to \$42.34 billion. Table 2 shows the development of this total for the current year and the prior year.
- The individual entry age normal funding method is used to allocate the actuarial present value of future benefits between that portion due for the current year (the normal cost), prior years (the actuarial accrued liability) and future years (the present value of future normal cost). Under the individual entry age normal cost method, the current and future normal costs are determined as a level percentage of payroll. Table 3 shows an analysis of the normal cost for the current year and the prior year. The amount needed to fund the current and future normal costs is 27.21% of pay for Police and Fire employees and 12.94% for All Other Employees. It includes all of the employees' contribution (if any) and the employers' normal cost rate.
- A part of the normal cost is paid by the employee contributions of 12.78% of pay for Police and Firefighters, leaving 14.43% of pay to be funded by the employers. Thus, the current year's employer normal cost for Police and Firefighters is deemed to be 14.43% of the valuation payroll. As for the All Other Employees group, the average weighted effective employee contribution rate is 5.92% of pay, leaving 7.02% of pay to be funded by the employers. This is shown in Line 3 of Table 1.
- The UAAL is \$13.71 billion for 2023, an increase from \$13.50 billion in 2022. As indicated in Table 1, the UAAL equals the difference between the total actuarial accrued liability (Item 7) and current actuarial assets (Item 8).
- In determining the number of years that will be required to amortize the UAAL, an assumption is made concerning future growth of ERS's covered payroll. Payroll can grow from intrinsic growth in the pay of individual members and it can also grow due to active membership growth. In determining the funding period of ERS, we have assumed that the number of active members will remain constant in our open group projection.
- As shown in Item 10 of Table 1 and on Table 9c, the period to fund the UAAL is 22 years for the Police and Fire and 23 years for the All Other Employees group. When combining both groups, the aggregate funding period for ERS is 23 years (i.e. the UAAL is expected to be paid off in fiscal year 2046). Since the aggregate funding period based on the contribution rates is less than 30 years, the employer contribution rates are adequate to meet the requirements of Hawaii Revised Statutes §88-122(e)(1). Please note that this statement assumes the current contribution rates will remain in effect throughout the entire funding period.

## SECTION C – FUNDED STATUS (CONTINUED)

As of the valuation date, ERS has a funded ratio of 62.2%, based on the actuarial value of assets.

Due to the significant changes in the future contribution rates and benefits for employees hired after June 30, 2012, ERS's funding policy uses an open group projection for determining how many years it will take to eliminate the unfunded liabilities of ERS. ERS is expected to be fully funded in 2046 which is 23 years from now. Therefore, the funding period is equal to 23 years. The open group projection assumes that the number of active members will remain constant and that there will be no actuarial gains or losses on liabilities or investments.

## SECTION D – ANALYSIS OF CHANGES

Section C has noted that the unfunded actuarial accrued liability (UAAL) is \$13.71 billion as of June 30, 2023 compared to the \$13.50 billion UAAL for 2022.

Table 7 develops the estimated yield for the year based on two measures of asset values. Table 9b takes the information contained in Table 6 and develops the expected value of actuarial assets for this valuation, based on the prior year's investment return assumption of 7.00%.

As shown in Item 6 of Table 9b, the expected value of actuarial assets as of June 30, 2023 is \$22.54 billion. As developed in Table 6, the actual value of actuarial assets as of the valuation date is \$22.51 billion (as repeated in Item 7 of Table 9b). Thus, the loss for the year is the difference between the actual value and the expected value, or \$29.8 million (as shown in Item 8 of Table 9b). This asset loss for the year is a direct reflection of the estimated yield for the year based on the value of actuarial assets, namely 6.86% (as shown in Item B4 of Table 7) being less than the assumed rate of return.

The markets returned less than assumed in FY 2023 with a return of 3.81% on the market value of assets, which is significantly below our benchmark of 7.00%. Therefore, the return for the year was less than our expectation. The rate of return for the actuarial value was 6.86%, which is greater than the market return, due to the smoothing methodology used in the determination of the actuarial value of assets. The actuarial value of assets exceeds the market value of assets by \$89.5 million, so there are \$89.5 million in deferred investment losses still to be recognized in the actuarial value of assets.

Table 9a shows the total unanticipated change in the unfunded actuarial accrued liability was \$191 million (item 7), this means the UAAL increased \$191 million more than expected from all sources for the 2023 fiscal year. As noted above, the actuarial investment loss was equal to \$29.8 million. This means that there was a liability experience loss during the year equal to \$161.2 million. The liability experience loss is primarily due to higher than expected salary increases for both employee groups. For Tier 1 members, the pensionable earnings include overtime, and it is possible a source of the higher salaries was an increase in overtime during the fiscal year.

Table 9c shows the current year's valuation results plus a 30-year open group projection of ERS's assets and liabilities. As discussed previously, this projection assumes no actuarial gains or losses in the actuarial liabilities or the actuarial value of assets. In addition, the projection assumes the current employer contribution rates will continue and reflects the changes to the benefits and member contribution rates of employees hired after June 30, 2012. As may be seen by examining this table, the unfunded liability of ERS (Column 7) is expected to grow as a dollar amount until 2025 before beginning to decline and finally being eliminated in 2046.

The June 30, 2046 valuation is 23 years from this valuation. Therefore, for the purpose of satisfying Hawaii Revised Statutes §88-122(e)(1) the funding period is considered to be 23 years.

## SECTION E – ERS ASSETS

Table 4 presents a summary of the market value of assets held by ERS. About 82% of the total invested assets available for benefits are held in equities (including alternative investments) and real assets compared to about 80% last year. Table 5 shows a reconciliation of the assets from the beginning of the prior year to the valuation date.

Table 6 shows the development of the Actuarial Value of Assets (AVA). An actuarial value is used in order to dampen some of the year-to-year fluctuations which would occur if the market value were used instead. The expected actuarial value of assets is calculated and compared to the actual market value of assets. This difference is then compared with the remaining deferrals from the prior years to determine this year's excess/shortfall. The current year's excess/shortfall is offset directly against any prior years' deferrals of the opposite sign (oldest bases first). Any remaining bases are then recognized over a four-year period from the date the base was established. Any remaining deferrals, after the current year's recognition, are then subtracted from the market value of assets to get the final actuarial value of assets. This method has the advantage of more quickly converging towards the market value in years when the returns go in the opposite direction of the prior years.

Table 7 shows an estimate of ERS's dollar-weighted rate of return for the year. This is shown on (i) the market value of assets (reflecting all realized and unrealized gains and losses), and (ii) the actuarial value of assets. While the dollar-weighted market return this year was 3.81%, the return on the actuarial value was 6.86%. The difference between these is due to the smoothing effect of the AVA valuation method.

Table 9b determines the asset gain or loss for the year, based on the difference between the actual fund return and the actuarial value of assets and the prior year's assumed rate of 7.00%.

Finally, Table 13 shows a history of cash flows for the trust.

## SECTION F – BENEFIT AND CONTRIBUTION PROVISIONS

Table 16 summarizes the benefit provisions of ERS used in this valuation. Table 17 is a historical record of prior legislative changes starting with changes effective in 1999. There were significant changes made by the 2011 Legislature to the benefit provisions of ERS for employees hired after June 30, 2012. Because the Board has chosen to use the Individual Entry Age Normal Cost method, the normal cost and the growth of the accrued liabilities will be slowly impacted by the changes in the benefit provisions, as members under the new tier are hired to replace members who are covered under the older tier of benefits.

There have been no changes to the benefit provisions since the last valuation that had an actuarial impact on the valuation. The 2017 Legislature enacted ACT 017 which increased the employer contribution rates over a four-year period.

The employer contribution rates for Police and Fire employees are 41% of pay in FY 2021 and beyond while the employer contribution rates for All Other Employees are 24% of pay in FY 2021 and beyond.

This valuation reflects benefits promised to members by ERS's statutes. There are no ancillary benefits - retirement type benefits not required by ERS's statutes but which might be deemed an ERS liability if continued beyond the availability of funding by the current funding source.

Act 179/2004 was adopted during FY 2003/2004 and established the new Hybrid class that became effective on July 1, 2006. Current participants had the choice to elect to move to the new class or stay in the current plan. There were 26,228 plan members who elected to transfer. The Hybrid class membership has since grown to approximately 50,300 members.

## SECTION G – GASB DISCLOSURE

The Governmental Accounting Standards Board (GASB) has issued Statement No. 67 which provides the manner in which the actuarial condition of a public sector retirement plan is to be disclosed in the system's financial statements. This new standard replaces GASB No. 25, and went into effect for ERS for fiscal years ending on or after June 30, 2014.

Similar to last year, we will provide a separate accounting report with the required disclosures under this new standard.

## SECTION H – ACTUARIAL ASSUMPTIONS AND METHODS

In determining costs and liabilities, actuaries use assumptions about the future, such as rates of salary increase, probabilities of retirement, termination, death and disability, and an investment return assumption. ERS's Board adopts the assumptions used, taking into account the actuary's recommendations.

In addition to the actuarial assumptions, the actuary also makes use of an actuarial funding method to allocate costs to particular years. In common with most public sector plans, ERS uses the entry age normal method (individual normal cost). This method produces a relatively level pattern of funding for individual employees over time. We believe this method is appropriate for ERS.

ERS's Board adopted new actuarial assumptions on August 8, 2022 to be used effective with the June 30, 2022 actuarial valuation. For a complete description of the recommended assumption changes please see our experience study report dated June 14, 2022.

Please see Table 18 for a complete description of the actuarial assumptions and methods.



## SECTION I – MEMBERSHIP DATA

Membership data was provided in electronic files, via a secured file transfer protocol, by the staff. Data for active members include sex, birthdate, service, pay rate as of March 2023, employer entity and accumulated employee contributions. Data for inactive, nonretired members was similar, but also includes the members' unreduced benefit. For retired members, data includes status (service retiree, disabled retiree or beneficiary), sex, birthdate, pension amount, pension COLA amount, form of payment, beneficiary sex and birthdate if applicable, and date of retirement.

While not verifying the correctness of the data at the source, we performed various tests to ensure the internal consistency of the data and its overall reasonableness. Membership statistics are summarized in Table 12a. Table 12b summarizes certain active member data, and the age/service distribution of active members is shown in Table 19. Tables 30-43 show various distributions of retirees.

Since last year, the number of active members decreased by 9 members from 64,234 to 64,243. These 64,243 active members are distributed as follows:

Category	Number	% of Total
(1)	(2)	(3)
Police & Fire	4,832	7.5%
Contributory	432	0.7%
Noncontributory	8,700	13.5%
Hybrid	<u>50,279</u>	<u>78.3%</u>
Total	64,243	100.00%

Covered payroll (which is the annualized pay for all active members on the census date) increased by 2.8% since last year. ERS also provided the actual aggregate payroll for fiscal year 2023 on which contributions were received (this includes payroll for members who terminated and retired during the year). The lesser of the covered payroll and the aggregate payroll is adjusted by the payroll growth rate to produce the *projected FY 2024 payroll for contribution purposes*, as shown in Item 1 of Table 1.

Average age of the active members remained unchanged at 48.0 and the average service decreased slightly to 13.1 years.

## **SECTION J – ASSESSMENT AND DISCLOSURE OF RISK ASSOCIATED WITH MEASURING PENSION OBLIGATIONS AND DETERMINING PENSION PLAN CONTRIBUTIONS**

The determination of the accrued liability and an actuarially determined contribution (or funding period) requires the use of 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 assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and an actuarially determined contribution (or funding period) 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 assumptions; changes in economic or demographic 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. 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;
3. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
4. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
5. 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.

## **SECTION J – ASSESSMENT AND DISCLOSURE OF RISK ASSOCIATED WITH MEASURING PENSION OBLIGATIONS AND DETERMINING PENSION PLAN CONTRIBUTIONS (CONTINUED)**

### **ERS SPECIFIC RELATIONSHIP TO CERTAIN RISKS**

While ERS has various levels of exposure to all of the risks listed above, in our opinion the three that warrant the most observation for ERS's Board specifically are assumption change risk and affordability risk.

Assumption Change Risk is the potential for the environment to change such that future valuation assumptions are adjusted to be different than the current assumptions. For example, declines in interest rates or increases in earnings multiples over time may result in a change in the assumed rates of return used in the valuation. A healthier workforce may result in changes in employee behavior such that retirement rates are adjusted to reflect employees working longer. And the difference in changing an assumption versus the other experience related risks listed above is instead of the loss slowly building over time, there is the immediate recognition of the change. Over the past decade, the changing of assumptions has increased the liabilities of ERS more than any other source. While those changes were warranted and put ERS on a stronger path going forward, it did cause a setback in many of the actuarial measurements and at least gives the appearance of a weaker System. We do not currently anticipate any significant changes to assumptions in the future and will continue to communicate with the Board if any issues beginning to show.

Affordability Risk is the simple fact that the contributions into ERS are quite large and in order to achieve the benefit security desired by the Board and the beneficiaries of ERS, they must remain high for quite a number of years. State Law requires the actuarial contribution occur and there has been no requests or attempts to lower the amounts, but it will always be a risk a future decision maker does attempt to do so.

This is also risk in a continued contraction in the headcount of active members. As clearly seen in the 2022 valuation, the contributions into ERS are directly tied to the covered payroll of the active membership and the projection of that payroll is used in determining the funding period. If the headcount were to decline, it would be difficult for the amount of future revenue to meet the current expectations and thus it would likely take more than 23 years to fully amortize the UAAL.

### **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. Several generally accepted plan maturity measures are described below and are followed by a table showing a 10-year history of the measurements for ERS.

### **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.



## **SECTION J – ASSESSMENT AND DISCLOSURE OF RISK ASSOCIATED WITH MEASURING PENSION OBLIGATIONS AND DETERMINING PENSION PLAN CONTRIBUTIONS (CONTINUED)**

### **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 (5 to 2 ratio), 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 active 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.

### **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 existing funds are being used to make 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.

### **DURATION OF ACTUARIAL ACCRUED LIABILITY**

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

### **ADDITIONAL RISK ASSESSMENT**

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. While a robust measurement of additional risk assessment is outside the scope of the annual actuarial valuation, some scenario tests and sensitivity tests are included in the valuation summary PowerPoint presentation presented to the Board at the Board's January Board Meeting.

In addition, an annual stress test as prescribed by state law is conducted each year. Please see the stress test report dated December 18, 2023, which was conducted in conjunction with this valuation.

### **LOW-DEFAULT RISK OBLIGATION MEASURE**

ASOP No. 4 was revised and reissued in December 2021 by the ASB. It includes a new calculation called a low-default-risk obligation measure (LDROM) to be prepared and issued annually for defined benefit pension plans. The transmittal memorandum for ASOP No. 4 includes the following explanation:



*“The ASB believes that the calculation and disclosure of this measure provides appropriate, useful information for the intended user regarding the funded status of a pension plan. The calculation and disclosure of this additional measure is not intended to suggest that this is the “right” liability measure for a pension plan. However, the ASB does believe that this additional disclosure provides a more complete assessment of a plan’s funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date.”*

The LDROM estimates the amount of money the plan would need to invest in low risk securities to provide the benefits with greater certainty. The traditional model based on expected portfolio returns expects lower costs but with higher risk, which creates less certainty and a possibility of higher costs. The LDROM model creates higher expected costs but more predictability when compared to the traditional model. Thus, the difference between the two measures (Valuation and LDROM) is one illustration of the possible costs the sponsor could incur if there was a reduction in the investment risk in comparison to the current diversified portfolio. However, the downside risk would be limited in the scenarios where the current portfolio would fail to achieve returns in excess of the low-default-risk discount, in this case 4.90%.

The following information has been prepared in compliance with this new requirement. Unless otherwise noted, the measurement date, actuarial cost methods, and assumptions used are the same as for the funding valuation covered in this actuarial valuation report.

A.	LDROM measure of benefits earned as of the measurement date:	\$47,397 million
B.	Valuation liability at 7% on measurement date:	<u>36,225 million</u>
C.	Cost to mitigate investment risk in the System’s portfolio:	\$ 11,172 million

Disclosures: Discount rate used to calculate LDROM: 4.90% Intermediate FTSE Pension Discount Curve as of June 30, 2023. This measure may not be appropriate for assessing the need for or amount of future contributions as the current portfolio is expected to generate significantly more investment earnings than the low-default-risk portfolio. This measure is also not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan’s benefit obligation as this measure includes projections of salary increases and the ability for current members to continue to accrue eligibility and vesting service.

## SECTION J – ASSESSMENT AND DISCLOSURE OF RISK ASSOCIATED WITH MEASURING PENSION OBLIGATIONS AND DETERMINING PENSION PLAN CONTRIBUTIONS (CONTINUED)

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Ratio of the market value of assets to payroll	4.67	4.74	4.59	3.75	3.81	3.79	3.68	3.30	3.48	3.56
Ratio of actuarial accrued liability to payroll	7.54	7.55	7.14	7.06	6.95	6.82	6.72	6.44	5.57	5.57
Ratio of actives to retirees and beneficiaries	1.17	1.19	1.25	1.30	1.33	1.36	1.40	1.48	1.52	1.56
Ratio of net cash flow to market value of assets	-1.1%	-1.1%	-0.5%	-1.1%	-1.8%	-2.0%	-2.0%	-1.9%	-1.8%	-2.0%
Duration of the actuarial accrued liability*	14.77	14.88	14.95	15.03	15.11	NA	NA	NA	NA	NA

\*Duration measure not available prior to 2019

## SECTION K – SUMMARY AND CLOSING COMMENTS

To summarize the results of the actuarial valuation of the Employees' Retirement System as of June 30, 2023, it is our opinion that if all assumptions are met going forward, the present assets plus future expected contributions will be sufficient to provide the benefits specified in the law.

This year's valuation shows that ERS is expected to be fully funded in 2046 (23 years from this year's valuation date), which is the same year projected in last year's valuation. This is due to the increase in expected future contributions caused by the increase in the covered payroll that occurred in FY 2023. The 23 is consistent with the original impact statement which set the current contribution pattern which projected a 23-year funding period in 2023.

Based on this year's valuation results, the statutory contribution rates are sufficient to eliminate the UAAL over a period of 30 years or less as specified by Hawaii Revised Statute 88-122(e)(1).

Our modeling continues to show that the new contribution levels should be able to absorb material adverse experience without resulting in a need for further contribution rate increases. Moderate adverse experience may result in the date ERS obtains a fully funded status being later than 2046, but it is not expected to result in a requirement for further contribution rate increases.

The results of this valuation are uneven from the financail outlook of the System. While the end date for achieving full funding for the System remained unchanged when compared with last year (2046 for both valuations), ERS saw a larger than exepcted increase UAAL. This follows a decline in the UAAL in the prior two years. In addition, ERS is still deferring \$89.5 million in investment losses. If these deferred investment losses are recognized instead of being offset, the end date for achieving full funding could be extended.

Finally, while this valuation saw the date of full funding remain the same as last year, it is important to note that these projections assume the current contribution rates will be maintained throughout the funding period. Any reduction in the contribution rates would increase the length of time until ERS achieves a fully funded status.

## SECTION L – ACTUARIAL CERTIFICATION STATEMENT

	Police and Firefighters June 30, 2023 (1)	All Other Employees June 30, 2023 (2)	All Employees June 30, 2023 (3)
1. Gross normal cost as a percentage of pay	27.21%	12.94%	14.57%
2. Present value of future benefits			
a. Active employees	\$ 4,196,690,846	\$ 16,524,202,275	\$ 20,720,893,121
b. Inactive members	64,449,644	1,121,036,873	1,185,486,517
c. Pensioners and beneficiaries	4,239,927,507	16,188,715,864	20,428,643,371
d. Total	\$ 8,501,067,997	\$ 33,833,955,012	\$ 42,335,023,009
3. Present value of future employee and employer contributions			
a. Present value of future normal costs	\$ 1,340,847,911	\$ 4,769,557,845	\$ 6,110,405,756
b. Present value of future employee contributions	694,547,730	2,463,119,269	3,157,666,999
c. Present value of future employer normal costs (Item 3a - Item 3b)	\$ 646,300,181	\$ 2,306,438,576	\$ 2,952,738,757
4. Actuarial accrued liability (Item 2d - Item 3a)	\$ 7,160,220,086	\$ 29,064,397,167	\$ 36,224,617,253
5. Actuarial value of assets			
a. Annuity Savings Fund	\$ 1,524,966,323	\$ 2,204,282,300	\$ 3,729,248,623
b. Pension Accumulation Fund	3,402,942,425	15,382,740,645	18,785,683,070
c. Total	\$ 4,927,908,748	\$ 17,587,022,945	\$ 22,514,931,693
6. Unfunded actuarial accrued liability	\$ 2,232,311,338	\$ 11,477,374,222	\$ 13,709,685,560
7. Adequacy of contribution rates			
a. Statutory Contribution Rate for Fiscal Year 2024	41.00%	24.00%	25.89%
b. Funding Period in years as of June 30, 2023*	22	23	23

\* The Funding Period is calculated using an open group projection which reflects the impact of the benefits and member contribution rates for employees hired after June 30, 2012.  
It also assumes the current employer contribution rates will remain in place until the System is fully funded.





## SECTION L – ACTUARIAL CERTIFICATION STATEMENT (CONTINUED)

The actuarial valuation as of June 30, 2023 is based on the provisions of Chapter 88 of the Hawaii Revised Statutes, as amended. The assumptions used in the cost calculations were those adopted by the Board of Trustees in August of 2022 based on the actuary's actuarial experience investigation report for the period ending June 30, 2021. The actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures.

In our opinion, the comparison of the current contribution policies to ERS's liabilities were calculated in accordance with the provisions of Chapter 88 regarding the funding of the Employees' Retirement System on an actuarial reserve basis.

All of our work conforms with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of state law and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned is an independent actuary and consultant. Mr. Newton is an Enrolled Actuary, a Member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries. Finally, he is experienced in performing valuations for large public retirement systems.



Joseph P. Newton, FSA, EA, MAAA  
Pension Market Leader & Actuary

## SECTION M – VALUATION TABLES

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**TABLE 1****Development of Employer Cost**

	Police and Firefighters June 30, 2023 (1)	All Other Employees June 30, 2023 (2)	All Employees June 30, 2023 (3)
1. Projected FY 2024 payroll for contribution purposes	\$ 535,221,890	\$ 4,270,054,764	\$ 4,805,276,654
2. Gross normal cost (Table 3)	27.21%	12.94%	14.57%
3. Employer normal cost rate (Table 3)	14.43%	7.02%	7.86%
4. Present value future benefits (Table 2)	\$ 8,501,067,997	\$ 33,833,955,012	\$ 42,335,023,009
5. Present value future employer normal cost	\$ 646,300,181	\$ 2,306,438,576	\$ 2,952,738,757
6. Present value future employee contributions	\$ 694,547,730	\$ 2,463,119,269	\$ 3,157,666,999
7. Actuarial accrued liability (Item 4 - Item 5 - Item 6)	\$ 7,160,220,086	\$ 29,064,397,167	\$ 36,224,617,253
8. Actuarial value of assets	\$ 4,927,908,748	\$ 17,587,022,945	\$ 22,514,931,693
9. Unfunded actuarial accrued liability (UAAL) (Item 7 - Item 8)	\$ 2,232,311,338	\$ 11,477,374,222	\$ 13,709,685,560
10. Funding Period*	22	23	23

	Police and Firefighters June 30, 2022 (1)	All Other Employees June 30, 2022 (2)	All Employees June 30, 2022 (3)
1. Projected FY 2022 payroll for contribution purposes	\$ 521,695,052	\$ 4,092,295,884	\$ 4,613,990,936
2. Gross normal cost (Table 3)	27.31%	12.96%	14.60%
3. Employer normal cost rate (Table 3)	14.56%	7.17%	8.01%
4. Present value future benefits (Table 2)	\$ 8,181,257,954	\$ 32,634,402,467	\$ 40,815,660,421
5. Present value future employer normal cost	\$ 655,487,850	\$ 2,307,400,158	\$ 2,962,888,008
6. Present value future employee contributions	\$ 686,362,784	\$ 2,343,631,009	\$ 3,029,993,793
7. Actuarial accrued liability (Item 4 - Item 5 - Item 6)	\$ 6,839,407,320	\$ 27,983,371,300	\$ 34,822,778,620
8. Actuarial value of assets	\$ 4,612,721,060	\$ 16,705,114,593	\$ 21,317,835,653
9. Unfunded actuarial accrued liability (UAAL) (Item 7 - Item 8)	\$ 2,226,686,260	\$ 11,278,256,707	\$ 13,504,942,967
10. Funding Period*	23	24	24

\* The Funding Period is calculated using an open group projection which reflects the impact of the smaller benefits and larger member contribution rates for employees hired after June 30, 2012. Please refer to Table 9c for the full projection.

**TABLE 2****Actuarial Present Value of Future Benefits**

	Police and Firefighters June 30, 2023 (1)	All Other Employees June 30, 2023 (2)	All Employees June 30, 2023 (3)
1. Active members			
a. Service retirement benefits	\$ 4,058,457,708	\$ 15,330,680,665	\$ 19,389,138,373
b. Termination Benefits	82,911,291	691,105,278	774,016,569
c. Survivor benefits	16,630,910	128,256,064	144,886,974
d. Disability retirement benefits	38,690,937	374,160,268	412,851,205
e. Total	\$ 4,196,690,846	\$ 16,524,202,275	\$ 20,720,893,121
2. Retired members			
a. Service retirement	\$ 3,973,678,601	\$ 14,905,264,452	\$ 18,878,943,053
b. Disability retirement	40,607,581	323,047,806	363,655,387
c. Beneficiaries	225,641,325	960,403,606	1,186,044,931
d. Total	\$ 4,239,927,507	\$ 16,188,715,864	\$ 20,428,643,371
3. Inactive members			
a. Vested terminations	\$ 55,695,619	\$ 912,548,153	\$ 968,243,772
b. Nonvested terminations	8,754,025	208,488,720	217,242,745
c. Total	\$ 64,449,644	\$ 1,121,036,873	\$ 1,185,486,517
4. Total actuarial present value of future benefits	\$ 8,501,067,997	\$ 33,833,955,012	\$ 42,335,023,009

	Police and Firefighters June 30, 2022 (1)	All Other Employees June 30, 2022 (2)	All Employees June 30, 2022 (3)
1. Active members			
a. Service retirement benefits	\$ 3,936,986,502	\$ 14,869,296,751	\$ 18,806,283,253
b. Termination Benefits	83,650,920	676,018,881	759,669,801
c. Survivor benefits	16,513,834	125,825,955	142,339,789
d. Disability retirement benefits	38,197,571	359,403,154	397,600,725
e. Total	\$ 4,075,348,827	\$ 16,030,544,741	\$ 20,105,893,568
2. Retired members			
a. Service retirement	\$ 3,786,345,877	\$ 14,383,298,870	\$ 18,169,644,747
b. Disability retirement	40,176,603	310,853,955	351,030,558
c. Beneficiaries	212,510,419	900,592,640	1,113,103,059
d. Total	\$ 4,039,032,899	\$ 15,594,745,465	\$ 19,633,778,364
3. Inactive members			
a. Vested terminations	\$ 59,848,063	\$ 862,323,648	\$ 922,171,711
b. Nonvested terminations	7,028,165	146,788,613	153,816,778
c. Total	\$ 66,876,228	\$ 1,009,112,261	\$ 1,075,988,489
4. Total actuarial present value of future benefits	\$ 8,181,257,954	\$ 32,634,402,467	\$ 40,815,660,421

**TABLE 3****Analysis of Normal Cost**

	Police and Firefighters June 30, 2023 (1)	All Other Employees June 30, 2023 (2)	All Employees June 30, 2023 (3)
1. Normal cost as a percent of pay			
a. Service retirement benefits	24.43%	9.90%	11.55%
b. Deferred termination benefits	0.88%	0.61%	0.65%
c. Refunds	0.84%	1.38%	1.32%
d. Disability retirement benefits	0.48%	0.53%	0.52%
e. Survivor benefits	0.18%	0.12%	0.13%
f. Administrative Expenses	0.40%	0.40%	0.40%
g. Total	27.21%	12.94%	14.57%
2. Employee contribution rate	12.78%	5.92%	6.71%
3. Effective employer normal cost rate (Item 1g - Item 2)	14.43%	7.02%	7.86%

	Police and Firefighters June 30, 2022 (1)	All Other Employees June 30, 2022 (2)	All Employees June 30, 2022 (3)
1. Normal cost as a percent of pay			
a. Service retirement benefits	24.53%	9.92%	11.59%
b. Deferred termination benefits	0.88%	0.63%	0.66%
c. Refunds	0.84%	1.36%	1.30%
d. Disability retirement benefits	0.48%	0.52%	0.52%
e. Survivor benefits	0.18%	0.13%	0.13%
f. Administrative Expenses	0.40%	0.40%	0.40%
g. Total	27.31%	12.96%	14.60%
2. Employee contribution rate	12.75%	5.79%	6.59%
3. Effective employer normal cost rate (Item 1g - Item 2)	14.56%	7.17%	8.01%

**TABLE 4**

**Statement of Net Position**  
**(Assets at Market or Fair Value)**

Item	Valuation as of	
	June 30, 2023	June 30, 2022
1. Cash and cash equivalents	\$ 497,906,509	\$ 1,008,317,872
2. Receivables:		
a. Accounts receivable and others	\$ 3,589,353	\$ 2,622,869
b. Investment sale proceeds	15,982,313	39,940,051
c. Accrued income	28,989,788	28,852,378
d. Member and employer contributions	151,378,373	84,468,296
e. Subtotal	\$ 199,939,827	\$ 155,883,594
3. Investments		
a. Equity securities	\$ 5,288,938,937	\$ 5,360,412,415
b. Fixed income securities	3,525,645,635	3,262,952,343
c. Real assets	3,774,821,802	3,372,222,912
d. Alternative investments	9,369,579,364	8,825,905,906
e. Subtotal	\$ 21,958,985,738	\$ 20,821,493,576
4. Other		
a. Invested securities lending collateral	\$ 491,507,300	\$ 735,926,602
b. Equipment at cost, net of depreciation	4,010,465	4,984,223
c. Other assets	-	-
d. Subtotal	\$ 495,517,765	\$ 740,910,825
5. Total assets	\$ 23,152,349,839	\$ 22,726,605,867
6. Liabilities		
a. Accounts payable	\$ 202,903,305	\$ 111,219,287
b. Investment commitments payable	32,554,259	24,645,946
c. Securities lending collateral	491,507,300	735,926,602
d. Notes payable	-	-
e. Total liabilities	\$ 726,964,864	\$ 871,791,835
7. Total market value of assets available for benefits (Item 5 - Item 6e)	\$ 22,425,384,975	\$ 21,854,814,032

**TABLE 5****Statement of Changes in Net Position**

		Year Ending	
		June 30, 2023	June 30, 2022
1.	a. Value of assets at beginning of year	\$ 21,854,814,032	\$ 21,935,791,711
	b. Adjustment due to post valuation changes in ACFR assets	-	-
	c. Adjusted value of assets at beginning of year	\$ 21,854,814,032	\$ 21,935,791,711
2.	Revenue for the year		
	a. Contributions		
	i. Member contributions	\$ 309,761,053	\$ 293,027,560
	ii. Employer contributions	1,274,221,056	1,242,139,095
	iii. Total	\$ 1,583,982,109	\$ 1,535,166,655
	b. Income		
	i. Interest, dividends, and other income	\$ 507,203,035	\$ 786,800,809
	ii. Investment expenses	(153,900,913)	(212,785,041)
	iii. Net	\$ 353,302,122	\$ 574,015,768
	c. Net realized and unrealized gains/(loss)	\$ 473,600,753	\$ (409,456,733)
	d. Net income/(loss)	\$ 826,902,875	\$ 164,559,035
	e. Total revenue	\$ 2,410,884,984	\$ 1,699,725,690
3.	Expenditures for the year		
	a. Refunds	\$ 26,353,782	\$ 24,454,256
	b. Benefit payments	1,795,410,787	1,738,751,492
	c. Administrative and miscellaneous expenses	18,549,472	17,497,621
	d. Total expenditures	\$ 1,840,314,041	\$ 1,780,703,369
4.	Increase/(decrease) in net assets (Item 2e - Item 3d)	\$ 570,570,943	\$ (80,977,679)
5.	Value of assets at end of year (Item 1c + Item 4)	\$ 22,425,384,975	\$ 21,854,814,032

# TABLE 6

## Development of Actuarial Value of Assets

	Year Ending June 30, 2023					
1. Actuarial value of assets, beginning of year	\$ 21,317,835,653					
2. Net new investments						
a. Contributions	\$ 1,583,982,109					
b. Benefits paid and Refunds	(1,821,764,569)					
c. Administrative expenses	(18,549,472)					
d. Subtotal	(256,331,932)					
3. Market value of assets at end of year	\$ 22,425,384,975					
4. Expected return on actuarial value of assets	\$ 1,483,276,878					
5. Expected actuarial value of assets, end of year	\$ 22,544,780,599					
6. Excess/(shortfall) return (Item 3-Item 5)	\$ (119,395,624)					
7. Development of amounts to be recognized as of June 30, 2023:						
Fiscal Year End	Remaining Deferrals of Excess (Shortfall) of Investment Income (1)	Offsetting of Gains/(Losses) (2)	Net Deferrals Remaining (3) = (1) + (2)	Years Remaining (4)	Recognized for this valuation (5) = (3) / (4)	Remaining after this valuation (6) = (3) - (5)
2020	\$ 0	\$ 0	\$ 0	1	\$ 0	\$ 0
2021	536,978,379	(536,978,379)	0	2	0	0
2022	0	0	0	3	0	0
2023	(656,374,003)	536,978,379	(119,395,624)	4	(29,848,906)	(89,546,718)
Total	\$ (119,395,624)	\$ 0	\$ (119,395,624)		\$ (29,848,906)	\$ (89,546,718)
8. Actuarial value of assets as of June 30, 2023 (Item 3 - Item 7)	\$ 22,514,931,693					
9. Ratio of actuarial value to market value	100.4%					
10. Asset gain/(loss) for year (Item 8 - Item 5)	\$ (29,848,906)					



**TABLE 7****Estimation of Yields**

	June 30, 2023 (1)	June 30, 2022 (2)
<b>A. Market value yield</b>		
1. Beginning of year market assets	\$ 21,854,814,032	\$ 21,935,791,711
2. Investment income		
a. Change in assets (Item 3 - Item 1)	\$ 570,570,943	\$ (80,977,679)
b. Cash Flow	(256,331,932)	(245,536,714)
c. Total investment income based on market value (Item 2a less Item 2b)	\$ 826,902,875	\$ 164,559,035
3. End of year market assets	\$ 22,425,384,975	\$ 21,854,814,032
4. Estimated dollar weighted market value yield (net of investment and administrative expenses)	3.81%	0.75%
<b>B. Actuarial value yield</b>		
1. Beginning of year actuarial assets	\$ 21,317,835,653	\$ 19,909,791,554
2. Investment income (based on asset valuation method)		
a. Change in assets (Item 3 - Item 1)	\$ 1,197,096,040	\$ 1,408,044,099
b. Cash Flow	(256,331,932)	(245,536,714)
c. Total investment income based on market value (Item 2a less Item 2b)	\$ 1,453,427,972	\$ 1,653,580,813
3. End of year actuarial assets	\$ 22,514,931,693	\$ 21,317,835,653
4. Estimated actuarial value yield (net of investment and administrative expenses)	6.86%	8.36%

**TABLE 8****Allocation of Cash and Investments**

	June 30, 2023 (1)	June 30, 2022 (2)
1. Cash and short-term equivalents	2.2%	4.6%
2. Fixed income securities	15.7%	14.9%
3. Equity securities	23.6%	24.7%
4. Real assets	16.8%	15.4%
5. Other	41.7%	40.4%
6. Total investments	100.0%	100.0%

# TABLE 9A

## Total Experience Gain or Loss

Item (1)	Police and Firefighters (2)	All Other Employees (3)	All Employees (4)
A. Calculation of total actuarial gain or loss			
1. Unfunded actuarial accrued liability (UAAL), as of June 30, 2022	\$ 2,226,686,260	\$ 11,278,256,707	\$ 13,504,942,967
2. Normal cost for the year (includes admin expense)	\$ 144,238,270	\$ 539,573,427	\$ 683,811,697
3. Less: contributions and assessments for the year	\$ (319,544,526)	\$ (1,264,437,583)	\$ (1,583,982,109)
4. Interest at 7.00%			
a. On UAAL	\$ 155,868,038	\$ 789,477,969	\$ 945,346,007
b. On normal cost	5,048,339	18,885,070	23,933,409
c. On contributions	(11,184,058)	(44,255,315)	(55,439,373)
d. Total	\$ 149,732,319	\$ 764,107,724	\$ 913,840,043
5. Expected UAAL as of June 30, 2023 (Sum of Items 1 - 4)	\$ 2,201,112,323	\$ 11,317,500,275	\$ 13,518,612,598
6. Actual UAAL as of June 30, 2023	\$ 2,232,311,338	\$ 11,477,374,222	\$ 13,709,685,560
7. Total gain/(loss) for the year (Item 5 - Item 6)	\$ (31,199,015)	\$ (159,873,947)	\$ (191,072,962)
B. Source of gains and losses			
8. Asset gain/(loss) for the year (Table 9b)	\$ (6,533,117)	\$ (23,315,789)	\$ (29,848,906)
9. Gain/(loss) due to change in actuarial assumptions	-	-	-
10. Other liability gain/(loss)	(24,665,898)	(136,558,158)	(161,224,056)
11. Change in benefit provisions	-	-	-
12. Total gain/(loss) for the year	\$ (31,199,015)	\$ (159,873,947)	\$ (191,072,962)

**TABLE 9B****Investment Experience Gain or Loss**

Item (1)	June 30, 2023 (2)	June 30, 2022 (3)
1. Actuarial assets, beginning of year	\$ 21,317,835,653	\$ 19,909,791,554
2. Total contributions during year	\$ 1,583,982,109	\$ 1,535,166,655
3. Benefits and refunds paid	\$ (1,821,764,569)	\$ (1,763,205,748)
4. Administrative expenses paid	\$ (18,549,472)	\$ (17,497,621)
5. Assumed net investment income at 7.00%		
a. Beginning of year assets	\$ 1,492,248,496	\$ 1,393,685,409
b. Contributions	55,439,374	53,730,833
c. Benefits and refunds paid	(63,761,760)	(61,712,201)
d. Administrative expenses paid	(649,232)	(612,417)
e. Total	\$ 1,483,276,878	\$ 1,385,091,624
6. Expected actuarial assets, end of year (Sum of items 1 through 5)	\$ 22,544,780,599	\$ 21,049,346,464
7. Actual actuarial assets, end of year	\$ 22,514,931,693	\$ 21,317,835,653
8. Asset gain/(loss) for year (Item 7 - Item 6)	\$ (29,848,906)	\$ 268,489,189
9. Asset gain/(loss) as a percent of actuarial value of assets, end of year (Item 8 / Item 7)	(0.13%)	1.26%

# TABLE 9C

## Projection Results Based on June 30, 2023 Actuarial Valuation

Valuation as of June 30,	Employer Contribution Rate for Fiscal Year Following Valuation Date	Compensation (in Millions)	Employer Contributions (in Millions)	Actuarial Accrued Liability (AAL, in Millions)	Actuarial Value of Assets (AVA, in Millions)	Unfunded Actuarial Accrued Liability (UAAL, in Millions)	Funded Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2023	25.89%	\$ 4,805	\$ 1,244	\$ 36,225	\$ 22,515	\$ 13,710	62.2%
2024	25.89%	4,924	1,275	37,481	23,710	13,771	63.3%
2025	25.88%	5,061	1,310	38,729	24,926	13,803	64.4%
2026	25.87%	5,202	1,346	39,973	26,171	13,802	65.5%
2027	25.86%	5,349	1,383	41,212	27,448	13,764	66.6%
2028	25.86%	5,501	1,422	42,448	28,762	13,687	67.8%
2029	25.85%	5,657	1,462	43,682	30,116	13,565	68.9%
2030	25.84%	5,819	1,504	44,912	31,517	13,394	70.2%
2031	25.84%	5,987	1,547	46,138	32,968	13,171	71.5%
2032	25.84%	6,160	1,592	47,361	34,473	12,888	72.8%
2033	25.84%	6,338	1,638	48,580	36,039	12,541	74.2%
2034	25.84%	6,523	1,686	49,795	37,671	12,124	75.7%
2035	25.84%	6,715	1,735	51,009	39,377	11,631	77.2%
2036	25.84%	6,912	1,786	52,220	41,166	11,054	78.8%
2037	25.84%	7,117	1,839	53,432	43,045	10,387	80.6%
2038	25.84%	7,329	1,894	54,646	45,024	9,622	82.4%
2039	25.84%	7,551	1,951	55,867	47,117	8,750	84.3%
2040	25.84%	7,782	2,011	57,099	49,337	7,762	86.4%
2041	25.84%	8,022	2,073	58,347	51,698	6,649	88.6%
2042	25.84%	8,270	2,137	59,616	54,216	5,400	90.9%
2043	25.84%	8,528	2,203	60,909	56,905	4,004	93.4%
2044	25.84%	8,794	2,272	62,233	59,784	2,449	96.1%
2045	25.84%	9,070	2,343	63,591	62,869	722	98.9%
2046	25.84%	9,355	2,417	64,989	66,178	(1,189)	101.8%
2047	25.84%	9,650	2,493	66,432	69,732	(3,299)	105.0%
2048	25.84%	9,955	2,572	67,927	73,551	(5,624)	108.3%
2049	25.84%	10,270	2,654	69,480	77,661	(8,180)	111.8%
2050	25.84%	10,593	2,737	71,094	82,081	(10,987)	115.5%
2051	25.84%	10,927	2,823	72,773	86,835	(14,062)	119.3%
2052	25.84%	11,269	2,912	74,520	91,945	(17,426)	123.4%

Projection assumes all assumptions exactly met, including a 7.00% annual return on the current actuarial value of assets.

**TABLE 10****Employer Covered Payroll**

	Police and Firefighters		All Other Employees		All Employees	
	March 31, 2023	March 31, 2022	March 31, 2023	March 31, 2022	March 31, 2023	March 31, 2022
	(1)	(2)	(3)	(4)	(5)	(6)
State of Hawaii	\$ 22,596,296	\$ 22,648,428	\$ 3,424,929,968	\$ 3,334,443,057	\$ 3,447,526,264	\$ 3,357,091,485
City & County of Honolulu	317,972,053	310,858,294	374,043,550	365,380,744	692,015,603	676,239,038
Board of Water Supply	-	-	39,320,778	39,692,339	39,320,778	39,692,339
County of Hawaii	85,215,972	81,764,153	116,945,043	110,574,295	202,161,015	192,338,448
County of Maui	62,680,822	60,881,031	127,636,344	120,196,291	190,317,166	181,077,322
County of Kauai	28,657,456	27,901,285	63,483,960	62,816,889	92,141,416	90,718,174
Total All Employers	\$ 517,122,599	\$ 504,053,191	\$ 4,146,359,643	\$ 4,033,103,615	\$ 4,663,482,242	\$ 4,537,156,806

**TABLE 11****Schedule of Funding Progress**

Valuation Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial		Annual Covered Payroll	UAAL as % of Payroll (4)/(6)
			Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
June 30, 2006 *	\$ 9,529.4	\$ 14,661.4	\$ 5,132.0	65.0%	\$ 3,238.3	158.5%
June 30, 2007 **	10,589.8	15,696.5	5,106.8	67.5%	3,507.0	145.6%
June 30, 2008	11,381.0	16,549.1	5,168.1	68.8%	3,782.1	136.6%
June 30, 2009	11,400.1	17,636.4	6,236.3	64.6%	4,030.1	154.7%
June 30, 2010	11,345.6	18,483.7	7,138.1	61.4%	3,895.7	183.2%
June 30, 2011 **	11,942.8	20,096.9	8,154.2	59.4%	3,916.0	208.2%
June 30, 2012	12,242.5	20,683.4	8,440.9	59.2%	3,890.0	217.0%
June 30, 2013	12,748.8	21,243.7	8,494.9	60.0%	3,906.7	217.4%
June 30, 2014	13,641.8	22,220.1	8,578.3	61.4%	3,991.6	214.9%
June 30, 2015**	14,463.7	23,238.4	8,774.7	62.2%	4,171.4	210.4%
June 30, 2016**	14,998.7	27,439.2	12,440.5	54.7%	4,258.9	292.1%
June 30, 2017	15,720.6	28,648.6	12,928.0	54.9%	4,265.0	303.1%
June 30, 2018	16,512.7	29,917.4	13,404.7	55.2%	4,383.7	305.8%
June 30, 2019**	17,322.2	31,396.4	14,074.3	55.2%	4,519.7	311.4%
June 30, 2020	18,084.4	32,691.8	14,607.4	55.3%	4,630.2	315.5%
June 30, 2021	19,909.8	34,139.2	14,229.4	58.3%	4,783.8	297.5%
June 30, 2022**	21,317.8	34,822.8	13,504.9	61.2%	4,614.0	292.7%
June 30, 2023	22,514.9	36,224.6	13,709.7	62.2%	4,805.3	285.3%

Note : Dollar amounts in millions.

\* Assumption changes and new Hybrid class effective June 30, 2006.

\*\* New assumption effective on valuation date.

**TABLE 12A****Membership Data**

	Police and Firefighters		All Other Employees		All Employees	
	June 30, 2023	June 30, 2022	June 30, 2023	June 30, 2022	June 30, 2023	June 30, 2022
	(1)	(2)	(3)	(4)	(5)	(6)
1. Active members						
a. Number	4,832	4,870	59,411	59,364	64,243	64,234
b. Total salary	\$ 517,122,599	\$ 504,053,191	\$ 4,146,359,643	\$ 4,033,103,615	\$ 4,663,482,242	\$ 4,537,156,806
c. Average salary	\$ 107,020	\$ 103,502	\$ 69,791	\$ 67,939	\$ 72,591	\$ 70,635
d. Average age	42.5	42.1	48.4	48.5	48.0	48.0
e. Average service	14.0	13.7	13.0	13.1	13.1	13.2
2. Inactive members						
a. Number	228	242	8,769	8,789	8,997	9,031
b. Total annual deferred benefits	\$ 5,331,907	\$ 5,794,515	\$ 107,547,445	\$ 103,824,257	\$ 112,879,352	\$ 109,618,772
c. Average annual deferred benefit	\$ 23,386	\$ 23,944	\$ 12,265	\$ 11,813	\$ 12,546	\$ 12,138
3. Service retirees						
a. Number	4,156	4,103	43,782	43,064	47,938	47,167
b. Total annual benefits	\$ 293,231,396	\$ 278,238,588	\$ 1,315,364,185	\$ 1,264,013,343	\$ 1,608,595,581	\$ 1,542,251,931
c. Average annual benefit	\$ 70,556	\$ 67,813	\$ 30,043	\$ 29,352	\$ 33,556	\$ 32,698
4. Disabled retirees						
a. Number	124	128	1,630	1,618	1,754	1,746
b. Total annual benefits	\$ 3,573,996	\$ 3,528,613	\$ 26,638,064	\$ 25,629,578	\$ 30,212,060	\$ 29,158,191
c. Average annual benefit	\$ 28,823	\$ 27,567	\$ 16,342	\$ 15,840	\$ 17,225	\$ 16,700
5. Beneficiaries						
a. Number	407	389	4,874	4,688	5,281	5,077
b. Total annual benefits	\$ 18,958,831	\$ 17,660,517	\$ 93,297,190	\$ 86,687,801	\$ 112,256,021	\$ 104,348,318
c. Average annual benefit	\$ 46,582	\$ 45,400	\$ 19,142	\$ 18,491	\$ 21,257	\$ 20,553



**TABLE 12B****Historical Summary of Active Member Data**

Year Ending June 30,	Active Members		Total Salaries		Average Salary		Average Age	Average Service
	Number	Percent Increase	Amount in \$ Millions	Percent Increase	\$ Amount	Percent Increase		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2003	62,292	0.1%	\$ 2,718.4	5.8%	\$ 43,640	5.7%	46.0	13.1
2004	62,573	0.5%	2,755.5	1.4%	44,037	0.9%	46.0	13.0
2005	63,073	0.8%	2,924.5	6.1%	46,368	5.3%	46.3	13.0
2006	64,069	1.6%	3,113.7	6.5%	48,599	4.8%	46.4	13.0
2007	65,251	1.8%	3,340.5	7.3%	51,194	5.3%	46.5	13.0
2008	66,589	2.1%	3,601.7	7.8%	54,089	5.7%	46.6	12.9
2009	67,912	2.0%	3,838.0	6.6%	56,514	4.5%	46.8	12.9
2010	65,890	-3.0%	3,713.6	-3.2%	56,360	-0.3%	47.1	13.2
2011	65,310	-0.9%	3,731.4	0.5%	57,133	1.4%	47.4	13.4
2012	65,599	0.4%	3,706.1	-0.7%	56,497	-1.1%	47.6	13.5
2013	66,226	1.0%	3,720.8	0.4%	56,184	-0.6%	47.7	13.5
2014	67,206	1.5%	3,871.0	4.0%	57,600	2.5%	47.8	13.5
2015	67,310	0.2%	3,952.6	2.1%	58,723	1.9%	47.8	13.2
2016	67,377	0.1%	4,118.4	4.2%	61,124	4.1%	47.9	13.3
2017	65,911	-2.2%	4,134.2	0.4%	62,723	2.6%	48.0	13.3
2018	66,271	0.5%	4,257.2	3.0%	64,240	2.4%	47.9	13.2
2019	66,383	0.2%	4,393.0	3.2%	66,176	3.0%	47.9	13.1
2020	66,750	0.6%	4,523.4	3.0%	67,766	2.4%	47.9	13.1
2021	65,561	-1.8%	4,622.0	2.2%	70,499	4.0%	48.0	13.2
2022	64,234	-2.0%	4,537.2	-1.8%	70,635	0.2%	48.0	13.2
2023	64,243	0.0%	4,663.5	2.8%	72,591	2.8%	48.0	13.1

# TABLE 13

## History of Cash Flow

Year Ending June 30, (1)	Contributions			Expenditures				External		External Cash
	Employee (2)	Employer (3)	Total (4)	Benefit Payments (5)	Refunds (6)	Administrative		Cash Flow for the Year <sup>2</sup> (9)	Market Value of Assets (10)	Flow as Percent of Market Value (11)
						Expenses <sup>1</sup> (7)	Total (8)			
2009	\$ 184.5	\$ 578.6	\$ 763.1	\$ (839.1)	\$ (3.5)	\$ (12.3)	\$ (854.9)	\$ (91.8)	\$ 8,818.0	(1.0%)
2010	360.0	547.6	907.6	(906.4)	(7.8)	(12.2)	(926.4)	(18.8)	9,821.6	(0.2%)
2011	231.0	534.9	765.9	(960.2)	(7.9)	(13.3)	(981.4)	(215.5)	11,642.3	(1.9%)
2012	178.8	548.4	727.2	(1,015.4)	(7.2)	(11.6)	(1,034.2)	(307.0)	11,285.9	(2.7%)
2013	185.8	581.4	767.2	(1,060.6)	(7.2)	(12.3)	(1,080.1)	(312.9)	12,357.8	(2.5%)
2014	206.1	653.1	859.2	(1,122.4)	(8.5)	(12.6)	(1,143.5)	(284.3)	14,203.0	(2.0%)
2015	223.5	717.8	941.3	(1,170.7)	(10.5)	(14.0)	(1,195.2)	(253.9)	14,505.5	(1.8%)
2016	236.8	756.6	993.4	(1,232.6)	(12.9)	(14.0)	(1,259.5)	(266.1)	14,070.0	(1.9%)
2017	250.7	781.2	1,031.9	(1,306.8)	(16.3)	(15.0)	(1,338.1)	(306.2)	15,698.3	(2.0%)
2018	259.4	847.6	1,107.0	(1,395.9)	(20.8)	(15.8)	(1,432.5)	(325.5)	16,598.4	(2.0%)
2019	273.2	922.6	1,195.8	(1,469.6)	(16.5)	(13.8)	(1,499.9)	(304.1)	17,227.0	(1.8%)
2020	287.4	1,098.6	1,386.0	(1,545.6)	(22.4)	(17.8)	(1,585.8)	(199.8)	17,385.5	(1.1%)
2021	300.6	1,281.6	1,582.2	(1,651.4)	(23.6)	(19.0)	(1,694.0)	(111.8)	21,935.8	(0.5%)
2022	293.0	1,242.1	1,535.1	(1,738.8)	(24.5)	(17.5)	(1,780.8)	(245.7)	21,854.8	(1.1%)
2023	309.8	1,274.2	1,584.0	(1,795.4)	(26.4)	(18.5)	(1,840.3)	(256.3)	22,425.4	(1.1%)

Amounts in \$ millions

<sup>1</sup> Excludes investment expenses

<sup>2</sup> Column (9) = Column (4) + Column (8)



**TABLE 14****Solvency Test**

	June 30, 2023 (1)	June 30, 2022 (2)
1. Actuarial accrued liability (AAL)		
a. Active member contributions	\$ 2,290,437,945	\$ 2,249,447,034
b. Retirees and beneficiaries	20,428,643,371	19,633,778,364
c. Active and inactive members	<u>13,505,535,937</u>	<u>12,939,553,222</u>
d. Total	\$ 36,224,617,253	\$ 34,822,778,620
2. Actuarial value of assets	\$ 22,514,931,693	\$ 21,317,835,653
3. Cumulative portion of AAL covered		
a. Active member contributions	100%	100%
b. Retirees and beneficiaries	99%	97%
c. Active and inactive members	0%	0%

**TABLE 15**

**Highlights of Last Five Annual Actuarial Valuations**  
**2019 through 2023**

Item	Valuation Date: June 30				
	2019	2020	2021	2022	2023
Number of active members	66,383	66,750	65,561	64,234	64,243
Number of inactive members	9,321	9,204	9,011	9,031	8,997
Number of pensioners	45,440	46,486	47,724	48,913	49,692
Number of beneficiaries	4,445	4,667	4,894	5,077	5,281
Average monthly contributory member pension amount	\$ 3,136	\$ 3,293	\$ 3,458	\$ 3,632	\$ 3,807
Average monthly noncontributory member pension amount	\$ 1,736	\$ 1,773	\$ 1,813	\$ 1,861	\$ 1,909
Average monthly hybrid member pension amount	\$ 2,285	\$ 2,345	\$ 2,416	\$ 2,495	\$ 2,555
Average monthly beneficiary amount	\$ 1,558	\$ 1,610	\$ 1,668	\$ 1,713	\$ 1,771
Total actuarial value of assets (\$millions)	\$ 17,322	\$ 18,084	\$ 19,910	\$ 21,318	\$ 22,515
Unfunded actuarial accrued liability (\$millions)	\$ 14,074.3	\$ 14,607.4	\$ 14,229.4	\$ 13,504.9	\$ 13,709.7
Funding Period (in years) <sup>(1)</sup>	26	26	24	24	23
Item (Dollar amounts in millions)	Fiscal Year				
	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Employer contributions <sup>(2)</sup>	\$ 922.6	\$ 1,098.6	\$ 1,281.6	\$ 1,242.1	\$ 1,274.2

<sup>(1)</sup> Beginning with the 2011 valuation, the funding period was determined using an open group projection. Prior valuations determined the remaining amortization based on the assumption that the amortization payment would remain constant as a percentage of pay.

<sup>(2)</sup> Beginning July 1, 2017, the employer contribution rate was 28.0% for Police and Fire, 18.0% for All Other Employees.  
Beginning July 1, 2018, the employer contribution rate was 31.0% for Police and Fire, 19.0% for All Other Employees.  
Beginning July 1, 2019, the employer contribution rate was 36.0% for Police and Fire, 22.0% for All Other Employees.  
Beginning July 1, 2020, the employer contribution rate was 41.0% for Police and Fire, 24.0% for All Other Employees.

**TABLE 16**

**Summary of Benefit Provisions  
(For Members Hired Prior to 7/1/2012)**

	<b>Noncontributory</b>	<b>Contributory</b>	<b>Hybrid</b>
<b>Employee Contributions</b>	No employee contributions	7.8% of salary	6.0% of salary
<b>Normal Retirement</b>			
Eligibility	Age 62 and 10 years credited service; or Age 55 and 30 years credited service	Age 55 and 5 years credited service	Age 62 and 5 years credited service; or Age 55 and 30 years credited service
Benefit	1 ¼% of average final compensation times years of credited service (Average Final Compensation or AFC is an average of the highest salaries during any three years of credited service, excluding any salary paid in lieu of vacation or if ERS membership occurred prior to 1/1/71, AFC may be an average of the highest salaries during any five years of credited service including any salary paid in lieu of vacation.)	2% of average final compensation times years of credited service (Average Final Compensation or AFC is an average of the highest salaries during any three years of credited service, excluding any salary paid in lieu of vacation or if ERS membership occurred prior to 1/1/71, AFC may be an average of the highest salaries during any five years of credited service including any salary paid in lieu of vacation.)	2% of average final compensation times years of credited service, split formula for unconverted noncontributory service at 1 ¼% (Average Final Compensation or AFC is an average of the highest salaries during any three years of credited service, excluding any salary paid in lieu of vacation or if ERS membership occurred prior to 1/1/71, AFC may be an average of the highest salaries during any five years of credited service including any salary paid in lieu of vacation.)

**TABLE 16 (CONTINUED)**

	<b>Noncontributory</b>	<b>Contributory</b>	<b>Hybrid</b>
<b>Early Retirement</b>			
Eligibility	Age 55 and 20 years credited service	Any age and 25 years credited service	Age 55 with 20 years credited service
Benefit	Maximum allowance reduced 6% per year under age 62	Maximum allowance reduced 5% per year under age 55 plus 4% per year under age 50	Maximum allowance reduced 5% for each year under age 62
<b>Deferred Vesting</b>			
Eligibility	10 years credited service	5 years credited service and contributions left in ERS	5 years credited service and contributions left in ERS
Benefit	Accrued maximum allowance payable at age 65	Accrued maximum allowance payable at age 55	Accrued maximum allowance payable at age 62
<b>Annuity Savings Account</b>			
Interest	Not applicable	4.5% per annum on employee contributions and accrued interest	4.5% per annum on employee contributions and accrued interest
Eligibility	Not applicable	Requests refund and forfeits future retirement benefit	Requests refund and forfeits future retirement benefit
Benefit			
- Terminates with less than 5 years credited service	Not applicable	Return of member's contributions and accrued interest	Return of member's contributions and accrued interest
- Terminates with 5 or more years of credited service	Not applicable	Return of member's contributions and accrued interest	Return of member's Hybrid contributions and accrued interest, both times 150%. Return of non-Hybrid balance transfers and accrued interest.

**TABLE 16 (CONTINUED)**

	<b>Noncontributory</b>	<b>Contributory</b>	<b>Hybrid</b>
<b>Ordinary Disability</b>			
Eligibility	10 years credited service	10 years credited service	10 years credited service
Benefit	1 ¼% of AFC times years of credited service, unreduced for age (Minimum is 12.5% of AFC)	1 ¾% of AFC times years of credited service, unreduced for age  (Minimum is 30% of AFC)	2% of AFC times years of credited service, unreduced for age, split formula for unconverted noncontributory service at 1 ¼% (Minimum is 25% of AFC)
<b>Service-Connected Disability</b>			
Eligibility	Any age or credited service	Any age or credited service	Any age or credited service
Benefit	Accrued maximum allowance, but not less than 15% AFC.  For accidents that occur on or after July 1, 2004, lifetime pension of 35% of AFC.	Totally disabled: lifetime pension of 66 2/3% AFC plus annuity.  Occupationally disabled: same benefit (66 2/3% pension plus annuity) paid for 3 years and then pension is reduced to 33 1/3% AFC if not totally disabled.  For accidents on or after July 7, 1998, lifetime pension of 50% of AFC plus refund of member's contributions and accrued interest.	Lifetime pension of 35% of AFC plus refund of member's contributions and accrued interest.

**TABLE 16 (CONTINUED)**

	Noncontributory	Contributory	Hybrid
<b>Ordinary Death</b>			
Eligibility	Active employee at time of death with at least 10 years of credited service	Active employee at time of death with at least 1 year of service	Active employee at time of death with at least 5 years of service
Benefit	<p>Surviving spouse/reciprocal beneficiary and dependent children receive a benefit equal to a percentage of member's accrued maximum allowance unreduced for age; or</p> <p>Option B (100% Joint and Survivor) benefit for surviving spouse if member was eligible for retirement at time of death and a percentage of member's accrued maximum allowance unreduced for age for the dependent children</p>	<p>Lump sum payment of member's contributions and accrued interest plus a percentage of the salary earned in the 12 months preceding death; or</p> <p>Option 3 (50% Joint and Survivor) benefit if member was not eligible for retirement at the time of death, credited with 10 years of service, and one beneficiary designated (benefit calculated using the ordinary disability retirement formula); or</p> <p>Option 2 (100% Joint and Survivor) benefit if member was eligible for retirement at the time of death and one beneficiary designated</p>	<p>Return of member's Hybrid contributions and accrued interest (both times 150%) plus return of non-Hybrid balance transfers and accrued interest; or</p> <p>Option 3 (50% Joint Survivor) lifetime benefit if credited with at least 10 years of service and one beneficiary designated; or</p> <p>Option 2 (100% Joint Survivor) lifetime monthly benefit if member was eligible for service retirement at time of death, and one beneficiary designated</p>



**TABLE 16 (CONTINUED)**

	Noncontributory	Contributory	Hybrid
<b>Service-Connected Death</b>			
Eligibility	Any age or service	Any age or service	Any age or service
Benefit	<p>Surviving spouse/reciprocal beneficiary receives pension equal to 30% of AFC (until remarriage or re-entry into a new reciprocal beneficiary relationship); additional benefits payable to surviving dependent children (up to age 18)</p> <p>If there is no spouse/reciprocal beneficiary or dependent children, no benefit is payable.</p>	<p>Lump sum payment of member's contributions and accrued interest, plus pension of 50% AFC to surviving spouse/reciprocal beneficiary (until remarriage or re-entry into a new reciprocal beneficiary relationship);</p> <p>If there is no surviving spouse or reciprocal beneficiary, surviving dependent children (up to age 18) or dependent parents shall be eligible for a monthly benefit.</p> <p>If there is no spouse/reciprocal beneficiary or dependent children/parents, the ordinary death benefit shall be payable to the designated beneficiary.</p>	<p>Lump sum payment of member's contributions and accrued interest, plus pension of 50% AFC to surviving spouse/reciprocal beneficiary (until remarriage or re-entry into a new reciprocal beneficiary relationship);</p> <p>If there is no surviving spouse or reciprocal beneficiary, surviving dependent children (up to age 18) or dependent parents shall be eligible for a monthly benefit.</p> <p>If there is no spouse/reciprocal beneficiary or dependent children/parents, the ordinary death benefit shall be payable to the designated beneficiary.</p>

## TABLE 16 (CONTINUED)

For members hired after June 30, 2011, the interest crediting rate on employee contributions and accrued interest is 2.0% per annum.

The plan provisions summarized above apply to teachers and most State and County employees. Special provisions applicable to other groups of employees are outlined below:

- A. Police officers, firefighters, investigators of the Department of the Prosecuting Attorney and the Attorney General, narcotic enforcement investigators, and public safety investigators contribute 12.2% of their monthly salary to ERS instead of 7.8%. These members may retire at age 55 with 5 years of credited service or at any age with 25 years of credited service and receive a retirement benefit of 2 ½% of average final compensation (AFC) for each year of such service up to a maximum of 80% AFC, provided the last 5 years of credited service in any of these occupations.
- B. Judges, elected officials, and legislative officers may retire at age 55 with at least 5 years of credited service, or at any age with at least 10 years of credited service and receive a pension of 3 ½% of AFC for each year of such service plus an annuity from their contributions allocable to the period of such service. This benefit cannot exceed 75% of the AFC. Judges hired after June 30, 1999 require 25 years of credited service in order to retire before age 55.
- C. Sewer workers in specified classifications, water safety officers, and emergency medical technicians (EMTs) may retire at any age if they are credited with 25 years of such service with the last 5 or more years in these occupations. (The 25-year feature is phased in through 7/1/2008 for EMTs.)
- D. Sewer workers in specified classifications, water safety officers, and emergency medical technicians (EMTs) that transfer to the Hybrid class contribute 9.75% of their monthly salary to ERS. These members may retire at age 62 with 5 years of credited service or at any age if they are credited with 25 years of such service with the last 5 or more years in these occupations.

**TABLE 16 (CONTINUED)**  
**Summary of Benefit Provisions**  
**(For Members Hired After 6/30/2012)**

	<b>Contributory (for Police/Fire)</b>	<b>Contributory (for Judges/Elected Officers)</b>	<b>Hybrid</b>
<b>Employee Contributions</b>	14.2% of base pay earnings	9.8% of base pay earnings	8.0% of base pay earnings 11.75% of base pay earnings for Sewer workers, water safety officers, and emergency medical technicians (EMTs)
<b>Normal Retirement Eligibility</b>	Age 60 and 10 years credited service	Age 60 and 10 years credited service	Age 65 and 10 years credited service; or Age 60 and 30 years credited service  Sewer workers, water safety officers, and EMTs may retire with 25 years credited service at age 55.
<b>Benefit</b>	2.25% of average final compensation times years of credited service. (Average final compensation or AFC is an average of the highest base pay earnings during any five years of credited service, excluding any salary paid in lieu of vacation.) Maximum is 80% of AFC.	3.0% of average final compensation times years of credited service (Average final compensation or AFC is an average of the highest base pay earnings during any five years of credited service, excluding any salary paid in lieu of vacation.) Maximum is 75% of AFC.	1.75% of average final compensation times years of credited service (Average final compensation or AFC is an average of the highest base pay earnings during any five years of credited service, excluding any salary paid in lieu of vacation.)

**TABLE 16 (CONTINUED)**

	<b>Contributory (for Police/Fire)</b>	<b>Contributory (for Judges/Elected Officers)</b>	<b>Hybrid</b>
<b>Early Retirement</b>			
Eligibility	Age 55 and 25 years credited service	Age 55 and 25 years credited service Any age with 10 years for elected officers	Age 55 with 20 years credited service Sewer workers, water safety officers, and emergency medical technicians (EMTs) may retire with 25 years credited service.
Benefit	Maximum allowance reduced 6% per year under age 60	Maximum allowance reduced 6% per year under age 60	Maximum allowance reduced 5% for each year under age 65
<b>Deferred Vesting</b>			
Eligibility	10 years credited service and contributions left in ERS	10 years credited service and contributions left in ERS	10 years credited service and contributions left in ERS
Benefit	Accrued maximum allowance payable at age 60	Accrued maximum allowance payable at age 60	Accrued maximum allowance payable at age 65
<b>Annuity Savings Account</b>			
Interest	2.0% per annum	2.0% per annum	2.0% per annum
Eligibility	Requests refund and forfeits future retirement benefit	Requests refund and forfeits future retirement benefit	Requests refund and forfeits future retirement benefit
Benefit			
- Terminates with less than 10 years credited service	Return of member's contributions and accrued interest	Return of member's contributions and accrued interest	Return of member's contributions and accrued interest
- Terminates with 10 or more years of credited service	Return of member's contributions and accrued interest	Return of member's contributions and accrued interest	Return of member's contributions and accrued interest, both times 120%

**TABLE 16 (CONTINUED)**

	<b>Contributory (for Police/Fire)</b>	<b>Contributory (for Judges/Elected Officers)</b>	<b>Hybrid</b>
<b>Ordinary Disability</b>			
Eligibility	10 years credited service	10 years credited service	10 years credited service
Benefit	1 $\frac{3}{4}$ % of AFC times years of credited service, unreduced for age (Minimum is 30% of AFC)	3.0% of AFC times years of credited service, unreduced for age (Minimum is 30% of AFC)	1 $\frac{3}{4}$ % of AFC times years of credited service, unreduced for age (Minimum is 25% of AFC)
<b>Service-Connected Disability</b>			
Eligibility	Any age or credited service	Any age or credited service	Any age or credited service
Benefit	Lifetime pension of 50% of AFC plus refund of member's contributions and accrued interest.	Lifetime pension of 50% of AFC plus refund of member's contributions and accrued interest.	Lifetime pension of 35% of AFC plus refund of member's contributions and accrued interest.

**TABLE 16 (CONTINUED)**

	<b>Contributory (for Police/Fire)</b>	<b>Contributory (for Judges/Elected Officers)</b>	<b>Hybrid</b>
<b>Ordinary Death</b>			
Eligibility	Active employee at time of death with at least 1 years of credited service	Active employee at time of death with at least 1 years of credited service	Active employee at time of death with at least 10 years of service
Benefit	<p>Lump sum payment of member's contributions and accrued interest plus a percentage of the salary earned in the 12 months preceding death; or</p> <p>Option 3 (50% Joint Survivor) lifetime benefit if credited with at least 10 years of service and one beneficiary designated; or</p> <p>Option 2 (100% Joint Survivor) lifetime monthly benefit if member was eligible for service retirement at time of death, and one beneficiary designated</p>	<p>Lump sum payment of member's contributions and accrued interest plus a percentage of the salary earned in the 12 months preceding death; or</p> <p>Option 3 (50% Joint Survivor) lifetime benefit if credited with at least 10 years of service and one beneficiary designated; or</p> <p>Option 2 (100% Joint Survivor) lifetime monthly benefit if member was eligible for service retirement at time of death, and one beneficiary designated</p>	<p>Return of member's Hybrid contributions and interest; or</p> <p>Option 3 (50% Joint Survivor) lifetime benefit if credited with at least 10 years of service and one beneficiary designated; or</p> <p>Option 2 (100% Joint Survivor) lifetime monthly benefit if member was eligible for service retirement at time of death, and one beneficiary designated</p>

**TABLE 16 (CONTINUED)**

	<b>Contributory (for Police/Fire)</b>	<b>Contributory (for Judges/Elected Officers)</b>	<b>Hybrid</b>
<b>Service-Connected Death</b>			
Eligibility	Any age or service	Any age or service	Any age or service
Benefit	<p>Same for all members.</p> <p>Lump sum payment of member's contributions and interest, plus pension of 50% AFC to surviving spouse/reciprocal beneficiary (until remarriage or re-entry into a new reciprocal beneficiary relationship);</p> <p>If there is no surviving spouse or reciprocal beneficiary, surviving dependent children (up to age 18) or dependent parents shall be eligible for a monthly benefit.</p> <p>If there is no spouse/reciprocal beneficiary or dependent children/parents, the ordinary death benefit shall be payable to the designated beneficiary.</p>		

## TABLE 16 (CONTINUED)

### Post Retirement Benefit

Each retiree's original retirement allowance is increased by 1 ½% (if their membership date is after June 30, 2012) or 2 ½% (if their membership date is before July 1, 2012) on each July 1 beginning the calendar year after retirement. This cumulative benefit is not compounded.

### Retirement Options

#### Contributory or Hybrid Member

**Maximum Allowance:** The member receives a lifetime maximum allowance and at death the difference between the value of the member's contributions at the time of retirement and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate.

**Option One:** The member receives a reduced lifetime allowance based on age and at death, the difference between the initial insurance reserve and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate.

**Option Two (100% Joint and Survivor with Pop-Up):** The member receives a reduced lifetime allowance based on ages of both the member and the sole beneficiary and at death of the member; the same allowance is paid to the designated beneficiary for life. Should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance, and all payments will cease at the retiree's death.

**Option Three (50% Joint and Survivor with Pop-Up):** This allowance is similar to Option Two. The member receives a reduced lifetime allowance which is higher than Option Two and is based on ages of both the member and the sole beneficiary; however, at death of the member one-half of the allowance is paid to the designated beneficiary for life. Like Option Two, should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance, and all payments will cease at the retiree's death.

**Option Four:** This option allows the member to devise an allowance that will provide a benefit according to the member's specifications. It requires certification by the Actuary and approval of the Board of Trustees. The following Option Four allowances have been approved:

Combination of Options Five and Maximum Allowance: The member receives a reduced lifetime allowance and is allowed to withdraw the pre-1987 nontaxable contribution, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid class members are not allowed the 75% option); at death, the difference between the value of the member's contributions at the time of retirement and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate.

Combination of Options Five and One: The member receives a reduced lifetime allowance and is allowed to withdraw the pre-1987 nontaxable contributions, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid class members are not allowed the 75% option); at death, the difference between the initial insurance reserve and the retirement allowance paid prior to death is paid to the designated beneficiary(ies) or estate.





## TABLE 16 (CONTINUED)

**Combination of Options Five and Two:** The member receives a reduced lifetime allowance based on ages of both member and the sole beneficiary, and is allowed to withdraw the pre-1987 nontaxable contributions, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid class members are not allowed the 75% option); at death of the member, the same allowance is paid to the designated beneficiary for life. As in the case of Option Two, should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance (as adjusted for the contribution withdrawal), and all payments will cease at the retiree's death.

**Combination of Options Five and Three:** The member receives a reduced lifetime allowance based on ages of both member and the sole beneficiary, and is allowed to withdraw the pre-1987 nontaxable contributions, 50% of accumulated contributions, or 75% of accumulated contributions (Hybrid class members are not allowed the 75% option); at death of the member, one-half of the allowance is paid to the designated beneficiary for life. As in the case of Option Three, should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance (as adjusted for the contribution withdrawal), and all payments will cease at the retiree's death.

**Option Five:** The member receives a reduced lifetime allowance and is allowed to withdraw all accumulated contributions; at death, the retirant is entitled to the pension for the entire month that death occurs.

Option Four and Option Five are restricted to those members with at least ten years of credited service excluding unused sick leave credit.

Regardless of the option selected, should death occur during the first year of retirement, the designated beneficiary may elect to receive benefits as if death had occurred immediately prior to retirement in lieu of the death benefits described above.

### **Noncontributory Member**

**Maximum Allowance:** The member receives a lifetime pension and at death, the retirant is entitled to the pension for the entire month that death occurs.

**Option A (50% Joint and Survivor with Pop-Up):** The member receives a reduced lifetime pension and at death of the member, one-half of the pension is paid to the sole designated beneficiary for life. Should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance, and all payments will cease at the retiree's death.

**Option B (100% Joint and Survivor with Pop-up):** The member receives a reduced lifetime pension and at death of the member, the same pension is paid to the sole designated beneficiary for life. Like Option A, should the designated beneficiary predecease the retiree, another beneficiary cannot be named, the benefit will revert back to the Maximum Allowance, and all payments will cease at the retiree's death.

**Option C (Ten-Year Guarantee):** The member receives a reduced lifetime pension. Should death occur within ten years of retirement, the same pension will be paid to the designated beneficiary for the balance of the ten-year period. Should the designated beneficiary predecease the retiree, another beneficiary can be named.

Regardless of the option selected, should death occur during the first year of retirement, the designated beneficiary may elect to receive benefits as if death had occurred immediately prior to retirement in lieu of the death benefits described above.



## TABLE 17

### Summary of Plan Changes

#### **Act 65, effective July 1, 1999**

Requires judges who enter or re-enter service after June 30, 1999 to be at least 55 years old and five years of service or have 25 years of service to rehire.

#### **Act 100, effective June 30, 1999**

Uses actuarial investment earnings in excess of a ten percent (10%) actuarial investment yield rate to reduce the employer's contribution requirements by \$147.0 million and \$50.6 million for fiscal years ending June 30, 2000 and 2001, respectively.

#### **Act 284, effective June 30, 2001**

Provide an increase in pension benefits for current retirees with military service who retired prior to July 2, 1989. A retirant who rendered honorable active military service could be granted up to 4 years of military service credits based upon his/her years of credited service under ERS, not to exceed his/her actual years of military service. The years of military service credits granted are based on the following schedule:

- 0 years for retirants with less than 8 years of credited service
- Up to 2 years of retirants with 8 years or more of credited service
- Up to 3 years of retirants with 20 years or more of credited service
- Up to 4 years of retirants with 25 years or more of credited service

For each year of military service credits granted on the schedule above, the retirant will be provided a \$36.00 increase in his/her monthly pension or retirement allowance.

#### **Act 199, effective June 30, 2003**

Emergency Medical Technicians (EMTs) are allowed to retire with an unreduced benefit after 25 years of service regardless of age, of which the last five or more years prior to retirement must be in that capacity. This feature is phased in one year at a time, July 1, 2003 through June 30, 2008.

#### **Act 177, effective July 1, 2004**

This Act allows police officers with a permanent service-connected disability to retain the 2-1/2% benefit multiplier for each year of service as a police officer.

#### **Act 181, effective July 1, 2004**

This Act establishes fixed employer contribution rates as a percentage of compensation effective July 1, 2005. Employers will contribute 15.75% for their police officers and firefighters and 13.75% for other employees.



## TABLE 17 (CONTINUED)

### **Act 183, effective July 1, 2004**

This Act amends ERS's statutes to comply with the federal tax limits on compensation retroactive to July 1, 1996.

### **Act 56, effective December 1, 2004**

This Act amends ERS's statutes to allow the automatic cost-of-living-adjustment to be reflected when determining actuarial equivalent optional forms of payment.

### **Act 256, effective July 5, 2007**

Legislation was enacted to remove the statutory salary increase assumption from the statutes and to grant ERS's Board of Trustees the authority to set the salary increase assumption. As a result of this legislation, the Board has adopted effective with this valuation the salary increase assumption recommended by GRS as a result of the Experience Study performed in 2006.

Legislation was also enacted to increase the employer contribution rates to ERS. Effective July 1, 2008, the employer contribution rate for Police and Fire employees will increase from 15.75% to 19.70% and the rate for All Other employees will increase from 13.75% to 15.00%.

### **Act 163, effective June 23, 2011**

Legislation was enacted that increased the future employer contribution rates to ERS. Employers of Police and Fire employees will contribute 22% of pay in FY 2013, 23% in FY 2014, 24% in FY 2015, and 25% in FY 2016 and beyond. Employers of All Other Employees will contribute 15.5% of pay in FY 2013, 16.0% in FY 2014, 16.5% in FY 2015, and 17.0% in FY 2016 and beyond.

## TABLE 17 (CONTINUED)

Legislation was enacted that made numerous changes to the benefits and member contribution rates for employees hired after June 30, 2012. Key changes are shown below:

Benefit Provision	Police & Fire Employees	All Other Employees
Benefit Multiplier	2.25%	1.75%
Normal Retirement	Age 55 with 25 years of service, or age 60 with 10 years of service	Age 60 with 30 years of service, or age 65 with 10 years of service
Post-Retirement Increase	1.5%	1.5%
Hybrid Match	N/A	120%
Average Final Compensation	Highest 5 annual base salaries	Highest 5 annual base salaries
Eligibility for Deferred Benefit	10 years of service	10 years of service
Member Contribution Rate	14.20%	8.00%

Similar changes were also made to the benefits of Judges, Legislative Officers, etc.

Similar changes were also made to those employees in the All Other Employees group who are eligible to retire at 25 years of service including the addition of a minimum age requirement (55).

Finally, legislation was enacted that set the investment return assumption for the June 30, 2011 valuation at 7.75% (the rate recommended in the Experience Study presented to the Board in December of 2010). In addition, the legislation granted ERS's Board the authority to set this assumption for valuations after 2011.

### **Act 152, effective June 26, 2012**

Legislation was enacted to eliminate most types of non-base pay from the definition of compensation for employees hired after June 30, 2012. For the impacted employees, non-base pay compensation will be excluded in determining both the contributions made by and on behalf of these employees and the benefits they will earn in the System.

### **Act 153, effective June 26, 2012**

Legislation was enacted to require employers to pay additional contributions if a retiring employee, who was first employed prior to July 1, 2012 and who was last employed by the employer, has significant non-base pay increases included in their average final compensation. The additional contribution is equal to the actuarial present value of the additional benefits earned due to the "excessive" non-base pay increases.

## TABLE 17 (CONTINUED)

### **Act 017, effective July 1, 2017**

Legislation was enacted that increased the future employer contribution rates to ERS. Employers of Police and Fire employees will contribute 28% of pay in FY 2018, 31% in FY 2019, 36% in FY 2020, and 41% in FY 2021 and beyond. Employers of All Other Employees will contribute 18% of pay in FY 2018, 19% in FY 2019, 22% in FY 2020, and 24% in FY 2021 and beyond.

## TABLE 18

### Summary of Actuarial Methods and Assumptions

Basis for assumption setting: The actuarial assumptions were adopted by the Board on August 8, 2022. Rationale for the recommendations are in the most recent experience study dated June 14, 2022.

#### *I. Valuation Date*

The valuation date is June 30th of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

#### *II. Actuarial Cost Method*

The normal cost and actuarial accrued liability are determined using the Entry Age Actuarial Cost Method. The actuarial accrued liability is assigned to years prior to the valuation, and the normal cost is assigned to the year following the valuation. The remaining costs are assigned to future years. The normal cost and accrued liability are determined on an individual basis.

The normal cost is the level percentage of payroll contribution required to accumulate the needed funds to pay all expected benefits. This percentage of payroll is then applied to the total compensation for the prior year for all active members, and is then adjusted for the payroll growth assumption.

The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs. The unfunded actuarial accrued liability (UAAL) is the excess of the actuarial accrued liability over the actuarial value of assets.

#### *III. Funding of Unfunded Actuarial Accrued Liability*

Since the State statutes governing the System establish the employee and employer contribution rates, the actuarial valuation determines the number of years required to amortize (or fund) the UAAL. Because of the legislated increases in future employer contribution rates and the new tier of benefits for employees hired after June 30, 2012, an open group projection of liabilities and assets was used to determine the length of time until the UAAL is eliminated. The open group projection assumed that the number of active members would remain static (i.e. each active employee who leaves employment due to termination, retirement, death or disability, would be replaced by exactly one new employee.

Because of this methodology for determining the funding period, any change in the unfunded actuarial accrued liability due to (i) actuarial gains and losses, (ii) changes in actuarial assumptions, or (iii) amendments, affects the funding period.

Please see Section V of this table for a description of the new entrant profile used in the open group projection.

## TABLE 18 (CONTINUED)

### IV. Actuarial Value of Assets

The actuarial value of assets is based on the market value of assets with a four-year phase-in of actual investment return in excess of/(less than) expected investment income. Offsetting unrecognized gains and losses are immediately recognized, with the shortest remaining bases recognized first and the net remaining bases continue to be recognized on their original timeframe. The expected actuarial value of assets is calculated net of investment expenses, and the expected investment return is equal to the assumed investment return rate multiplied by the prior year's actuarial value of assets, adjusted for contributions, benefits paid, and refunds.

### V. New Entrant Profile

For the purposes of determining the funding period, an open group projection is used which replaces on a one-to-one basis each active member who leaves employment with an average new hire. The average new hire is determined based on a new entrant profile, which is created from the valuation data by determining the entry age and entry pay for anyone with seven or less years of service as of the valuation date. Each group of new hires' salaries is assumed to grow at the General Wage Inflation over the salaries of the previous year's group.

The new entrant profile for members assumed to be hired during the year following the valuation date for the Police and Fire Employees and the All Other Employees are shown in the table below.

New Entrant Profile for Police & Fire Employees		
Entry Age	# of Employees	Average Salary
15-19	2	\$61,913
20-24	264	72,559
25-29	431	71,096
30-34	300	69,566
35-39	136	70,215
40-44	39	72,298
45-49	17	71,420
50-54	6	115,096
55-59	6	83,734
60+	2	64,229
Total	1,203	\$71,235

It is assumed that 90% of new hires will be male.

**TABLE 18 (CONTINUED)**

New Entrant Profile for All Other Employees		
Entry Age	# of Employees	Average Salary
15-19	15	\$42,719
20-24	1,598	50,318
25-29	3,343	53,262
30-34	2,890	55,488
35-39	2,561	56,834
40-44	2,176	55,894
45-49	1,794	55,474
50-54	1,420	55,254
55-59	1,208	54,008
60-64	615	58,171
65+	91	56,625
Total	17,711	\$54,813

It is assumed that 40% of new hires will be male and Teachers replace Teachers and Non-Teachers replace Non-Teachers

VI. Actuarial Assumptions

A. Economic Assumptions

1. Investment return: 7.00% per year, compounded annually, composed of an assumed 2.50% inflation rate and a 4.50% net real rate of return (net of investment expenses).
2. General Wage Inflation: (used to index each year's group of new entrants in the open group projection) 3.50% per annum for Police and Fire Employees and 3.00% per annum for General Employees and Teachers.



## TABLE 18 (CONTINUED)

3. Salary increase rates: As shown below

Years of Service	General Employees		Teachers	
	Service-Related Component	Total Rate Including 2.50% Inflation Component and 1.25% Productivity Component	Service-Related Component	Total Rate Including 2.50% Inflation Component and 1.25% Productivity Component
1	3.00%	6.75%	3.00%	6.75%
2	3.00%	6.75%	3.00%	6.75%
3	2.00%	5.75%	2.00%	5.75%
4	1.50%	5.25%	1.50%	5.25%
5	1.50%	5.25%	1.50%	5.25%
6	1.25%	5.00%	1.25%	5.00%
7	1.25%	5.00%	1.25%	5.00%
8	1.00%	4.75%	1.00%	4.75%
9	1.00%	4.75%	1.00%	4.75%
10	1.00%	4.75%	1.00%	4.75%
11	0.75%	4.50%	0.75%	4.50%
12	0.75%	4.50%	0.75%	4.50%
13	0.50%	4.25%	0.50%	4.25%
14	0.50%	4.25%	0.50%	4.25%
15	0.50%	4.25%	0.50%	4.25%
16	0.50%	4.25%	0.50%	4.25%
17	0.50%	4.25%	0.50%	4.25%
18	0.50%	4.25%	0.50%	4.25%
19	0.50%	4.25%	0.50%	4.25%
20	0.25%	4.00%	0.25%	4.00%
21	0.25%	4.00%	0.25%	4.00%
22	0.25%	4.00%	0.25%	4.00%
23	0.25%	4.00%	0.25%	4.00%
24	0.25%	4.00%	0.25%	4.00%
25 or more	0.00%	3.75%	0.00%	3.75%

**TABLE 18 (CONTINUED)**

## 3. Salary increase rates (continued):

Years of Service	Police & Fire	
	Service-Related Component	Total Annual Rate of Increase Including 2.50% Inflation Component and 2.50% General Increase Rate
1	1.00%	6.00%
2	1.00%	6.00%
3	1.00%	6.00%
4	1.00%	6.00%
5	1.00%	6.00%
6	1.00%	6.00%
7	1.00%	6.00%
8	1.00%	6.00%
9	1.00%	6.00%
10	1.00%	6.00%
11	1.00%	6.00%
12	1.00%	6.00%
13	1.00%	6.00%
14	1.00%	6.00%
15	1.00%	6.00%
16	0.75%	5.75%
17	0.75%	5.75%
18	0.75%	5.75%
19	0.50%	5.50%
20	0.50%	5.50%
21	0.50%	5.50%
22	0.25%	5.25%
23	0.25%	5.25%
24	0.25%	5.25%
25 or more	0.00%	5.00%

Salary increases are assumed to occur once a year, on July 1. Therefore the pay used for the period between the valuation date and the first anniversary of the valuation date is equal to the reported pay for the prior year, annualized if necessary, and then increased by the salary increase assumption. To adjust the pays received as of March 31<sup>st</sup> to the June 30<sup>th</sup> valuation date, the reported pay for each member is increased by 1%.

## TABLE 18 (CONTINUED)

### B. Demographic Assumptions

#### 1. Mortality rates:

Active Members: Multiples of the Pub-2010, Employee Tables for active employees based on the occupation of the member as follows:

Type	General Employees	Teachers	Police & Fire
	Male & Female	Male & Female	Male & Female
Ordinary	94%	92%	80%
% of Ordinary	41%	52%	24%
Choosing Annuity			
Duty Related	6%	8%	20%

Healthy Retirees: The 2022 Public Retirees of Hawaii mortality tables. The rates are projected on a fully generational basis by Scale MP from the year 2022 (with immediate convergence) and with multiplier and setbacks based on plan and group experience. The following are sample rates of the base table as of 2022 with the corresponding multipliers:

Healthy Annuitant Mortality Rates Before Projection (Multiplier Added)

Age	General Employees		Teachers		Police & Fire	
	Male	Female	Male	Female	Male	Female
50	0.2094%	0.1276%	0.1698%	0.0951%	0.2421%	0.1130%
55	0.3215%	0.1687%	0.2883%	0.1596%	0.3473%	0.1633%
60	0.5570%	0.3095%	0.4672%	0.2467%	0.6179%	0.2799%
65	0.8041%	0.4488%	0.7256%	0.4063%	0.8426%	0.4283%
70	1.2621%	0.7066%	1.0762%	0.6015%	1.4172%	0.6565%
75	2.0700%	1.0964%	1.7879%	0.9358%	2.3227%	1.0121%
80	3.5996%	2.1275%	3.0429%	1.6565%	4.1824%	1.8863%
85	6.5891%	4.1569%	5.5564%	3.2698%	7.6513%	3.6977%
90	11.9340%	8.3647%	10.1056%	6.5007%	13.6689%	7.3991%
Multiplier	102%	98%	97%	101%	93%	100%
Setback	0	-1	1	1	-2	0

## TABLE 18 (CONTINUED)

The following table provides the life expectancy for individuals retiring in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years					
Gender	Year of Retirement				
	2025	2030	2035	2040	2045
General Retirees					
Male	22.8	23.2	23.5	23.9	24.2
Female	26.3	26.6	26.9	27.2	27.5
Teachers					
Male	24.1	24.5	24.9	25.2	25.5
Female	28.0	28.3	28.6	28.9	29.2
Police & Fire					
Male	21.8	22.1	22.4	22.8	23.1
Female	27.1	27.4	27.7	28.0	28.3

Disabled retirees: Base Table for healthy retiree's occupation, set forward 3 years, generational projection using the MP projection table from the year 2022 with immediate convergence. Minimum mortality rate of 3.5% for males and 2.5% for females.

- Disability rates – The assumed total disability rates at select ages are multiples of the client specific table that follows:

Age	Male & Female
25	0.000%
30	0.001%
35	0.008%
40	0.026%
45	0.064%
50	0.146%
55	0.198%
60	0.212%

Note: The disability rates project the percentage of employees at each age that is assumed to become disabled before retiring. Multiples of the rates above are assumed to be ordinary disability or accidental disability, and varies by employee group as follows:

Type	General Employees	Teachers	Police & Fire
	Male & Female	Male & Female	Male & Female
Ordinary	200%	100%	50%
Accidental	60%	8%	120%

## TABLE 18 (CONTINUED)

3. Termination Rates - Same male and female rates, based solely on the member's service. Rates reflect terminations for causes other than death, disability or retirement. Employees eligible for retirement are assumed to have no probability of termination. Sample rates are shown below:

Years of Service	<u>Expected Terminations per 1000 Lives (Male &amp; Female)</u>		
	<u>General Employees</u>	<u>Teachers</u>	<u>Police &amp; Fire</u>
0	177.2	0.0	140.0
1	142.2	197.9	52.4
2	114.2	165.2	41.3
3	92.0	134.8	34.8
4	74.8	108.2	30.2
5	61.7	86.3	26.6
6	51.9	69.4	23.7
7	44.7	57.3	21.3
8	39.6	49.4	19.1
9	35.8	44.5	17.2
10	32.8	41.0	15.6
11	30.3	35.8	10.6
12	27.9	32.4	10.0
13	22.6	29.1	9.4
14	19.8	26.1	8.8
15	17.7	23.2	8.2
16	16.1	20.6	7.6
17	14.8	18.1	7.0
18	13.7	15.8	6.4
19	12.8	13.6	5.8
20	11.9	11.7	5.2
21	11.1	10.0	4.6
22	10.2	8.4	4.0
23	9.3	7.0	3.4
24	8.3	5.8	2.8
25	7.1	4.8	0.0
26	6.0	4.0	0.0
27	4.7	3.3	0.0
28	3.5	2.8	0.0
29	2.4	2.6	0.0
30	0.0	2.5	0.0
31 and more	0.0	0.0	0.0

## TABLE 18 (CONTINUED)

4. Retirement Rates – separate male and female rates, based on age. Sample rates are shown below:

Contributory Members

Age	Expected Retirements per 100 Lives								
	General Employees				Teachers				Police & Fire
	Unreduced		Reduced		Unreduced		Reduced		Unreduced
	Male	Female	Male	Female	Male	Female	Male	Female	Male & Female
45	0	0	0	0	0	0	0	0	16
46	0	0	0	0	0	0	0	0	16
47	0	0	0	0	0	0	0	0	16
48	0	0	0	0	0	0	0	0	16
49	0	0	0	0	0	0	0	0	16
50	0	0	0	0	0	0	1	0	18
51	0	0	2	1	0	0	1	1	18
52	0	0	2	1	0	0	1	1	18
53	0	0	2	1	0	0	2	2	18
54	0	0	3	2	0	0	3	3	18
55	25	20			20	18			22
56	25	20			15	16			22
57	16	13			15	16			22
58	16	13			15	16			24
59	13	13			15	16			27
60	13	15			14	18			30
61	13	15			14	18			30
62	28	25			14	25			30
63	20	20			14	20			30
64	20	20			14	15			30
65	20	20			20	25			100
66	18	20			15	25			100
67	18	20			15	20			100
68	18	20			15	20			100
69	18	20			15	20			100
70	20	20			15	20			100
71	20	20			15	20			100
72	20	20			15	20			100
73	20	20			15	20			100
74	20	20			15	20			100
75	100	100			100	100			100

## TABLE 18 (CONTINUED)

### Noncontributory Members

Expected Retirements per 100 Lives										
Age	General Employees						Teachers			
	Unreduced		25 & Out		Reduced		Unreduced		Reduced	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
55	20	11	15	11	1	1	10	13	1	2
56	18	11	23	11	1	1	10	7	1	2
57	13	11	18	11	1	1	10	8	1	2
58	10	11	15	11	2	2	10	10	2	2
59	10	11	15	11	2	2	10	20	3	3
60	10	14	15	14	4	4	10	11	5	5
61	11	18	16	18	4	4	10	16	7	5
62	20	20	25	20			16	25		
63	20	20	25	20			12	20		
64	12	20	17	20			10	15		
65	14	20	19	20			20	25		
66	20	20	25	20			15	25		
67	20	20	25	20			15	25		
68	20	20	25	20			15	25		
69	20	20	25	20			15	25		
70	20	20	25	20			15	25		
71	20	20	25	20			15	25		
72	20	20	25	20			15	25		
73	20	20	25	20			15	25		
74	20	20	25	20			15	25		
75	100	100	100	100			100	100		

Note: Retirement rates for the 25&out group prior to age 55 are 15% for male and 11% for female.

## TABLE 18 (CONTINUED)

### Hybrid Members

Expected Retirements per 100 Lives								
Age	General Employees				Teachers			
	Unreduced		Reduced		Unreduced		Reduced	
	Male	Female	Male	Female	Male	Female	Male	Female
55	18	18	1	1	20	16	2	2
56	12	13	1	1	13	10	2	2
57	12	13	1	1	13	10	2	2
58	16	13	2	2	13	12	2	2
59	16	13	2	2	13	12	3	3
60	14	13	4	4	14	14	3	5
61	14	15	4	4	14	18	3	10
62	21	20			22	30		
63	18	20			14	20		
64	18	20			14	20		
65	21	20			20	25		
66	18	18			15	25		
67	18	18			15	25		
68	18	18			15	25		
69	18	18			15	25		
70	20	20			15	25		
71	20	20			15	25		
72	20	20			15	25		
73	20	20			15	25		
74	20	20			15	25		
75	100	100			100	100		

Note: For the 25&out group with membership dates before July 1, 2012, the retirement rates prior to age 55 are 6% for both male and female.

For members hired after June 30, 2012 the retirement rates for members once they reach unreduced retirement eligibility are increased 10% (multiplicative) for each year the member is beyond the age the member would have been eligible under the Hybrid provisions for members hired prior to June 30, 2012.



## TABLE 18 (CONTINUED)

### C. Other Assumptions

1. Projected payroll for contributions: The aggregate projected payroll for the fiscal year following the valuation date is calculated taking the lesser of the actual payroll paid during the previous fiscal year and the current annualized pay on the valuation date and increasing this number by the payroll growth rate.
2. Age difference: Male members are assumed to be four years older than their spouses, and female members are assumed to be four years younger than their spouses.
3. Marriage Assumption: While not implicitly used in the valuation, 100% of active members are assumed to be married when setting other benefit election and eligibility assumptions.
4. Percent electing annuity on death for contributory participants (when eligible): All of the spouses of married participants who die after becoming eligible for a retirement benefit are assumed to elect an annuity or a refund, whichever is more valuable at time of participant's death.
5. Payment Option: Future healthy retirees are assumed to choose the life only payment option. 50% of future disabled retirees are assumed to choose the 100% Joint and Survivor option.
6. Percent electing deferred termination benefit: vested terminating members are assumed to elect a refund or a deferred benefit, whichever is more valuable at the time of termination.
7. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt when eligible for early retirement.
8. Administrative expenses: Administrative expenses are assumed to be 0.35% of active member payroll.
9. Reemployment, purchase of service, transfers: No recognition is made of (i) future member reimbursements upon reemployment, (ii) future purchase of additional service, or (iii) special transfer provisions.
10. Sick Leave: It is assumed that all members will have their benefit service increased by sick leave and the following loads will be applied by group:

General Employees	3.25%
Teachers	3.75%
Police and Fire	5.00%

## TABLE 18 (CONTINUED)

11. COLA delay: It is assumed that the first COLA will be received 9 months after retirement. Teachers are assumed to receive COLA 12 months after retirement,
12. There will be no recoveries once disabled.
13. No surviving spouse will remarry and there will be no children's benefit.
14. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
15. Decrement timing: Retirements and terminations of Teachers are assumed to occur at the beginning of the year. All other decrements are assumed to occur mid-year.
16. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
17. Decrement relativity: Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
18. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
19. Benefit Service: All members are assumed to accrue 1 year of service each year. Exact fractional service is used to determine the amount of benefit payable.
20. Police officers, firefighters, investigators of the Department of the Prosecuting Attorney and the Attorney General, narcotic enforcement investigators, and public safety investigators hired prior to June 30, 2012 are not assumed to retire at age 55 unless they have 10 years of service.

### VII. Participant Data

Participant data was supplied in electronic files for (i) active members, (ii) inactive vested members, who are entitled to a future deferred benefit, (iii) members and beneficiaries receiving benefits.

Salary supplied for the current year was based on the actual pensionable earnings for the 12-month period ending the March preceding the valuation date. This pay was increased by 1% to reflect the three-month difference from March to June. For members with less than one year of service, the base pay rate provided in the data was used

## TABLE 18 (CONTINUED)

### VIII. Dates of Adoption of Assumptions and Methods

The actuarial assumptions and methods were adopted by the Board of Trustees on August 8, 2022 as recommended by Gabriel, Roeder, Smith & Company (GRS).

### IX. Changes in Assumptions and Methods since Prior Valuation

The actuarial assumptions have been revised since the prior valuation. Please see our Experience Study report dated June 14, 2022 for a more extensive discussion of the changes in the actuarial assumptions and the rationale for the current assumptions.

## SECTION N – STATISTICAL TABLES

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**TABLE 19**

**Distribution of Active Members by Age and by Years of Service - All Employees  
As of 06/30/2023**

Attained Age	Years of Credited Service												Total
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.
Under 25	558	267	62	29	15	5	0	0	0	0	0	0	936
	\$48,965	\$48,849	\$52,012	\$50,626	\$46,879	\$30,050	\$0	\$0	\$0	\$0	\$0	\$0	\$49,196
25-29	825	906	602	535	416	425	0	0	0	0	0	0	3,709
	\$50,508	\$52,425	\$54,390	\$57,492	\$57,289	\$57,663	\$0	\$0	\$0	\$0	\$0	\$0	\$54,194
30-34	670	689	454	571	589	2,407	270	0	0	0	0	0	5,650
	\$52,398	\$51,906	\$57,040	\$58,065	\$58,477	\$62,510	\$72,538	\$0	\$0	\$0	\$0	\$0	\$59,187
35-39	515	528	365	497	561	2,373	1,692	325	0	0	0	0	6,856
	\$55,158	\$54,105	\$58,886	\$58,935	\$59,777	\$64,673	\$79,719	\$85,177	\$0	\$0	\$0	\$0	\$66,705
40-44	456	484	335	417	462	2,049	1,718	1,967	277	0	0	0	8,165
	\$54,268	\$54,485	\$57,943	\$59,169	\$59,008	\$64,056	\$78,880	\$87,395	\$86,952	\$0	\$0	\$0	\$71,674
45-49	372	392	267	347	373	1,651	1,395	1,973	1,780	158	2	0	8,710
	\$53,885	\$54,989	\$56,078	\$58,052	\$60,757	\$63,840	\$78,574	\$85,657	\$97,064	\$97,977	\$57,926	\$0	\$77,125
50-54	316	318	207	298	300	1,357	1,139	1,653	1,956	1,547	312	0	9,403
	\$57,599	\$57,802	\$56,176	\$57,940	\$60,303	\$62,441	\$73,853	\$82,651	\$93,518	\$100,735	\$86,915	\$0	\$80,285
55-59	229	254	166	231	233	1,136	901	1,361	1,316	1,259	1,319	157	8,562
	\$57,631	\$51,922	\$59,756	\$55,512	\$57,162	\$60,783	\$71,240	\$76,304	\$85,596	\$93,254	\$94,733	\$92,398	\$78,141
60-64	133	168	116	188	204	936	793	1,084	1,054	791	984	570	7,021
	\$56,560	\$54,503	\$58,330	\$59,215	\$60,329	\$62,261	\$70,924	\$71,702	\$75,536	\$87,073	\$91,105	\$95,578	\$75,736
65 & Over	85	83	73	107	133	697	665	755	760	511	601	761	5,231
	\$62,555	\$58,882	\$69,100	\$58,907	\$61,301	\$64,036	\$70,241	\$72,161	\$76,525	\$84,952	\$92,664	\$104,094	\$78,762
Total	4,159	4,089	2,647	3,220	3,286	13,036	8,573	9,118	7,143	4,266	3,218	1,488	64,243
	\$53,266	\$53,414	\$57,083	\$58,079	\$59,132	\$63,061	\$75,919	\$81,297	\$88,226	\$94,002	\$92,456	\$99,598	\$72,591

**TABLE 20**

**Distribution of Active Members by Age and by Years of Service  
Noncontributory Members, All  
As of 06/30/2023**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
25-29	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
30-34	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
35-39	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$116,890	22 \$61,827	0 \$0	0 \$0	0 \$0	0 \$0	23 \$64,221
40-44	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	4 \$46,196	396 \$81,270	115 \$75,138	0 \$0	0 \$0	0 \$0	515 \$79,628
45-49	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2 \$54,286	7 \$58,496	468 \$81,185	618 \$84,389	49 \$77,572	2 \$57,926	0 \$0	1,146 \$82,532
50-54	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2 \$48,774	346 \$74,419	743 \$81,631	542 \$91,226	117 \$80,007	0 \$0	1,750 \$83,030
55-59	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$36,735	2 \$25,715	338 \$74,226	577 \$76,718	547 \$86,676	521 \$87,327	71 \$83,989	2,057 \$81,826
60-64	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$47,446	1 \$96,852	234 \$66,137	516 \$69,639	366 \$80,620	439 \$84,882	206 \$91,926	1,763 \$77,857
65 & Over	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	4 \$72,041	186 \$64,865	359 \$70,775	260 \$77,613	322 \$88,916	315 \$97,119	1,446 \$81,026
Total	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	4 \$48,188	21 \$59,292	1,990 \$75,335	2,928 \$77,545	1,764 \$85,229	1,401 \$86,273	592 \$93,737	8,700 \$81,047

**TABLE 21**

**Distribution of Active Members by Age and by Years of Service**  
**Noncontributory Members, General Employees**  
**As of 06/30/2023**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
25-29	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
30-34	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
35-39	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$116,890	21 \$61,645	0 \$0	0 \$0	0 \$0	0 \$0	22 \$64,156
40-44	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	4 \$46,196	190 \$75,102	85 \$70,141	0 \$0	0 \$0	0 \$0	279 \$73,176
45-49	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2 \$54,286	7 \$58,496	266 \$76,337	323 \$78,577	31 \$71,231	2 \$57,926	0 \$0	631 \$76,907
50-54	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2 \$48,774	255 \$68,823	500 \$75,716	263 \$85,170	102 \$76,602	0 \$0	1,122 \$76,398
55-59	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$36,735	2 \$25,715	258 \$67,863	458 \$71,858	352 \$81,498	352 \$81,707	60 \$82,607	1,483 \$76,138
60-64	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$47,446	1 \$96,852	197 \$61,784	421 \$63,168	280 \$74,206	347 \$80,375	156 \$88,256	1,403 \$72,235
65 & Over	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$40,188	156 \$60,887	286 \$61,397	205 \$70,457	248 \$79,373	225 \$87,733	1,121 \$72,227
Total	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	4 \$48,188	18 \$55,398	1,343 \$68,949	2,073 \$70,557	1,131 \$78,264	1,051 \$80,176	441 \$87,221	6,061 \$74,459

**TABLE 22**

**Distribution of Active Members by Age and by Years of Service**  
**Noncontributory Members, Teachers**  
**As of 06/30/2023**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
25-29	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
30-34	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
35-39	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$65,639	0 \$0	0 \$0	0 \$0	0 \$0	1 \$65,639
40-44	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	206 \$86,958	30 \$89,295	0 \$0	0 \$0	0 \$0	236 \$87,255
45-49	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	202 \$87,568	295 \$90,753	18 \$88,494	0 \$0	0 \$0	515 \$89,425
50-54	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	91 \$90,101	243 \$93,801	279 \$96,934	15 \$103,157	0 \$0	628 \$94,880
55-59	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	80 \$94,747	119 \$95,423	195 \$96,025	169 \$99,034	11 \$91,526	574 \$96,522
60-64	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	37 \$89,312	95 \$98,315	86 \$101,503	92 \$101,881	50 \$103,375	360 \$99,766
65 & Over	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	3 \$82,659	30 \$85,550	73 \$107,515	55 \$104,285	74 \$120,897	90 \$120,585	325 \$111,378
Total	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	3 \$82,659	647 \$88,590	855 \$94,489	633 \$97,674	350 \$104,582	151 \$112,769	2,639 \$96,178



**TABLE 23**

**Distribution of Active Members by Age and by Years of Service  
Contributory Members, All  
As of 06/30/2023**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	25 \$67,759	41 \$67,816	19 \$71,814	6 \$70,761	1 \$62,689	2 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	94 \$68,743
25-29	32 \$63,759	68 \$66,377	64 \$72,359	96 \$72,610	65 \$71,585	58 \$74,062	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	383 \$70,768
30-34	27 \$54,196	46 \$62,897	53 \$71,653	86 \$70,744	76 \$71,508	303 \$77,187	64 \$91,591	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	655 \$74,690
35-39	19 \$58,247	23 \$62,725	27 \$69,596	48 \$71,111	50 \$72,272	268 \$77,381	306 \$103,724	68 \$125,560	0 \$0	0 \$0	0 \$0	0 \$0	809 \$89,582
40-44	8 \$56,287	11 \$66,791	10 \$71,107	18 \$71,399	17 \$71,965	138 \$79,086	221 \$103,376	330 \$120,553	58 \$129,212	0 \$0	0 \$0	0 \$0	811 \$105,353
45-49	10 \$73,999	5 \$122,069	5 \$74,939	6 \$92,141	9 \$74,933	60 \$85,562	160 \$104,981	269 \$122,635	351 \$138,071	35 \$147,492	0 \$0	0 \$0	910 \$122,524
50-54	3 \$58,417	2 \$192,472	5 \$139,008	2 \$73,966	5 \$81,899	27 \$93,388	62 \$105,582	180 \$123,238	374 \$135,426	218 \$153,062	22 \$149,256	0 \$0	900 \$133,737
55-59	1 \$70,708	2 \$120,285	2 \$97,603	3 \$107,734	2 \$71,799	7 \$89,552	20 \$114,682	49 \$125,895	123 \$134,831	104 \$148,194	62 \$156,986	9 \$170,620	384 \$138,875
60-64	0 \$0	0 \$0	1 \$63,960	4 \$174,254	3 \$162,382	9 \$79,994	11 \$116,399	13 \$116,738	17 \$137,986	33 \$140,942	30 \$138,074	40 \$116,497	161 \$127,733
65 & Over	1 \$73,071	2 \$47,788	0 \$0	1 \$77,352	2 \$73,419	8 \$172,482	5 \$112,882	6 \$143,040	13 \$144,261	11 \$131,183	11 \$154,525	97 \$107,182	157 \$118,536
Total	126 \$62,012	200 \$68,481	186 \$73,721	270 \$73,985	230 \$73,256	880 \$79,378	849 \$103,567	915 \$122,444	936 \$136,124	401 \$149,716	125 \$150,870	146 \$113,645	5,264 \$107,288

**TABLE 24**

**Distribution of Active Members by Age and by Years of Service**  
**Contributory Members, General Employees**  
**As of 06/30/2023**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
25-29	2 \$73,072	0 \$0	4 \$60,309	0 \$0	3 \$61,861	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	9 \$63,663
30-34	1 \$73,071	0 \$0	0 \$0	1 \$61,158	1 \$32,204	3 \$47,742	1 \$69,593	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	7 \$54,179
35-39	4 \$72,648	3 \$45,401	1 \$40,270	0 \$0	2 \$69,995	4 \$69,131	9 \$75,617	1 \$79,123	0 \$0	0 \$0	0 \$0	0 \$0	24 \$68,469
40-44	1 \$73,071	0 \$0	0 \$0	1 \$65,280	2 \$64,927	7 \$101,221	4 \$89,229	6 \$64,096	2 \$102,896	0 \$0	0 \$0	0 \$0	23 \$83,654
45-49	2 \$138,186	2 \$203,301	0 \$0	2 \$132,323	1 \$87,129	4 \$159,263	8 \$122,937	10 \$106,754	11 \$86,041	0 \$0	0 \$0	0 \$0	40 \$116,732
50-54	1 \$73,071	1 \$210,419	4 \$137,491	0 \$0	1 \$70,708	7 \$120,247	6 \$128,197	17 \$146,569	16 \$110,281	9 \$144,218	2 \$113,827	0 \$0	64 \$129,638
55-59	1 \$70,708	1 \$203,301	1 \$59,146	3 \$107,734	0 \$0	5 \$93,080	3 \$182,809	11 \$135,960	14 \$119,019	8 \$113,829	5 \$68,616	1 \$138,119	53 \$117,431
60-64	0 \$0	0 \$0	0 \$0	3 \$206,444	2 \$204,731	7 \$78,914	5 \$129,312	7 \$120,574	4 \$122,447	5 \$121,110	10 \$97,387	20 \$82,194	63 \$107,696
65 & Over	1 \$73,071	2 \$47,788	0 \$0	0 \$0	1 \$80,441	8 \$172,482	5 \$112,882	4 \$152,714	9 \$153,433	7 \$117,884	5 \$199,376	72 \$97,098	114 \$114,020
Total	13 \$82,777	9 \$116,900	10 \$89,061	10 \$133,362	13 \$87,336	45 \$111,216	41 \$112,662	56 \$124,524	56 \$115,244	29 \$125,494	22 \$115,522	93 \$94,334	397 \$109,553

**TABLE 25**

**Distribution of Active Members by Age and by Years of Service  
Contributory Members, Teachers  
As of 06/30/2023**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
25-29	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
30-34	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
35-39	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
40-44	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
45-49	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$74,740	1 \$81,486	1 \$94,958	0 \$0	0 \$0	3 \$83,728
50-54	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$117,183	0 \$0	0 \$0	0 \$0	1 \$117,183
55-59	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$106,628	1 \$77,692	0 \$0	2 \$92,160
60-64	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$71,728	1 \$94,867	4 \$103,540	6 \$96,793
65 & Over	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$203,588	3 \$109,316	19 \$130,708	23 \$131,087
Total	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$74,740	2 \$99,335	4 \$119,225	5 \$100,101	23 \$125,983	35 \$118,527

**TABLE 26**

**Distribution of Active Members by Age and by Years of Service  
Contributory Members, Police and Firefighters  
As of 06/30/2023**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	25 \$67,759	41 \$67,816	19 \$71,814	6 \$70,761	1 \$62,689	2 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	94 \$68,743
25-29	30 \$63,138	68 \$66,377	60 \$73,162	96 \$72,610	62 \$72,055	58 \$74,062	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	374 \$70,939
30-34	26 \$53,470	46 \$62,897	53 \$71,653	85 \$70,857	75 \$72,032	300 \$77,481	63 \$91,940	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	648 \$74,912
35-39	15 \$54,407	20 \$65,323	26 \$70,724	48 \$71,111	48 \$72,367	264 \$77,506	297 \$104,576	67 \$126,253	0 \$0	0 \$0	0 \$0	0 \$0	785 \$90,227
40-44	7 \$53,889	11 \$66,791	10 \$71,107	17 \$71,759	15 \$72,903	131 \$77,903	217 \$103,637	324 \$121,598	56 \$130,152	0 \$0	0 \$0	0 \$0	788 \$105,986
45-49	8 \$57,952	3 \$67,914	5 \$74,939	4 \$72,050	8 \$73,408	56 \$80,298	152 \$104,036	258 \$123,436	339 \$139,926	34 \$149,037	0 \$0	0 \$0	867 \$122,925
50-54	2 \$51,090	1 \$174,525	1 \$145,076	2 \$73,966	4 \$84,697	20 \$83,987	56 \$103,159	163 \$120,805	357 \$136,604	209 \$153,443	20 \$152,799	0 \$0	835 \$134,071
55-59	0 \$0	1 \$37,269	1 \$136,060	0 \$0	2 \$71,799	2 \$80,734	17 \$102,659	38 \$122,981	109 \$136,862	95 \$151,526	56 \$166,292	8 \$174,683	329 \$142,613
60-64	0 \$0	0 \$0	1 \$63,960	1 \$77,684	1 \$77,684	2 \$83,775	6 \$105,638	6 \$112,262	13 \$142,767	27 \$147,178	19 \$161,762	16 \$162,615	92 \$143,472
65 & Over	0 \$0	0 \$0	0 \$0	1 \$77,352	1 \$66,397	0 \$0	0 \$0	2 \$123,692	4 \$123,624	3 \$138,079	3 \$124,982	6 \$153,687	20 \$129,847
Total	113 \$59,623	191 \$66,199	176 \$72,849	260 \$71,701	217 \$72,412	835 \$77,662	808 \$103,106	858 \$122,364	878 \$137,539	368 \$151,956	98 \$161,395	30 \$164,047	4,832 \$107,020

# TABLE 27

## Distribution of Active Members by Age and by Years of Service Hybrid Members, All As of 06/30/2023

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	533	226	43	23	14	3	0	0	0	0	0	0	842
	\$48,084	\$45,409	\$43,262	\$45,374	\$45,750	\$50,084	\$0	\$0	\$0	\$0	\$0	\$0	\$47,014
25-29	793	838	538	439	351	367	0	0	0	0	0	0	3,326
	\$49,974	\$51,293	\$52,252	\$54,186	\$54,642	\$55,072	\$0	\$0	\$0	\$0	\$0	\$0	\$52,286
30-34	643	643	401	485	513	2,104	206	0	0	0	0	0	4,995
	\$52,322	\$51,120	\$55,108	\$55,816	\$56,546	\$60,396	\$66,618	\$0	\$0	\$0	\$0	\$0	\$57,155
35-39	496	505	338	449	511	2,105	1,385	235	0	0	0	0	6,024
	\$55,040	\$53,712	\$58,031	\$57,634	\$58,554	\$63,055	\$74,388	\$75,678	\$0	\$0	\$0	\$0	\$63,642
40-44	448	473	325	399	445	1,911	1,493	1,241	104	0	0	0	6,839
	\$54,232	\$54,199	\$57,538	\$58,618	\$58,513	\$62,971	\$75,341	\$80,532	\$76,448	\$0	\$0	\$0	\$67,081
45-49	362	387	262	341	364	1,589	1,228	1,236	811	74	0	0	6,654
	\$53,329	\$54,122	\$55,718	\$57,452	\$60,407	\$63,031	\$75,247	\$79,303	\$88,974	\$88,070	\$0	\$0	\$69,985
50-54	313	316	202	296	295	1,330	1,075	1,127	839	787	173	0	6,753
	\$57,591	\$56,950	\$54,126	\$57,832	\$59,937	\$61,812	\$72,070	\$78,695	\$85,364	\$92,790	\$83,658	\$0	\$72,449
55-59	228	252	164	228	231	1,128	879	974	616	608	736	77	6,121
	\$57,574	\$51,379	\$59,294	\$54,825	\$57,035	\$60,626	\$70,356	\$74,530	\$84,081	\$89,773	\$94,730	\$91,009	\$73,093
60-64	133	168	115	184	201	926	781	837	521	392	515	324	5,097
	\$56,560	\$54,503	\$58,282	\$56,714	\$58,805	\$62,105	\$70,251	\$72,558	\$79,339	\$88,563	\$93,673	\$95,317	\$73,361
65 & Over	84	81	73	106	131	689	656	563	388	240	268	349	3,628
	\$62,430	\$59,156	\$69,100	\$58,733	\$61,116	\$62,777	\$69,905	\$73,816	\$79,577	\$90,784	\$94,629	\$109,532	\$76,139
Total	4,033	3,889	2,461	2,950	3,056	12,152	7,703	6,213	3,279	2,101	1,692	750	50,279
	\$52,993	\$52,639	\$55,826	\$56,623	\$58,069	\$61,884	\$72,917	\$77,147	\$84,091	\$90,733	\$93,261	\$101,490	\$67,495

# TABLE 28

## Distribution of Active Members by Age and by Years of Service Hybrid Members, General Employees As of 06/30/2023

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	311 \$46,983	148 \$43,203	37 \$41,805	23 \$45,374	13 \$45,683	3 \$50,084	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	535 \$45,496
25-29	516 \$49,777	554 \$50,602	283 \$49,771	258 \$52,494	213 \$51,137	257 \$52,268	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2,081 \$50,780
30-34	462 \$50,607	489 \$50,367	268 \$54,215	342 \$54,975	359 \$54,694	1,300 \$57,151	121 \$63,029	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	3,341 \$54,744
35-39	362 \$54,204	391 \$52,984	249 \$57,765	339 \$54,280	384 \$55,191	1,525 \$60,960	729 \$72,995	155 \$71,975	0 \$0	0 \$0	0 \$0	0 \$0	4,134 \$60,873
40-44	300 \$51,674	370 \$54,004	234 \$55,725	301 \$56,017	339 \$55,299	1,398 \$59,443	918 \$73,481	677 \$78,039	71 \$70,112	0 \$0	0 \$0	0 \$0	4,608 \$63,476
45-49	261 \$50,350	300 \$53,230	206 \$54,274	256 \$55,486	290 \$57,265	1,223 \$59,212	857 \$72,274	795 \$74,890	405 \$84,805	38 \$76,774	0 \$0	0 \$0	4,631 \$65,268
50-54	238 \$56,189	247 \$57,045	160 \$52,862	227 \$55,673	229 \$57,426	1,033 \$57,639	775 \$66,990	806 \$73,258	552 \$79,781	358 \$85,713	131 \$77,650	0 \$0	4,756 \$66,676
55-59	182 \$54,930	215 \$50,739	137 \$58,125	190 \$52,604	195 \$54,978	920 \$57,352	693 \$66,514	761 \$70,321	449 \$77,949	378 \$84,613	450 \$91,219	64 \$89,126	4,634 \$68,125
60-64	114 \$56,016	141 \$53,938	101 \$58,303	166 \$56,755	161 \$55,315	790 \$59,603	625 \$64,896	666 \$68,181	410 \$72,719	276 \$80,942	368 \$90,013	218 \$89,634	4,036 \$68,405
65 & Over	59 \$60,068	66 \$57,651	58 \$70,081	88 \$57,282	104 \$58,109	591 \$59,435	544 \$66,228	447 \$67,069	306 \$71,638	176 \$81,322	202 \$88,689	242 \$102,767	2,883 \$70,291
Total	2,805 \$51,780	2,921 \$52,083	1,733 \$54,899	2,190 \$54,772	2,287 \$55,307	9,040 \$58,725	5,262 \$69,334	4,307 \$72,318	2,193 \$77,564	1,226 \$83,392	1,151 \$88,845	524 \$95,637	35,639 \$63,718

# TABLE 29

## Distribution of Active Members by Age and by Years of Service Hybrid Members, Teachers As of 06/30/2023

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 25	222 \$49,626	78 \$49,593	6 \$52,248	0 \$0	1 \$46,616	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	307 \$49,659
25-29	277 \$50,340	284 \$52,642	255 \$55,005	181 \$56,597	138 \$60,052	110 \$61,622	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1,245 \$54,804
30-34	181 \$56,700	154 \$53,512	133 \$56,908	143 \$57,828	154 \$60,862	804 \$65,643	85 \$71,727	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1,654 \$62,024
35-39	134 \$57,298	114 \$56,211	89 \$58,774	110 \$67,969	127 \$68,724	580 \$68,564	656 \$75,936	80 \$82,853	0 \$0	0 \$0	0 \$0	0 \$0	1,890 \$69,699
40-44	148 \$59,417	103 \$54,900	91 \$62,200	98 \$66,605	106 \$68,790	513 \$72,585	575 \$78,310	564 \$83,525	33 \$90,080	0 \$0	0 \$0	0 \$0	2,231 \$74,528
45-49	101 \$61,027	87 \$57,198	56 \$61,031	85 \$63,371	74 \$72,720	366 \$75,795	371 \$82,115	441 \$87,258	406 \$93,133	36 \$99,993	0 \$0	0 \$0	2,023 \$80,783
50-54	75 \$62,040	69 \$56,608	42 \$58,941	69 \$64,935	66 \$68,650	297 \$76,329	300 \$85,192	321 \$92,348	287 \$96,102	429 \$98,696	42 \$102,399	0 \$0	1,997 \$86,199
55-59	46 \$68,034	37 \$55,097	27 \$65,226	38 \$65,927	36 \$68,182	208 \$75,107	186 \$84,670	213 \$89,567	167 \$100,567	230 \$98,254	286 \$100,256	13 \$100,276	1,487 \$88,573
60-64	19 \$59,827	27 \$57,455	14 \$58,128	18 \$56,340	40 \$72,854	136 \$76,638	156 \$91,704	171 \$89,604	111 \$103,794	116 \$106,696	147 \$102,837	106 \$107,005	1,061 \$92,213
65 & Over	25 \$68,004	15 \$65,779	15 \$65,305	18 \$65,824	27 \$72,697	98 \$82,929	112 \$87,768	116 \$99,814	82 \$109,203	64 \$116,805	66 \$112,810	107 \$124,831	745 \$98,768
Total	1,228 \$55,764	968 \$54,319	728 \$58,032	760 \$61,959	769 \$66,281	3,112 \$71,061	2,441 \$80,641	1,906 \$88,059	1,086 \$97,271	875 \$101,019	541 \$102,655	226 \$115,058	14,640 \$76,691

# TABLE 30

## Summary of Pensions in Force by Type of Retirement

Employee Group	Contributory		Noncontributory		Hybrid	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
All Employees	16,669	\$ 3,807	17,781	\$ 1,909	15,242	\$ 2,555
	Service		Service		Service	
Total	16,353	\$ 3,844	16,883	\$ 1,951	14,702	\$ 2,587
General Employees - male	2,973	3,356	5,437	1,974	4,368	2,664
General Employees - female	4,715	2,423	6,851	1,514	6,456	2,224
Teachers - male	1,014	4,056	1,436	2,732	1,128	3,477
Teachers - female	3,495	3,701	3,159	2,505	2,750	2,953
Police and Firefighters	4,156	5,874	-	-	-	-
	Ordinary Disability		Ordinary Disability		Ordinary Disability	
Total	113	\$ 1,213	684	\$ 1,124	383	\$ 1,694
General Employees - male	33	1,140	315	1,121	173	1,552
General Employees - female	35	887	284	983	132	1,645
Teachers - male	4	1,790	31	1,737	20	2,330
Teachers - female	14	1,649	54	1,529	58	2,008
Police and Firefighters	27	1,413	-	-	-	-
	Accidental Disability		Accidental Disability		Accidental Disability	
Total	203	\$ 2,256	214	\$ 1,132	157	\$ 1,623
General Employees - male	66	1,883	110	1,204	71	1,599
General Employees - female	36	1,683	97	1,020	72	1,586
Teachers - male	-	-	1	1,311	2	1,707
Teachers - female	4	4,106	6	1,582	12	1,970
Police and Firefighters	97	2,647	-	-	-	-



**TABLE 31****Summary of Pensions in Force by Age and Type****General Employees**

Age	Type of Pension			
	Total	Service	Ordinary Disability	Accidental Disability
Total	32,224	30,800	972	452
Contributory				
Total	7,858	7,688	68	102
30-39	1	1	-	-
40-44	2	2	-	-
45-49	4	4	-	-
50-54	7	6	-	1
55-59	38	36	1	1
60-64	238	227	3	8
65-69	677	653	9	15
70-74	1,070	1,048	15	7
75-79	1,379	1,354	8	17
80-84	1,321	1,280	15	26
85-89	1,359	1,348	3	8
90-94	1,150	1,132	8	10
95-99	533	520	6	7
100 & over	79	77	-	2
Noncontributory				
Total	13,094	12,288	599	207
30-39	-	-	-	-
40-44	-	-	-	-
45-49	5	1	3	1
50-54	31	5	19	7
55-59	306	251	44	11
60-64	1,039	894	112	33
65-69	2,507	2,325	124	58
70-74	3,103	2,916	142	45
75-79	3,052	2,929	99	24
80-84	1,941	1,875	47	19
85-89	823	809	9	5
90-94	241	237	-	4
95-99	45	45	-	-
100 & over	1	1	-	-
Hybrid				
Total	11,272	10,824	305	143
30-39	2	-	1	1
40-44	5	-	2	3
45-49	10	-	6	4
50-54	30	5	15	10
55-59	451	387	47	17
60-64	1,657	1,546	87	24
65-69	3,497	3,381	78	38
70-74	3,506	3,430	47	29
75-79	1,667	1,637	18	12
80-84	365	356	4	5
85-89	66	66	-	-
90-94	16	16	-	-
95-99	-	-	-	-
100 & over	-	-	-	-

**TABLE 32****Summary of Pensions in Force by Age and Type****Teachers**

Age	Type of Pension			
	Total	Service	Ordinary Disability	Accidental Disability
Total	13,188	12,982	181	25
Contributory				
Total	4,531	4,509	18	4
30-39	-	-	-	-
40-44	-	-	-	-
45-49	-	-	-	-
50-54	-	-	-	-
55-59	3	3	-	-
60-64	41	41	-	-
65-69	176	174	2	-
70-74	477	473	4	-
75-79	1,122	1,116	5	1
80-84	965	961	3	1
85-89	944	942	2	-
90-94	617	615	1	1
95-99	152	151	-	1
100 & over	34	33	1	-
Noncontributory				
Total	4,687	4,595	85	7
30-39	-	-	-	-
40-44	-	-	-	-
45-49	-	-	-	-
50-54	5	-	5	-
55-59	103	93	10	-
60-64	254	236	17	1
65-69	546	524	19	3
70-74	1,043	1,026	15	2
75-79	1,478	1,463	14	1
80-84	892	888	4	-
85-89	280	279	1	-
90-94	77	77	-	-
95-99	8	8	-	-
100 & over	1	1	-	-
Hybrid				
Total	3,970	3,878	78	14
30-39	-	-	-	-
40-44	2	-	2	-
45-49	2	-	2	-
50-54	11	-	9	2
55-59	169	155	13	1
60-64	556	531	20	5
65-69	1,013	996	13	4
70-74	1,324	1,306	17	1
75-79	695	692	2	1
80-84	161	161	-	-
85-89	33	33	-	-
90-94	4	4	-	-
95-99	-	-	-	-
100 & over	-	-	-	-

**TABLE 33****Summary of Pensions in Force by Age and Type****Police and Firefighters**

Age	Type of Pension			
	Total	Service	Ordinary Disability	Accidental Disability
Total	4,280	4,156	27	97
30-39	-	-	-	-
40-44	3	-	-	3
45-49	26	24	1	1
50-54	295	282	5	8
55-59	665	651	3	11
60-64	724	715	4	5
65-69	669	655	1	13
70-74	727	701	6	20
75-79	622	598	3	21
80-84	352	339	3	10
85-89	143	138	1	4
90-94	42	41	-	1
95-99	11	11	-	-
100 & over	1	1	-	-

**TABLE 34**

**Noncontributory Service Pensions in Force**  
**by Years of Service**

Years of Service	Total		General Employees		Teachers	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	16,883	\$ 1,951	12,288	\$ 1,717	4,595	\$ 2,576
Less than 5	4	781	4	781	-	-
5-9	10	746	7	776	3	677
10-14	2,962	625	2,366	593	596	755
15-19	2,443	1,040	1,899	970	544	1,281
20-24	2,623	1,384	2,044	1,280	579	1,748
25-29	2,297	1,980	1,756	1,817	541	2,509
30-34	4,036	2,766	2,566	2,542	1,470	3,157
35 and over	2,508	3,667	1,646	3,354	862	4,266

**TABLE 35**

**Noncontributory Service Pensions in Force**  
**by Years Since Retirement**

Years Since Retirement	Total		General Employees		Teachers	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	16,883	\$ 1,951	12,288	\$ 1,717	4,595	\$ 2,576
Less than 5	3,815	1,893	3,015	1,746	800	2,447
5-9	3,813	1,745	2,921	1,615	892	2,171
10-14	3,086	1,921	2,291	1,680	795	2,615
15-19	3,169	2,051	2,173	1,746	996	2,716
20-24	2,045	2,183	1,300	1,788	745	2,870
25-29	840	2,293	524	1,983	316	2,807
30 -34	109	2,207	61	1,828	48	2,689
35 and over	6	982	3	920	3	1,044

**TABLE 36-1**

**Contributory Service Pensions in Force**  
**by Years of Service**

Years of Service	Total		General Employees		Teachers		Police and Firefighters	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	16,353	\$ 3,844	7,688	\$ 2,784	4,509	\$ 3,781	4,156	\$ 5,874
Less than 5	7	1,415	4	1,294	2	811	1	3,108
5-9	378	513	281	584	84	256	13	641
10-14	751	1,040	585	1,041	107	814	59	1,439
15-19	1,072	1,699	826	1,607	149	1,522	97	2,758
20-24	1,601	2,262	1,099	1,933	310	2,345	192	4,013
25-29	5,387	4,117	1,818	2,709	1,135	3,229	2,434	5,583
30-34	4,999	4,652	1,820	3,634	1,959	4,085	1,220	7,082
35 and over	2,158	5,097	1,255	4,488	763	5,659	140	7,499

**TABLE 36-2****Hybrid Service Pensions in Force****by Years of Service**

Years of Service	Total		General Employees		Teachers	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	14,702	\$ 2,587	10,824	\$ 2,402	3,878	\$ 3,105
Less than 5	7	1,032	5	1,224	2	553
5-9	1,213	760	963	757	250	768
10-14	2,124	1,110	1,723	1,068	401	1,289
15-19	2,042	1,598	1,558	1,529	484	1,822
20-24	1,997	2,015	1,420	1,873	577	2,364
25-29	1,936	2,782	1,386	2,609	550	3,218
30-34	3,372	3,670	2,373	3,544	999	3,970
35 and over	2,011	4,825	1,396	4,552	615	5,446

**TABLE 37-1**

**Contributory Service Pensions in Force  
by Years Since Retirement**

Years Since Retirement	Total		General Employees		Teachers		Police and Firefighters	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	16,353	\$ 3,844	7,688	\$ 2,784	4,509	\$ 3,781	4,156	\$ 5,874
Less than 5	1,289	6,820	315	5,083	86	5,512	888	7,563
5-9	1,501	5,676	527	4,149	186	5,494	788	6,740
10-14	1,982	4,793	977	3,606	356	5,071	649	6,429
15-19	2,457	3,933	1,195	3,014	745	4,476	517	5,273
20-24	2,778	3,438	1,320	2,687	876	3,868	582	4,494
25-29	2,863	3,111	1,462	2,450	976	3,572	425	4,324
30-34	2,066	2,537	1,059	1,951	815	3,028	192	3,683
35 -39	1,417	1,900	833	1,553	469	2,283	115	2,854
40-44	-	-	-	-	-	-	-	-
45 and over	-	-	-	-	-	-	-	-



**TABLE 37-2****Hybrid Service Pensions in Force****by Years Since Retirement**

Years Since Retirement	Total		General Employees		Teachers	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	14,702	\$ 2,587	10,824	\$ 2,402	3,878	\$ 3,105
Less than 5	5,866	2,640	4,475	2,437	1,391	3,291
5-9	5,070	2,473	3,698	2,292	1,372	2,961
10-14	3,153	2,713	2,243	2,548	910	3,118
15-19	613	2,385	408	2,201	205	2,752

**TABLE 38****Pensions in Force by Payment Option****General Employees**

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	32,224	\$ 2,183	30,800	\$ 2,224	972	\$ 1,221	452	\$ 1,425	-	\$ -
	Contributory									
Total	7,858	\$ 2,756	7,688	\$ 2,784	68	\$ 1,010	102	\$ 1,812	-	\$ -
Maximum	1,164	2,971	1,142	3,003	13	1,239	9	1,407	-	-
Option 1	419	2,167	400	2,211	11	1,148	8	1,372	-	-
Option 2	599	3,425	577	3,484	7	1,693	15	1,994	-	-
Option 3	328	3,945	324	3,976	3	1,001	1	2,687	-	-
Option 4	3,467	2,932	3,401	2,958	22	897	44	1,903	-	-
Option 5	1,881	2,010	1,844	2,023	12	443	25	1,796	-	-
	Noncontributory									
Total	13,094	\$ 1,678	12,288	\$ 1,717	599	\$ 1,055	207	\$ 1,118	-	\$ -
Maximum	6,650	1,660	6,327	1,690	231	1,043	92	1,147	-	-
Option A	2,741	1,771	2,615	1,802	85	1,162	41	1,090	-	-
Option B	3,002	1,630	2,686	1,699	252	1,025	64	1,122	-	-
Option C	701	1,676	660	1,714	31	1,104	10	939	-	-
	Hybrid									
Total	11,272	\$ 2,370	10,824	\$ 2,402	305	\$ 1,592	143	\$ 1,593	-	\$ -
Maximum	4,030	2,323	3,907	2,345	75	1,674	48	1,550	-	-
Option 1	747	2,163	726	2,174	14	1,713	7	1,876	-	-
Option 2	2,492	2,432	2,339	2,490	102	1,533	51	1,572	-	-
Option 3	1,554	2,868	1,508	2,907	29	1,624	17	1,589	-	-
Option 4	1,485	2,306	1,424	2,336	54	1,557	7	2,115	-	-
Option 5	964	1,855	920	1,871	31	1,568	13	1,399	-	-

**TABLE 39****Pensions in Force by Payment Option****Teachers**

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	13,188	\$ 3,132	12,982	\$ 3,153	181	\$ 1,822	25	\$ 2,171	-	\$ -
	Contributory									
Total	4,531	\$ 3,773	4,509	\$ 3,781	18	\$ 1,680	4	\$ 4,106	-	\$ -
Maximum	722	4,128	715	4,145	6	1,984	1	4,962	-	-
Option 1	180	3,386	179	3,395	1	1,731	-	-	-	-
Option 2	165	3,986	165	3,986	-	-	-	-	-	-
Option 3	144	4,753	143	4,762	1	3,559	-	-	-	-
Option 4	1,935	4,121	1,927	4,129	6	1,753	2	3,141	-	-
Option 5	1,385	3,024	1,380	3,030	4	633	1	5,178	-	-
	Noncontributory									
Total	4,687	\$ 2,557	4,595	\$ 2,576	85	\$ 1,605	7	\$ 1,543	-	\$ -
Maximum	2,870	2,612	2,823	2,628	41	1,650	6	1,582	-	-
Option A	821	2,685	812	2,694	8	1,897	1	1,311	-	-
Option B	761	2,256	728	2,293	33	1,452	-	-	-	-
Option C	235	2,410	232	2,417	3	1,904	-	-	-	-
	Hybrid									
Total	3,970	\$ 3,081	3,878	\$ 3,105	78	\$ 2,091	14	\$ 1,932	-	\$ -
Maximum	1,617	2,993	1,581	3,015	29	2,098	7	1,868	-	-
Option 1	196	2,967	192	2,985	4	2,136	-	-	-	-
Option 2	825	3,058	800	3,080	19	2,474	6	1,948	-	-
Option 3	571	3,501	561	3,527	9	1,991	1	2,287	-	-
Option 4	412	3,204	399	3,252	13	1,730	-	-	-	-
Option 5	349	2,774	345	2,788	4	1,570	-	-	-	-

**TABLE 40**  
**Pensions in Force by Payment Option**  
**Police and Firefighters**

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	4,280	\$ 5,773	4,156	\$ 5,874	27	\$ 1,413	97	\$ 2,647	-	\$ -
Maximum	219	6,437	204	6,716	-	-	15	2,647	-	-
Option 1	55	5,665	48	5,988	1	2,851	6	3,552	-	-
Option 2	340	6,341	317	6,603	9	2,067	14	3,159	-	-
Option 3	161	7,470	157	7,600	2	1,440	2	3,252	-	-
Option 4	2,595	6,118	2,564	6,162	6	1,134	25	2,856	-	-
Option 5	910	4,122	866	4,238	9	780	35	2,103	-	-

**TABLE 41****Pensions in Force by Payment Option****General Employees - New Retirees**

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	1,732	\$ 2,121	1,676	\$ 2,146	37	\$ 1,415	19	\$ 1,301	-	\$ -
	Contributory									
Total	62	\$ 4,269	62	\$ 4,269	-	\$ -	-	\$ -	-	\$ -
Maximum	13	3,348	13	3,348	-	-	-	-	-	-
Option 1	4	6,142	4	6,142	-	-	-	-	-	-
Option 2	9	3,745	9	3,745	-	-	-	-	-	-
Option 3	5	5,089	5	5,089	-	-	-	-	-	-
Option 4	29	4,520	29	4,520	-	-	-	-	-	-
Option 5	2	3,182	2	3,182	-	-	-	-	-	-
	Noncontributory									
Total	685	\$ 1,744	661	\$ 1,764	16	\$ 1,068	8	\$ 1,403	-	\$ -
Maximum	318	1,657	308	1,680	7	828	3	1,282	-	-
Option A	143	1,796	142	1,803	-	-	1	774	-	-
Option B	184	1,883	171	1,921	9	1,255	4	1,650	-	-
Option C	40	1,604	40	1,604	-	-	-	-	-	-
	Hybrid									
Total	985	\$ 2,248	953	\$ 2,272	21	\$ 1,680	11	\$ 1,227	-	\$ -
Maximum	348	2,336	339	2,353	6	1,643	3	1,875	-	-
Option 1	73	2,265	72	2,283	-	-	1	960	-	-
Option 2	206	2,363	196	2,391	6	2,083	4	1,418	-	-
Option 3	132	2,654	129	2,680	2	1,699	1	1,241	-	-
Option 4	139	1,875	135	1,889	4	1,416	-	-	-	-
Option 5	87	1,616	82	1,635	3	1,287	2	1,332	-	-

**TABLE 42**  
**Pensions in Force by Payment Option**

**Teachers - New Retirees**

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	428	\$ 3,043	414	\$ 3,073	12	\$ 2,256	2	\$ -	-	\$ -
	Contributory									
Total	12	\$ 5,917	12	\$ 5,917	-	\$ -	-	\$ -	-	\$ -
Maximum	2	4,235	2	4,235	-	-	-	-	-	-
Option 1	1	4,982	1	4,982	-	-	-	-	-	-
Option 2	1	10,156	1	10,156	-	-	-	-	-	-
Option 3	-	-	-	-	-	-	-	-	-	-
Option 4	7	6,697	7	6,697	-	-	-	-	-	-
Option 5	1	516	1	516	-	-	-	-	-	-
	Noncontributory									
Total	142	\$ 2,655	140	\$ 2,662	2	\$ 2,211	-	\$ -	-	\$ -
Maximum	67	2,762	66	2,759	1	2,946	-	-	-	-
Option A	33	2,923	33	2,923	-	-	-	-	-	-
Option B	38	2,156	37	2,175	1	1,476	-	-	-	-
Option C	4	3,402	4	3,402	-	-	-	-	-	-
	Hybrid									
Total	274	\$ 3,118	262	\$ 3,162	10	\$ 2,265	2	\$ 1,631	-	\$ -
Maximum	103	3,252	99	3,296	3	2,271	1	1,817	-	-
Option 1	12	2,842	12	2,842	-	-	-	-	-	-
Option 2	56	3,326	51	3,408	4	2,761	1	1,445	-	-
Option 3	45	2,963	43	2,989	2	2,400	-	-	-	-
Option 4	36	2,950	36	2,950	-	-	-	-	-	-
Option 5	22	2,750	21	2,831	1	1,055	-	-	-	-

**TABLE 43****Pensions in Force by Payment Option****Police and Firefighters - New Retirees**

Type of Option	Total		Service		Ordinary Disability		Accidental Disability		Other	
	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
Total	149	\$ 6,708	149	\$ 6,708	-	\$ -	-	\$ -	-	\$ -
Maximum	11	6,337	11	6,337	-	-	-	-	-	-
Option 1	3	2,571	3	2,571	-	-	-	-	-	-
Option 2	20	7,052	20	7,052	-	-	-	-	-	-
Option 3	15	8,642	15	8,642	-	-	-	-	-	-
Option 4	76	6,911	76	6,911	-	-	-	-	-	-
Option 5	24	5,258	24	5,258	-	-	-	-	-	-

## SECTION O – DEFINITION OF ACTUARIAL TERMS

1. *Actuarial Accrued Liability* – for benefits payable in the future to present members, it will equal the present value of benefits payable in the future to them less the present value of future normal costs.
2. *Actuarial Assumptions* – assumptions as to future experience under ERS. Current actuarial assumptions are detailed in Table 18 of the current annual valuation report. Assumptions include future fund earnings rate, rates of future salary increases, and rates of death (both before and after retirement), disability, retirement, and withdrawal.
3. *Actuarial Gain or Actuarial Loss* - a measure of the difference between actual experience and assumed experience of ERS. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, actuarial liabilities emerge which may be the same as forecasted, or they may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., ERS's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.
4. *Actuarial Liabilities* - the actuarially determined present value of future benefits to be provided by ERS. There are separate actuarially determined present values for retired members and non-retired members (either active or inactive). When applied to active members, it takes into account benefits which will be earned through future service and future salary increases.
5. *Actuarial Value of Present Assets* - the value of present ERS assets for valuation purposes. This value is calculated under a four-year phase-in of the excess (shortfall) between expected and actual income return.
6. *Actuarially Determined* - values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
7. *Decrement*s - those types of activities by members of ERS which cause them no longer to be members, i.e., death, retirement, disability, and withdrawal. It is a general term referring to any or all of these membership-terminating events.
8. *Defined Benefits* - in a retirement plan, benefits which are defined by a specific formula applied to specific member compensation and/or specific years of service. The amount of the benefit is not a function of contributions or actual earnings on those contributions.
9. *Defined Contributions* - in a retirement plan, periodic contributions to the plan which are defined as a specific percent of compensation.



10. *Experience Study* - a periodic review and analysis of the actual experience of ERS which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
11. *Funding Period* - the number of years in the future that will be required to fund (i.e., pay off or eliminate) the unfunded actuarial accrued liability, based on the actuarial assumptions and assuming no future actuarial gains or losses.
12. *Future Benefits* - benefits specified in the law which will become payable at some time in the future when the member satisfies the requirement to receive such benefits.
13. *Future Contributions* - contributions to be made by the member or the employers in the future.
14. *Normal Cost* - the actuarial cost to fund the benefits provided by ERS were the funding to begin at date of hire.
15. *Present Value* - the actuarially determined lump sum value as of the valuation date of a series of payments to be made in the future, where the lump sum value is equal to the sum of the discounted value of each future payment. The discounted value of each payment is the product of (a) the amount of the payment, (b) the probability that the payment will be made (based on the current actuarial assumptions as to future experience), and (c) the time value of money (based on the current assumed interest rate).
16. *Unfunded Actuarial Accrued Liability* - that portion of the actuarial accrued liability (including the present value of benefits presently being paid to retired members) that exceeds the value of current assets.
17. *Covered Payroll* - the total annualized payroll of active members as of the valuation date. Used to project individual members pay and benefits.
18. *Projected Payroll for Contributions Purposes* - The aggregate projected payroll for the fiscal year following the valuation date is calculated by increasing the actual payroll paid during the previous fiscal year by the payroll growth rate and multiplying by the ratio of current active members to the average number of active members during the previous fiscal year.