
Government of Guam Retirement Fund

Actuarial Valuation as of September 30, 2023

Prepared by:

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June 4, 2024



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**Re: Government of Guam Retirement Fund –
Actuarial Valuation as of September 30, 2023**

As part of our engagement with the Board of Trustees, we performed an actuarial valuation of the Government of Guam Retirement Fund as of September 30, 2023. The purpose of this valuation is to determine the required contribution under the provisions of GCA Section 8137.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the Fund's staff. This information includes, but is not limited to, financial information, member census data, and plan provisions. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete the results may be different and the calculations may need to be revised.

Actuarial assumptions, including discount rates, mortality tables, and others identified in this report, and actuarial cost methods are adopted by the Fund. The Fund is responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation methods, and assumptions. The policies, methods, and assumptions used in this valuation are those that have been so adopted and are described in this report. The Fund is solely responsible for communicating to Milliman any changes required thereto. All costs, liabilities, rates of interest, and other factors for the Fund have been determined on the basis of actuarial assumptions and methods which, in our professional opinion, are individually reasonable (taking into account the experience of the Fund and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated future experience affecting the Fund and are expected to have no significant bias. The assumptions have been adopted by the Board of Trustees and are based on the 2015-2020 actuarial experience study.

This valuation report is only an estimate of the Fund's financial condition as of a single date. It can neither predict the Fund's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of Fund benefits, only the timing of Fund contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

The valuation results were developed using models intended for valuations that use standard actuarial techniques. We have reviewed the models, including their inputs, calculations, and outputs

for consistency, reasonableness, and appropriateness to the intended purpose and in the compliance with generally accepted actuarial practice and relevant actuarial standards of practice (ASOP).

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; 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 modifications to contribution calculations based on the Fund's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The Board of Trustees has the final decision regarding the appropriateness of the assumptions and actuarial cost methods.

Actuarial computations presented in this report are for the purposes of determining the recommended funding amounts for the Fund. The calculations in this report have been made on a basis consistent with our understanding of the Fund's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the plan provisions described in Appendix A. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes. Disclosures for GASB Statements No. 67, 68 and 73 for the Government of Guam Defined Benefit Plan and the Government of Guam Defined Contribution Plan are issued under separate cover.

Milliman's work is prepared solely for the use and benefit of the Government of Guam Retirement Fund. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third-party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exception(s):

- (a) GGRF may provide a copy of Milliman's work, in its entirety, to its professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit GGRF.
- (b) GGRF may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third-party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board and the *Code of Professional Conduct and Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States*, published by the American Academy of Actuaries. We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sincerely,

A handwritten signature in black ink, appearing to read "Nick Collier".

Nick Collier, ASA, EA, MAAA
Principal and Consulting Actuary

Sincerely,

A handwritten signature in black ink, appearing to read "Reid Earnhardt".

Reid Earnhardt, ASA, EA, MAAA
Consulting Actuary

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This work product was prepared solely for the Government of Guam Retirement Fund for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing this Milliman work product.

INTRODUCTION

Milliman, Inc. has been retained by the Government of Guam Retirement Fund to provide an actuarial valuation of the retirement fund. In our valuation we:

- Summarize the membership data.
- Calculate the actuarial accrued liability and normal cost.
- Determine the contribution requirements.
- Project the fund balance and security ratio forward 40 years.

The results contained in this report represent a reasonable estimate. However, it is likely that actual experience will vary from these estimates. To the extent that actual experience differs from the anticipated experience, actual plan costs will vary as well.

HIGHLIGHTS

- The required contribution under GCA Section 8137 is **30.77%** of payroll. Of this amount, 25.58% is for the unfunded actuarial accrued liability of the defined benefit plans (Old DB Plan and DB 1.75 Plan), 1.12% is for the normal cost of the DB plans, and 4.07% is for contributions and expenses for the defined contribution (DC) plan.

The primary reasons for the increase in the contribution rate from 29.43% for the prior year was the recognition of investment gain and loss over the 3-year asset smoothing period and salary increases that were greater than expected. Higher than expected payroll increase had a partially offsetting impact. Payroll higher than expected lowers the contribution rate as a percent of payroll, but the related salary increases increase expected benefits resulting in a higher unfunded liability.

Contribution rate in 9/30/22 actuarial valuation	29.43%
2020-21 investment gain (final 1/3 rd recognition) *	(1.66%)
2021-22 investment loss (second 1/3 rd recognition) *	3.84%
2022-23 investment gain (first 1/3 rd recognition) *	(0.56%)
Actual payroll increase for 2022-23 of 7.41% vs. assumption of 4.00%	(0.83%)
Salary increases greater than assumed	0.91%
Other factors, including non-salary-related demographic changes	<u>(0.36)%</u>
Contribution rate in 9/30/23 actuarial valuation	30.77%

* Investment returns that differ from the actuarial assumption of 7% are recognized over a 3 year period.

- Public Law 28-150 provided that the current employer contribution rate would increase over a 5-year period starting in the 2006-07 fiscal year until it reached the actuarial contribution rate, which is the rate specified in the Fund's actuarial valuation report. The employer contribution rate for the 2023-24 fiscal year is 29.43%.
- The defined benefit (Old DB) payroll for the 2022-23 fiscal year was \$76.6 million compared with \$81.2 million for the 2021-22 fiscal year. The defined benefit (DB 1.75) payroll for the 2022-23 fiscal year was \$171.7 million compared with \$162.2 million for the 2021-22 fiscal year.

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- The total defined benefit and defined contribution payroll for the 2022-23 fiscal year, was \$596.5 million compared with \$555.5 million for the 2021-22 fiscal year, an increase of 7.39%. The prior valuation assumed a 4.00% increase for the 2022-23 fiscal year and a 2.50% increase each year thereafter. If total payroll for the 2022-23 fiscal year had increased by 4.00%, the required contribution rate would have been 31.60%.
- Based on the audited financial statements, we calculated an investment return on the total market value of assets of 11.6% for the fiscal year ending September 30, 2023. The average annual return on the market value of assets for the last 5 fiscal years has been 3.2%. The investment return on the actuarial value of assets, which recognizes investment gains and losses over a 3 year period, was 2.2% for the fiscal year ending September 30, 2023.
- Two-thirds of the investment loss for fiscal year ending September 30, 2022 have been reflected in the calculated employer contribution rate. The remaining amount of approximately \$182 million will be reflected over the next valuation and will only be partially offset by investment gains for fiscal year ending September 30, 2023. Absent future investment gains, this is expected to result in an increase in the employer contribution rate as shown in Exhibit 17.
- The unfunded actuarial accrued liability increased from \$1.173 billion as of September 30, 2022, to \$1.213 billion as of September 30, 2023. The payment required to amortize the unfunded actuarial accrued liability under GCA Section 8137 has increased from \$139.7 million to \$156.4 million. The payment as a percentage of payroll has increased from 24.18% to 25.58%.
- As the remaining period to pay off the unfunded actuarial accrued liability declines, year-to-year changes in the contribution rate will become increasingly sensitive in the future to investment gains and losses and other experience. As noted in the 2015-2020 experience study, and on page 7 of this report, we recommend a change in the amortization method be considered for future valuations to help mitigate this potential contribution rate volatility.
- On December 27, 2022, Public Law No. 36-130 was signed into law. The law provides for the following:
 - All employees who are members in the Defined Contribution System at any time between June 1, 2023 and December 31, 2023, may elect to become Defined Benefit 1.75 Plan members effective as of January 1, 2024.
 - All new employees whose employment commences on or after January 1, 2024, may elect to become Defined Benefit 1.75 members.
 - The Defined Benefit 1.75 Plan service retirement amount is increased from 1.75% to 2.75% for service after 25 years. The maximum benefit remains at 85%.
 - Effective January 1, 2024, active public safety and law enforcement officers of the Defined Benefit 1.75 Plan will be eligible for unreduced service retirement after reaching age 55 with 25 years of service or age 57 with 5 years of service.

The impact of P.L 36-130 has not been included in this actuarial valuation as of September 30, 2023, due to the effective date of the benefit changes being effective January 1, 2024. Please see our benefit proposal study dated October 20, 2022 which discusses the anticipated effect of the legislated changes. The actual impact of the law will be calculated when actual elections into the Defined Benefit 1.75 Plan are reflected in the next valuation.

RESULTS OF VALUATION

	9/30/2023		9/30/2022	
Participant Counts				
Active Old DB	816		930	
Non-Uniformed				
Uniformed	<u>117</u>		<u>140</u>	
Total	933		1,070	
Active DB 1.75 Participants	2,640		2,906	
Active DC Participants	<u>7,697</u>		<u>7,571</u>	
Total Active Participants (Old DB, DB 1.75, DC)	11,270		11,547	
Retired (Old DB)	7,201		7,283	
Retired (DB 1.75)	292		249	
Inactive/Terminated (Old DB, DB 1.75)				
Assumed to withdraw contributions	2,982		2,998	
<u>Not</u> assumed to withdraw contributions	79		107	
Total DB Participants (Old DB and DB 1.75)	14,127		14,613	
	(\$millions)		(\$millions)	
Actual Payroll for Prior Fiscal Year				
Defined benefit (Old DB) payroll	\$ 76.6		\$ 81.2	
Defined benefit (DB 1.75) payroll	171.7		162.2	
Defined contribution (DC) payroll	<u>348.3</u>		<u>312.1</u>	
Total payroll (DB and DC)	\$596.5		\$555.5	
Expected Payroll for Next Fiscal Year				
Defined benefit (Old DB) payroll	\$ 73.3		\$ 69.3	
Defined benefit (DB 1.75) payroll	173.0		163.2	
Defined contribution (DC) payroll	<u>365.1</u>		<u>345.1</u>	
Total payroll (DB and DC)	\$611.4		\$577.7	
Financial Status				
Actuarial accrued liability	\$3,232.6		\$3,236.6	
Actuarial value of assets	<u>2,019.3</u>		<u>2,063.6</u>	
Unfunded actuarial accrued liability (UAAL)	\$1,213.3		\$1,173.0	
Security ratio	62.47%		63.76%	
	% of DB Payroll		% of DB Payroll	
Normal Cost				
Total normal cost ¹	\$ 30.3	12.29%	\$ 29.0	12.47%
Estimated employee contributions	<u>(23.4)</u>	<u>(9.51%)</u>	<u>(22.1)</u>	<u>(9.52%)</u>
Government normal cost	\$ 6.9	2.78%	\$ 6.9	2.95%
	% of Total Payroll		% of Total Payroll	
Required Contribution per GCA §8137				
Unfunded actuarial accrued liability cost	\$ 156.4	25.58%	\$ 139.7	24.18%
Government DB normal cost	6.9	1.12%	6.9	1.19%
Expected government DC contributions ¹	<u>24.9</u>	<u>4.07%</u>	<u>23.4</u>	<u>4.06%</u>
Total DB and DC contribution	\$ 188.1	30.77%	\$ 170.0	29.43%

¹ Includes budgeted administrative expenses.

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5-YEAR HISTORICAL SUMMARY

The following table summarizes the principal valuation results over the last 5 years.

	9/30/2023	9/30/2022	9/30/2021	9/30/2020	9/30/2019
Participant Counts					
Active (Old DB)	933	1,070	1,226	1,420	1,636
Active (DB 1.75)	2,640	2,906	2,994	3,020	3,214
Retired (Old DB)	7,201	7,283	7,291	7,275	7,291
Retired (DB 1.75)	292	249	197	124	69
Inactives (Old DB)	3,045	3,087	3,101	3,136	3,139
Inactives (DB 1.75)	<u>16</u>	<u>18</u>	<u>21</u>	<u>121</u>	<u>23</u>
Total (DB)	14,127	14,613	14,830	15,096	15,372
Active (DC)	7,697	7,571	7,070	6,810	6,286
Actual Payroll (\$millions)					
DB payroll (Old DB)	\$ 76.6	\$ 81.2	\$ 90.8	\$101.5	\$111.2
DB payroll (DB 1.75)	171.7	162.2	160.6	161.7	162.3
DC payroll	<u>348.3</u>	<u>312.1</u>	<u>281.2</u>	<u>256.3</u>	<u>235.5</u>
Total payroll	\$596.6	\$555.5	\$532.5	\$519.5	\$509.1
Financial Status (\$millions)					
Accrued liability	\$3,232.6	\$3,236.6	\$3,267.5	\$3,228.1	\$3,221.3
Actuarial assets	<u>2,019.3</u>	<u>2,063.6</u>	<u>2,125.3</u>	<u>2,053.9</u>	<u>2,066.0</u>
UAAL	\$1,213.3	\$1,173.0	\$1,142.2	\$1,174.2	\$1,155.4
Security ratio	62.47%	63.76%	65.04%	63.62%	64.13%
Contribution Rate					
DB Normal Cost (as % of DB payroll)	2.78%	2.95%	3.89%	4.36%	4.19%
% of Total Payroll					
UAAL Rate	25.58%	24.18%	22.90%	22.63%	21.44%
DB Normal Cost	1.12%	1.19%	1.72%	2.08%	2.18%
DC Contribution	<u>4.07%</u>	<u>4.06%</u>	<u>3.81%</u>	<u>3.61%</u>	<u>3.35%</u>
Actuarial Rate ¹	30.77%	29.43%	28.43%	28.32%	26.97%
Budget Rate ²	**	29.43%	28.43%	28.32%	26.97%
Investment Yield (Market Value)					
	11.6%	-17.7%	19.1%	4.1%	2.9%

¹ "Actuarial Rate" is the contribution rate determined in the actuarial valuation. Contribution rates apply to the fiscal year beginning one year after the valuation date.

² "Budget Rate" is the contribution rate set by the legislature. The budget rate for 2024-25 has not yet been determined.

ACTUARIAL ASSUMPTIONS

The following are the major assumptions used in the actuarial valuation. The assumptions are based upon the actuarial experience study for the period October 1, 2015, through September 30, 2020, and subsequent information as it pertains to the interest rate assumption. The rationale for each significant assumption is provided in that experience study and in the discussion below. To the extent that actual experience differs from the assumptions below, future pension costs will differ.

Interest Rate: The interest rate used to discount future benefit payments to the present was 7.0% as of September 30, 2023. This assumption is unchanged from the prior valuation. Milliman's expected returns on various asset classes over the next 30 years are shown below, assuming inflation averages 2.50% over the next 30 years. The target asset allocation is the expected long-term asset allocation and is based on the Fund's investment policy.

Asset Class	(a) Target Asset Allocation	(b) Expected Nominal Return	(a) x (b) Component Return
U.S. Equities (large cap)	26.0%	7.88%	2.05%
U.S. Equities (small cap)	4.0%	9.44%	0.38%
Non-U.S. Equities	17.0%	10.16%	1.73%
Non-U.S. Equities (emerging markets)	3.0%	12.09%	0.36%
U.S. Fixed Income (aggregate)	22.0%	4.71%	1.04%
Risk Parity	8.0%	6.64%	0.53%
High Yield Bonds	8.0%	6.52%	0.52%
Global Real Estate (REITs)	2.5%	9.38%	0.23%
Global Equity	7.5%	8.73%	0.65%
Global Infrastructure	2.0%	8.20%	0.16%
Expected arithmetic mean (1 year)			7.66%
Expected geometric mean (30 years)			6.94%

The discount rate assumption of 7.0% is about equal to the expected geometric mean over 30 years, but lower than the average arithmetic return for one year. The geometric mean is lower than the arithmetic mean due to the expected volatility of investments. Note that if investments fail to achieve the assumed interest rate, future required contributions will increase.

Mortality: The mortality table used for retirees is the PUB-2010 General Healthy Retiree Amount-Weighted mortality table, set forward by 4 years for males and 2 years for females, then increased by 30% for ages less than 80. The mortality table used for active employees is the PUB-2010 General Employees Amount-Weighted mortality table, set forward by 4 years for males and 2 years for females, then increased by 30% for ages less than 80. The mortality table used for healthy beneficiaries is the PUB-2010 General Contingent Survivors Amount-Weighted mortality table, set forward by 3 years for males and 4 years for females, then increased by 30% for ages less than 80. The mortality table used for disabled lives is the PUB-2010 Disabled Retiree Amount-Weighted mortality table, set forward by 4 years for males and 2 years for females, then increased by 30% for ages less than 80. Mortality improvement is projected generationally from 2010 using 50% of Mortality Improvement Scale MP-2020. This is the same table used for the prior actuarial valuation.

Salary Increases. Salaries are assumed to increase annually by 6.0% for employees in their first 5 years of service, 4.5% for service between 6 and 10 years, and 3.0% for service after 10 years. These are the same rates used in the prior actuarial valuation.

Total Payroll Growth. The total payroll for defined benefit and defined contribution members is assumed to increase 2.50% per year.

Retirement Age. We have assumed 40% of employees will retire when first eligible for unreduced retirement. Thereafter, 20% of employees will retire at each year until age 75, at which time all remaining employees are assumed to retire. This is the same assumption used in the prior actuarial valuation.

Return of Contributions. We have assumed that any current Old DB Plan employees who terminate employment prior to retirement and who have less than 20 years of service will elect a return of contributions in lieu of a deferred benefit. Old DB Plan employees with at least 20 years of service who terminate employment are assumed to collect an annuity benefit when eligible. Old DB Plan employees with between 20 and 24 years of service who terminate employment and are ineligible for the service retirement benefit and DB 1.75 Plan employees who terminate employment with less than 25 years of service are assumed to retire at age 60.

Current terminated or inactive members with at least 5 years of service and a contributions balance that exceeds \$10,000 who have not withdrawn their contributions and for whom sufficient earnings data are available to value their retirement benefits are assumed to retire upon eligibility for unreduced benefits. All other terminated and inactive members are assumed to elect to withdraw their contributions. These assumptions are unchanged from the prior actuarial valuation.

Administrative Expenses. Total administrative expenses are assumed to be \$7,402,000, which is the amount budgeted for the year ending September 30, 2024. Of this amount, \$5,181,400 is allocated to the defined benefit plan and \$2,220,600 to the defined contribution plan.

Rates of Withdrawal. The assumed rates of withdrawal are shown in Appendix B. The withdrawal rates are unchanged from the prior actuarial valuation.

Rates of Disability. The assumed rates of disability are shown in Appendix B. The disability rates are unchanged from the prior actuarial valuation.

Probability of Marriage. We have assumed that 75% of retirees will be married at retirement. This assumption is unchanged from the prior actuarial valuation.

Leave Adjustments. For Old DB Plan members, we have assumed that unused leave will increase a member's service by 1.5 years, and that unused leave will increase average earnings by 3% at retirement. These assumptions are unchanged from the prior actuarial valuation.

Survivor Benefit – Minor Children. We have assumed there to be an average of 0.2 eligible child survivors at the time of a retiree's death, with payments to the child survivor continuing for 6 years. Payments to current child survivors are assumed to be payable through age 21. These assumptions are unchanged from the prior actuarial valuation.

Asset Valuation Method. Investment gains/losses relative to the assumed investment return are phased in over a period of 3 years. This valuation method is unchanged from the prior valuation.

A complete summary of actuarial assumptions is in Appendix B.

FUNDING METHOD

GCA Section 8137 required a contribution sufficient to fully fund the unfunded actuarial accrued liability by 2031 (within 80 years from May 1, 1951). P.L. 33-186 extended this period by 2 years to 2033. The required contribution shown in this report includes a payment for the normal cost of active members of the Fund, and amortizes the unfunded actuarial accrued liability over the remaining 9.58 years as a level percentage of total payroll (including both defined benefit and defined contribution members).

The unfunded actuarial accrued liability is the difference between the actuarial accrued liability and the actuarial value of assets. We believe the unfunded actuarial accrued liability is appropriate in accordance with actuarial standards for assessing the sufficiency of plan assets to cover the estimated cost of the Fund's benefit obligations, and for assessing the amount of future contributions.

Based on the current funding method, the employer contribution rate is projected to drop substantially in 2034. The employer contribution rate will also become more and more volatile as the remaining period is reduced. For example, in the year 2032, any investment gains or losses for the prior year will be amortized over one year. As we did in the 2015-2020 experience study, we continue to recommend a change in the amortization method be considered for future valuations to one that splits the current unfunded actuarial accrued liability into 5 or more bases, which are amortized over a staggered period to provide a "phase down" of the employer contribution over a period of years. In addition, we recommend amortizing future changes to the unfunded actuarial accrued liability over 15 years from the date of the change. Please see illustration in Exhibit 15 of our 2015-2020 experience study report.

Exhibits 17 and 18 project the employer and employee contributions, fund balance, actuarial accrued liability and security ratio forward 40 years based upon the current funding method. Upon request, we can produce similar exhibits showing these metrics under proposed amortization methodology.

SECTION II. FUND ASSETS**EXHIBIT 1. SUMMARY OF DB PLAN ASSETS**

Listed below are the assets reported for the defined benefit (DB) pension plan in the Fund's financial statements, excluding certain receivables and liabilities whose payments are deducted from employer contributions to the Fund.

	9/30/2023	9/30/2022
Investments		
Common stocks	\$ 1,328,842,274	\$ 1,200,878,984
U.S. government securities	265,370,061	245,915,400
Corporate bonds and notes	216,239,024	254,638,296
Money market funds	26,811,000	26,925,878
Mutual funds	<u>35,165,559</u>	<u>30,161,843</u>
Total investments	1,872,427,918	1,758,520,401
Receivables		
Employer contributions, net	2,306,891	2,166,632
Employer contributions, unfunded liability	2,788,733	2,432,115
Member contributions	780,485	737,078
Interest and penalties on contributions	95,356	95,356
Supplemental/insurance benefits advanced	1,996,097	1,996,097
Notes receivable for service credits	789,591	985,143
Accrued investment income	5,884,730	6,392,661
Other receivables	725,085	629,765
Due from brokers for unsettled trades	8,457,347	14,255,724
Due from DC plan	<u>293,590</u>	<u>260,942</u>
Total receivables	24,117,905	29,951,513
Cash and cash equivalents	8,481,607	6,191,045
Prepaid expenses	0	18,750
Property and equipment	<u>627,477</u>	<u>560,804</u>
Total assets	\$ 1,905,654,907	\$ 1,795,242,513
Liabilities		
Accounts payable and accrued expenses	\$ 4,174,536	\$ 4,253,796
Due to brokers for unsettled trades	<u>11,725,236</u>	<u>13,432,086</u>
Total liabilities	\$ 15,899,772	\$ 17,685,882
Valuation Assets	<u>\$ 1,889,755,135</u>	<u>\$ 1,777,556,631</u>

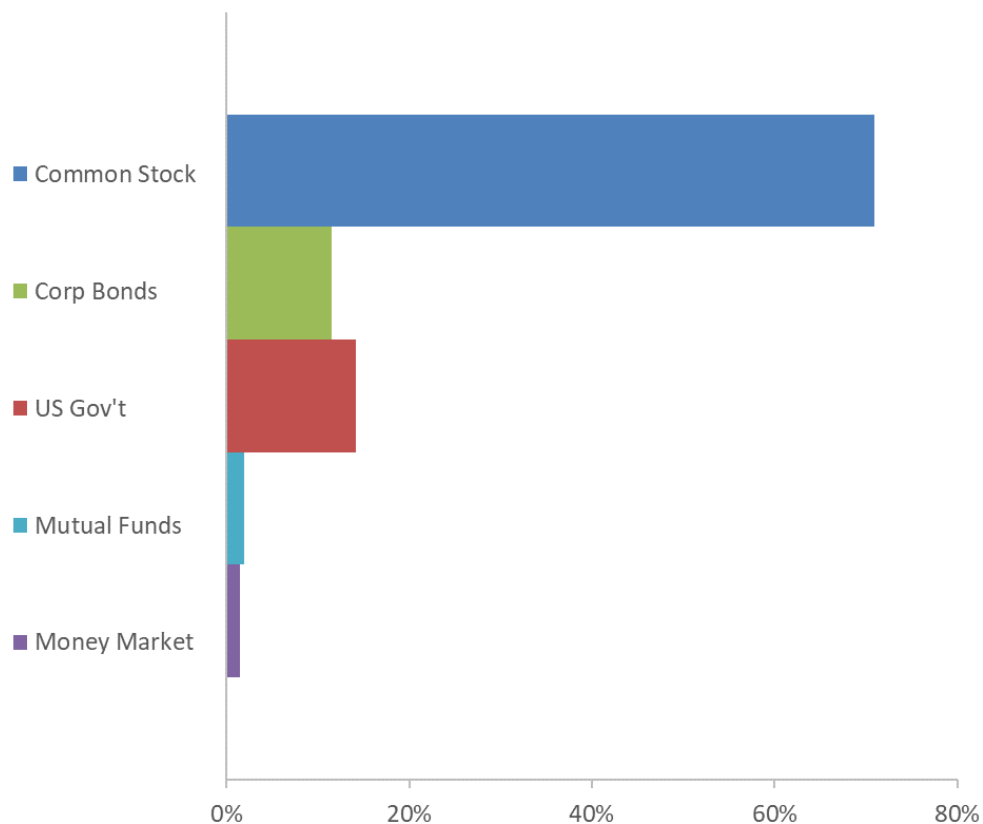
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SECTION II. FUND ASSETS

EXHIBIT 2. DB PLAN ASSET ALLOCATION

The allocation of assets among various investment classes is an important determinant of expected future investment returns.

	DB ASSET ALLOCATION	
	9/30/2023	9/30/2022
Common stocks	71.0%	68.3%
Corporate bonds and notes	11.5%	14.5%
U.S. government securities	14.2%	14.0%
Mutual funds	1.9%	1.7%
Money market funds	<u>1.4%</u>	<u>1.5%</u>
Total	100.0%	100.0%



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SECTION II. FUND ASSETS

EXHIBIT 3. CHANGES IN DB PLAN ASSETS

Assets increase or decrease each year due to employer contributions, investment income, benefit payments to retiring participants, plan expenses paid by the trust fund, and any realized and unrealized gains and losses from investments.

	FISCAL YEAR ENDING	
	9/30/2023	9/30/2022
Beginning Balance	\$ 1,777,556,631	\$ 2,263,748,022
Adjustments	393,297	0
Contributions		
Employer contributions	147,930,940	134,834,836
Member contributions	24,023,499	25,342,204
Decrease/(increase) in excluded assets	<u>0</u>	<u>173,760</u>
Total contributions	171,954,439	160,350,800
Investment Income		
Net appreciation in fair value	166,394,961	(427,351,840)
Interest	20,763,507	22,012,416
Dividends	17,285,665	18,486,701
Other investment income	1,007,377	657,539
Investment expenses	<u>(5,313,438)</u>	<u>(5,522,446)</u>
Total investment income	200,138,072	(391,717,627)
Benefit Payments		
Age and service annuities	214,703,487	211,752,842
Disability annuities	4,066,373	4,416,581
Survivor annuities	34,253,411	32,575,864
Refunds to separated employees	2,945,758	2,155,285
Interest on refunded contributions	<u>228,123</u>	<u>475,244</u>
Total benefit payments	256,197,152	251,375,816
Administrative Expenses	4,090,152	3,448,748
Ending Balance	\$ 1,889,755,135	\$ 1,777,556,631

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SECTION II. FUND ASSETS

EXHIBIT 4. ACTUARIAL VALUE OF ASSETS

The actuarial value of assets is equal to the market value of DB plan assets adjusted to phase in gains and losses relative to the assumed rate of return over a 3-year period, and to exclude certain receivables and liabilities whose payments are deducted from employer contributions to the Fund.

	9/30/2023	9/30/2022
Valuation assets at market value	\$ 1,889,755,135	\$ 1,777,556,631
(Gains)/Losses excluded from actuarial value (see below)	<u>129,548,600</u>	<u>286,061,962</u>
Actuarial value of assets	\$ 2,019,303,735	\$ 2,063,618,593
Actuarial value as % of market value	106.9%	116.1%

3-Year Phase-in of Gains and (Losses)

Year	Expected Return ¹	Actual Return	Gain/(Loss)	Percent Excluded	Excluded From Market Value
2022/2023	\$ 121,389,603	\$ 200,531,369	\$ 79,141,766	66.67%	\$ 52,761,177
2021/2022	155,211,704	(391,717,627)	(546,929,331)	33.33%	(182,309,777)
2020/2021	135,897,944	371,570,719	235,672,775	0.00%	<u>0</u>
Total					\$(129,548,600)

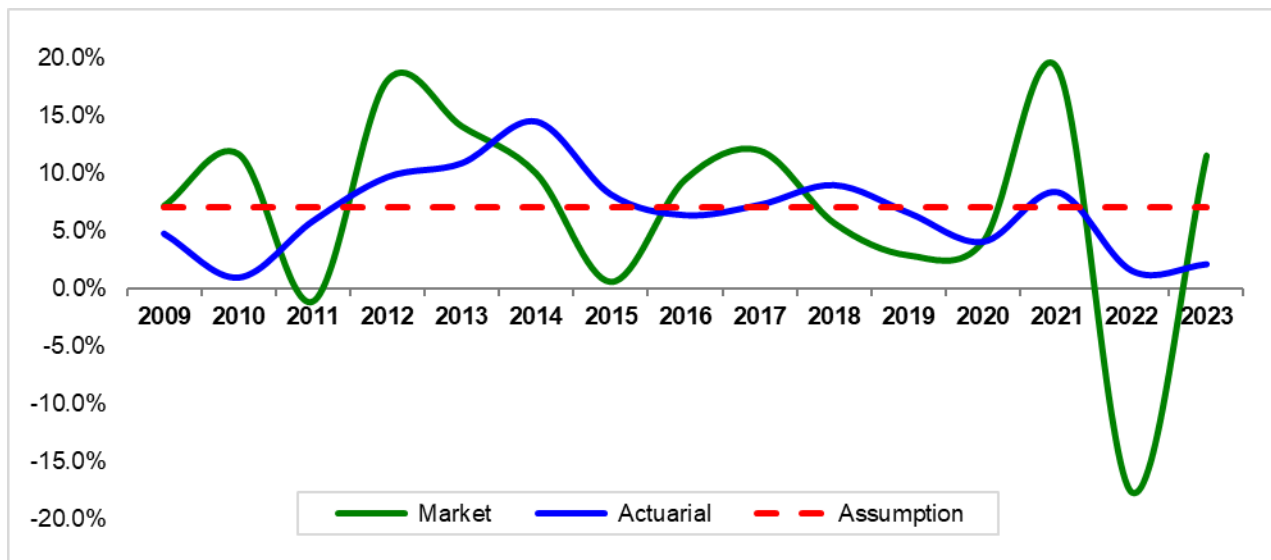
¹ Expected return is based on the assumed investment return, which is 7.0%.

SECTION II. FUND ASSETS

EXHIBIT 5. HISTORICAL RETURNS ON DB PLAN ASSETS

The following table shows the historical return on DB plan assets over the last 15 years. The assumed actuarial valuation rate is 7.0%.

Fiscal Year Ending 9/30	Return on Market Value	Return on Actuarial Value
2023	11.6%	2.2%
2022	(17.7)%	1.6%
2021	19.1%	8.4%
2020	4.1%	4.1%
2019	2.9%	6.6%
2018	5.7%	9.0%
2017	12.0%	7.3%
2016	9.5%	6.4%
2015	0.6%	8.2%
2014	10.0%	14.5%
2013	14.1%	10.9%
2012	18.1%	9.7%
2011	(1.1)%	5.9%
2010	11.7%	1.0%
2009	7.2%	4.8%
Average of last 5 years	3.2%	4.5%
Average of last 10 years	5.3%	6.8%
Average of last 15 years	6.8%	6.6%



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SECTION III. MEMBERSHIP DATA

EXHIBIT 6a. ACTIVE EMPLOYEES (Old DB Plan)

	9/30/2023	9/30/2022
Active Employees – Non-Uniformed		
Number vested	803	912
Number not vested	<u>13</u>	<u>18</u>
Total	816	930
Average age	58.1	57.4
Average service	29.9	28.9
Average earnings	\$ 72,111	\$ 62,793
Average accumulated contributions	\$ 233,263	\$ 215,407
Active Employees – Uniformed		
Number vested	117	140
Number not vested	<u>0</u>	<u>0</u>
Total	117	140
Average age	56.0	55.1
Average service	30.6	29.6
Average earnings	\$ 105,382	\$ 89,906
Average accumulated contributions	\$ 285,723	\$ 265,404
Active Employees – Total Old DB Plan		
Number vested	920	1,052
Number not vested	<u>13</u>	<u>18</u>
Total	933	1,070
Average age	57.8	57.1
Average service	30.0	29.0
Average earnings	\$ 76,283	\$ 66,340
Average accumulated contributions	\$ 239,842	\$ 221,948

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SECTION III. MEMBERSHIP DATA

EXHIBIT 6b. ACTIVE EMPLOYEES (DB 1.75 Plan)

	9/30/2023	9/30/2022
Active Employees – DB 1.75 Plan		
Number vested	2,640	2,885
Number not vested	<u>0</u>	<u>21</u>
Total	2,640	2,906
Average age	48.9	47.7
Average service	16.4	15.1
Average earnings	\$ 63,385	\$ 53,010
Average accumulated contributions	\$ 77,446	\$ 65,707
Active Employees – Total Old DB and DB 1.75		
Number vested	3,560	3,937
Number not vested	<u>13</u>	<u>39</u>
Total	3,573	3,976
Average age	51.2	50.2
Average service	19.9	18.8
Average earnings	\$ 66,753	\$ 56,519
Average accumulated contributions	\$ 119,852	\$ 106,843

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SECTION III. MEMBERSHIP DATA

EXHIBIT 7. ACTIVE EMPLOYEES BY AGENCY

	9/30/23 DC	9/30/23 DB 1.75	9/30/23 Old DB	9/30/22 DC	9/30/22 DB 1.75	9/30/22 Old DB
Bureau of Budget & Management Research	7	7	1	7	11	1
Bureau of Statistics and Plans	26	9	3	19	10	4
Bureau of Women Affairs	2	1	0	2	1	0
Chief Medical Examiner	2	0	0	1	0	0
Customs & Quarantine	104	27	24	73	29	25
Dept of Administration ¹	92	49	23	109	55	28
Dept of Agriculture	62	13	10	58	15	11
Dept of Corrections	102	54	11	114	71	14
Dept of Labor	98	14	6	90	15	6
Dept of Land Management	29	4	8	25	4	13
Dept of Law	101	50	17	104	71	21
Dept of Mental Health & Substance Abuse	236	40	12	234	51	13
Dept of Military Affairs	51	9	3	37	15	4
Dept of Parks and Recreation	29	11	7	27	12	7
Dept of Public Health & Social Services	353	106	34	350	120	42
Dept of Public Works	249	65	32	247	71	45
Dept of Revenue and Taxation	108	44	10	116	49	13
Dept of Youth Affairs	36	20	13	36	23	15
D.I.S.I.D.	16	5	3	14	5	3
Governor's Office	152	5	6	162	7	7
Guam Energy Office	7	2	0	3	2	1
Guam Environmental Protection Agency	30	20	3	27	21	3
Guam Fire Dept	82	137	19	75	141	29
Guam Legislature	30	13	3	43	15	5
Guam Police Dept	180	117	39	160	116	44
Judiciary Of Guam	286	96	29	265	111	28
KGTF	10	1	1	10	1	1
Lt. Governor's Office	15	0	0	20	1	1
Mayor's Council	219	15	10	225	19	7
Office of Technology	12	3	4	12	3	4
Public Auditors	11	3	0	12	1	0
Public Defender	49	14	11	49	13	9
General Fund Total	2,786	954	342	2,726	1,079	404
Dept of Chamorro Affairs ²	42	7	3	45	7	4
Dept of Education	2355	750	332	2,358	804	363
Government of Guam Retirement Fund	23	14	2	23	17	3
Guam Airport Authority	119	75	31	113	89	40
Guam Community College	136	71	22	135	81	22
Guam Economic Development Agency	31	7	2	41	7	3
Guam Housing & Urban Renewal Agency	76	35	12	60	39	14
Guam Housing Corporation	11	7	3	12	9	3
Guam Memorial Hospital Authority	982	190	27	929	207	37
Guam Power Authority	199	159	53	191	175	58
Guam Visitors Bureau	39	13	1	41	17	1
Guam Waterworks Authority	250	95	12	257	98	15
Port Authority Of Guam	218	130	34	203	128	40
University Of Guam	430	133	57	437	149	63
Others Total	4,911	1,686	591	4,845	1,827	666
GRAND TOTAL	7,697	2,640	933	7,571	2,906	1,070

¹ Department of Administration includes Civil Service Commission, Guam Ethics Commission and Guam Election Commission

² Department of Chamorro Affairs¹ includes Guam CAHA, Guam Public Library, and Chamorro Land Trust

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SECTION III. MEMBERSHIP DATA**EXHIBIT 8a. RETIRED EMPLOYEES (Old DB Plan)**

	9/30/2023	9/30/2022
Service Retirees		
Count	5,112	5,196
Average age	71.7	71.2
Average benefit	\$40,599	\$39,788
Median benefit	\$36,410	\$35,730
Disabled Retirees		
Count	156	170
Average age	70.6	70.5
Average benefit	\$24,123	\$23,736
Median benefit	\$22,594	\$22,213
Survivors		
Count	1,748	1,747
Average age	73.8	73.5
Average benefit	\$18,918	\$18,970
Median benefit	\$16,767	\$16,811
Child Pensioners		
Count	185	170
Average age	16.4	15.6
Average benefit	\$2,880	\$2,880
Median benefit	\$2,880	\$2,880
Total Retirees and Survivors ¹		
Count	7,016	7,113
Average age	72.2	71.7
Average benefit	\$34,831	\$34,550
Median benefit	\$30,688	\$30,598

¹ Excludes child pensioners.

SECTION III. MEMBERSHIP DATA

EXHIBIT 8b. RETIRED EMPLOYEES (DB 1.75 Plan)

	9/30/2023	9/30/2022
Service Retirees		
Count	241	212
Average age	67.9	67.3
Average benefit	\$24,412	\$23,847
Median benefit	\$21,876	\$21,249
Disabled Retirees		
Count	8	6
Average age	55.5	57.8
Average benefit	*	*
Median benefit	*	*
Survivors		
Count	43	31
Average age	57.2	56.0
Average benefit	\$10,088	\$8,840
Median benefit	\$8,313	\$8,220
Child Pensioners		
Count	0	0
Average age	n/a	n/a
Average benefit	n/a	n/a
Median benefit	n/a	n/a
Total Retirees and Survivors ¹		
Count	292	249
Average age	66.0	65.6
Average benefit	\$22,249	\$21,932
Median benefit	\$19,183	\$18,857

* Not shown since less than 20 members.

¹ Excludes child pensioners.

SECTION III. MEMBERSHIP DATA

EXHIBIT 9. TERMINATED AND INACTIVE MEMBERS (DB)

	9/30/2023	9/30/2022
Assumed to Withdraw Contributions		
Count	2,982	2,998
Accumulated contributions (Old DB)	\$ 1,731,538	\$ 1,760,031
Accumulated contributions (DB 1.75)	<u>43,161</u>	<u>49,043</u>
Accumulated contributions (Total DB)	\$ 1,774,698	\$ 1,809,073
Not Assumed to Withdraw Contributions		
Count	79	107
Average age	63.0	61.5
Average accrued benefit	\$ 11,193	\$ 13,988
Accumulated contributions	\$ 4,939,437	\$ 6,078,916

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SECTION III. MEMBERSHIP DATA

EXHIBIT 10. RECONCILIATION OF MEMBERSHIP DATA

Old DB Plan

	Active	Inactive Assumed to Refund	Inactive Assumed to Retire	Retiree	Survivor	Disabled	Child	Total
9/30/2022	1,070	2,980	107	5,196	1,747	170	170	11,440
New	0	0	0	0	91	0	48	139
Terminated	0	0	0	0	0	0	0	0
Retired	(99)	0	(8)	107	0	0	0	0
Disabled	(2)	0	0	0	0	2	0	0
Rehired	10	(7)	(3)	0	0	0	0	0
Deceased/Refunded	(46)	(7)	(17)	(191)	(90)	(16)	0	(367)
Benefit Expired	0	0	0	0	0	0	(33)	(33)
Net change	(137)	(14)	(28)	(84)	1	(14)	15	(261)
9/30/2023	933	2,966	79	5,112	1,748	156	185	11,179

DB 1.75 Plan

	Active	Inactive Assumed to Refund	Inactive Assumed to Retire	Retiree	Survivor	Disabled	Child	Total
9/30/2022	2,906	18	0	212	31	6	0	3,173
New	0	0	0	1	15	1	0	17
Terminated	0	0	0	0	0	0	0	0
Retired	(33)	0	0	33	0	0	0	0
Disabled	(3)	0	0	0	0	3	0	0
Rehired	1	(1)	0	0	0	0	0	0
Deceased/Refunded	(231)	(1)	0	(5)	(3)	(2)	0	(242)
Benefit Expired	0	0	0	0	0	0	0	0
Net change	(266)	(2)	0	29	12	2	0	(225)
9/30/2023	2,640	16	0	241	43	8	0	2,948

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SECTION IV. VALUATION EXHIBITS

EXHIBIT 11a. ACTUARIAL ACCRUED LIABILITY (Old DB Plan)

The actuarial accrued liability has been calculated using the Entry Age Normal actuarial cost method, and is equal to the present value of benefits for all Old DB Plan members less the present value of future normal costs for active Old DB Plan employees.

	Old DB Plan 9/30/2023	Old DB Plan 9/30/2022
Present Value of Benefits		
Active employees –		
Retirement	\$ 516,659,561	\$ 552,402,300
Disability	2,928,370	3,034,469
Death	4,615,665	6,366,833
Withdrawal	<u>3,886,459</u>	<u>4,065,959</u>
Total active PVB	528,090,055	565,869,561
Retirees and Survivors		
Retirees	1,962,705,649	1,967,394,938
Disabled retirees	32,344,241	34,539,987
Survivors	<u>265,757,773</u>	<u>267,406,133</u>
Total retirees and survivors	2,260,807,663	2,269,341,058
Terminated and inactive members		
Assumed to retire	6,178,303	7,637,791
Assumed to elect return of contributions	<u>1,731,538</u>	<u>1,760,031</u>
Total terminated and inactive members	7,909,841	9,397,822
Total PVB	\$ 2,796,807,559	\$ 2,844,608,441
Present Value of Future Normal Cost		
Active employees –		
Retirement	\$ 25,304,434	\$ 27,938,851
Disability	657,948	700,500
Death	668,196	936,313
Withdrawal	<u>9,907,584</u>	<u>8,023,232</u>
Total active PVFNC	\$ 36,538,162	\$ 37,598,896
Actuarial Accrued Liability		
Active members	\$ 491,551,893	\$ 528,270,665
Retirees and survivors	2,260,807,663	2,269,341,058
Terminations and inactives	<u>7,909,841</u>	<u>9,397,822</u>
Total accrued liability	\$ 2,760,269,397	\$ 2,807,009,545

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SECTION IV. VALUATION EXHIBITS

EXHIBIT 11b. ACTUARIAL ACCRUED LIABILITY (DB 1.75 Plan)

The actuarial accrued liability has been calculated using the Entry Age Normal actuarial cost method, and is equal to the present value of benefits for all DB 1.75 Plan members less the present value of future normal costs for active DB 1.75 Plan employees.

	DB 1.75 Plan 9/30/2023	DB 1.75 Plan 9/30/2022
Present Value of Benefits		
Active employees –		
Retirement	\$ 429,027,411	\$ 406,238,380
Disability	11,150,269	11,056,771
Death	11,151,840	19,377,023
Withdrawal	<u>96,521,910</u>	<u>71,909,568</u>
Total active PVB	547,851,430	508,581,742
Retirees and Survivors		
Retirees	61,031,332	53,068,045
Disabled retirees	2,029,770	1,770,864
Survivors	<u>5,831,850</u>	<u>3,820,545</u>
Total retirees and survivors	68,892,952	58,659,454
Terminated and inactive members		
Assumed to retire	0	0
Assumed to elect return of contributions	<u>43,161</u>	<u>49,043</u>
Total terminated and inactive members	43,161	49,043
Total PVB	\$ 616,787,543	\$ 567,290,239
Present Value of Future Normal Cost		
Active employees –		
Retirement	\$ 86,259,203	\$ 87,004,492
Disability	4,564,963	4,568,596
Death	3,999,433	6,609,769
Withdrawal	<u>49,666,312</u>	<u>39,500,583</u>
Total active PVFNC	\$ 144,489,911	\$ 137,683,440
Actuarial Accrued Liability		
Active members	\$ 403,361,519	\$ 370,898,302
Retirees and survivors	68,892,952	58,659,454
Terminations and inactives	<u>43,161</u>	<u>49,043</u>
Total accrued liability	\$ 472,297,632	\$ 429,606,799

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SECTION IV. VALUATION EXHIBITS

EXHIBIT 12. CALCULATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY

The unfunded actuarial accrued liability is used to determine the funding requirements. The unfunded actuarial accrued liability equals the actuarial accrued liability less the valuation assets.

	9/30/2023	9/30/2022
OLD DB PLAN		
Actuarial Accrued Liability		
Active members	\$ 491,551,893	\$ 528,270,665
Retirees and survivors	2,260,807,663	2,269,341,058
Terminations and inactives	<u>7,909,841</u>	<u>9,397,822</u>
Total accrued liability	\$ 2,760,269,397	\$ 2,807,009,545
DB 1.75 PLAN		
Actuarial Accrued Liability		
Active members	\$ 403,361,519	\$ 370,898,302
Retirees and survivors	68,892,952	58,659,454
Terminations and inactives	<u>43,161</u>	<u>49,043</u>
Total accrued liability	\$ 472,297,632	\$ 429,606,799
TOTAL (Old DB Plan plus DB 1.75 Plan)		
Actuarial Accrued Liability		
Active members	\$ 894,913,412	\$ 899,168,967
Retirees and survivors	2,329,700,615	2,328,000,512
Terminations and inactives	<u>7,953,002</u>	<u>9,446,864</u>
Total accrued liability	\$ 3,232,567,029	\$ 3,236,616,343
Actuarial Value of Assets	<u>2,019,303,735</u>	<u>2,063,618,593</u>
Unfunded Actuarial Accrued Liability	\$ 1,213,263,294	\$ 1,172,997,750
Security Ratio = (Actuarial Value of Assets / AAL)	62.47%	63.76%
Market Value of Assets	\$ 1,889,755,135	\$ 1,777,556,631
Market Value of Assets / AAL	58.46%	54.92%

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SECTION IV. VALUATION EXHIBITS

EXHIBIT 13. CALCULATION OF ACTUARIAL GAIN/LOSS

	Year Ending 9/30/2023	Year Ending 9/30/2022
Unfunded Actuarial Accrued Liability, beginning of year	\$ 1,172,997,750	\$ 1,142,218,777
Additions:		
Employer normal cost	6,634,722	9,109,941
Interest to end of year	<u>82,574,273</u>	<u>80,593,010</u>
Total additions	89,208,995	89,702,951
Deductions:		
Employer contributions for year	(147,930,940)	(135,008,596)
Interest on contributions	<u>(5,090,014)</u>	<u>(4,645,382)</u>
Total deductions	(153,020,954)	(139,653,978)
Other Changes:		
Plan amendments	0	0
Changes in assumptions and methods	<u>0</u>	<u>(8,175,829)</u>
Net other changes	0	(8,175,829)
Expected UAAL, end of year	\$ 1,109,185,791	\$ 1,084,091,921
Actual UAAL, end of year	<u>1,213,263,294</u>	<u>1,172,997,750</u>
Actuarial Gain/(Loss)	\$ (104,077,503)	\$ (88,905,829)
Components of Actuarial Gain/(Loss):		
Investment gain/(loss) on actuarial value of assets	\$ (97,395,932)	\$ (112,748,059)
Other gains/(losses)	<u>(6,681,571)</u>	<u>23,842,230</u>
Total actuarial gain/(loss)	\$ (104,077,503)	\$ (88,905,829)

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SECTION IV. VALUATION EXHIBITS

EXHIBIT 14. NORMAL COST

The normal cost has been calculated using the Entry Age Normal actuarial cost method.

	9/30/2023		9/30/2022	
OLD DB Plan				
Expected payroll for next fiscal year	\$ 73,307,658		\$ 69,329,992	
Normal cost ¹		<u>% of Old DB Payroll</u>		<u>% of Old DB Payroll</u>
Retirement	\$ 6,281,224	8.57%	\$ 6,826,078	9.85%
Disability	161,451	0.22%	169,015	0.24%
Death	164,970	0.23%	227,287	0.33%
Withdrawal	<u>2,440,571</u>	<u>3.33%</u>	<u>1,922,385</u>	<u>2.77%</u>
Total active normal cost	\$ 9,048,216	12.34%	\$ 9,144,766	13.19%
Assumed DB administrative expenses	<u>1,541,994</u>	<u>2.10%</u>	<u>1,418,584</u>	<u>2.05%</u>
Total normal cost and expenses	\$ 10,590,210	14.45%	\$ 10,563,350	15.24%
Expected member contributions	<u>(6,995,232)</u>	<u>(9.54%)</u>	<u>(6,630,884)</u>	<u>(9.56%)</u>
Government portion of normal cost	\$ 3,594,978	4.90%	\$ 3,932,466	5.67%
DB 1.75 Plan				
Expected payroll for next fiscal year	\$ 173,020,278		\$ 163,235,496	
Normal cost ¹		<u>% of DB 1.75 Payroll</u>		<u>% of DB 1.75 Payroll</u>
Retirement	\$ 10,194,413	5.89%	\$ 10,019,580	6.14%
Disability	525,463	0.30%	507,086	0.31%
Death	452,068	0.26%	711,923	0.44%
Withdrawal	<u>4,883,222</u>	<u>2.82%</u>	<u>3,859,312</u>	<u>2.36%</u>
Total active normal cost	\$ 16,055,166	9.28%	\$ 15,097,902	9.25%
Assumed DB administrative expenses	<u>3,639,406</u>	<u>2.10%</u>	<u>3,340,016</u>	<u>2.05%</u>
Total normal cost and expenses	\$ 19,694,572	11.38%	\$ 18,437,918	11.30%
Expected member contributions	<u>(16,436,926)</u>	<u>(9.50%)</u>	<u>(15,507,372)</u>	<u>(9.50%)</u>
Government portion of normal cost	\$ 3,257,646	1.88%	\$ 2,930,546	1.80%
TOTAL DB Plans				
Expected payroll for next fiscal year	\$ 246,327,935		\$ 232,565,488	
Total active normal cost ¹	\$ 25,103,383	<u>10.19%</u>	\$ 24,242,668	<u>10.42%</u>
Assumed DB administrative expenses	<u>5,181,400</u>	<u>2.10%</u>	<u>4,758,600</u>	<u>2.05%</u>
Total normal cost and expenses	\$ 30,284,783	12.29%	\$ 29,001,268	12.47%
Expected member contributions	<u>(23,432,158)</u>	<u>(9.51%)</u>	<u>(22,138,256)</u>	<u>(9.52%)</u>
Government portion of normal cost	\$ 6,852,625	2.78%	\$ 6,863,012	2.95%

¹ Includes interest to mid-year.

SECTION IV. VALUATION EXHIBITS

EXHIBIT 15. AMORTIZATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY

Pursuant to GCA Section 8137, as modified by P.L. 33-186, the unfunded liabilities of the Government of Guam Retirement Fund are to be completely funded within 82 years from May 1, 1951. As of September 30, 2023, there are 9.58 years remaining in the funding period. The amortization of the unfunded actuarial accrued liability is calculated as a constant percentage of total payroll, which is assumed to grow at 2.50% per year.

	9/30/2023	9/30/2022
Total payroll (DB and DC) for fiscal year following	\$ 611,445,966	\$ 577,700,554
Unfunded actuarial accrued liability	1,213,263,294	1,172,997,750
Remaining funding period	9.58 years	10.58 years
Annual amortization	\$ 156,424,332	\$ 139,696,287
As % of total payroll (DB and DC)	25.58%	24.18%

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SECTION IV. VALUATION EXHIBITS

EXHIBIT 16. ACTUARIALLY DETERMINED CONTRIBUTION

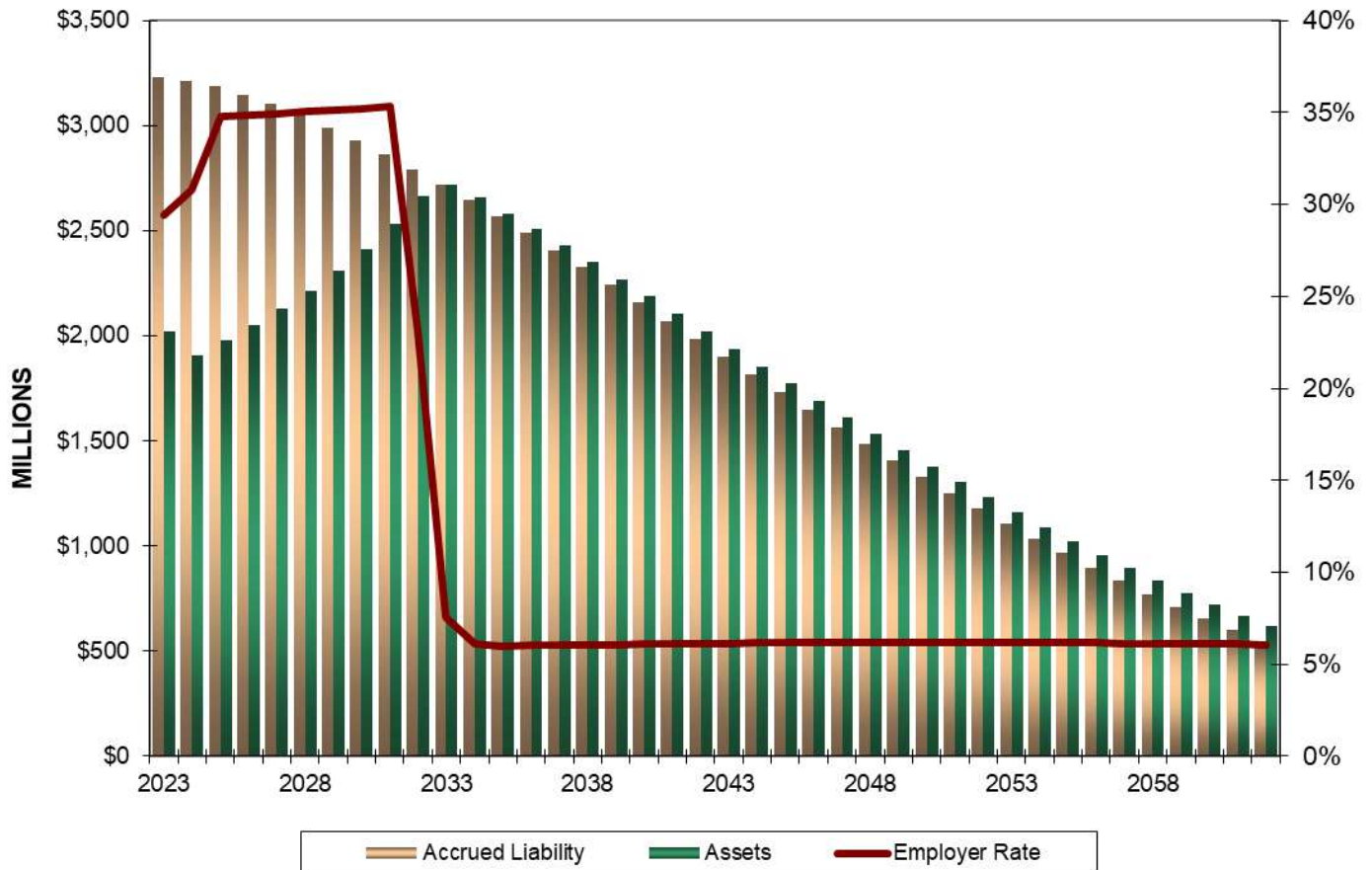
The Actuarially Determined Contribution (ADC) is equal to the sum of (1) the government normal costs for the defined benefit plans (Old DB and DB 1.75), (2) the amortization payment towards the unfunded actuarial accrued liability of the defined benefit plans (Old DB and DB 1.75), and (3) the expected government contributions to the defined contribution (DC) plan. The required contribution is then divided by the sum of the DB and DC payroll to determine the contribution rate as a percentage of payroll.

	9/30/2023	9/30/2022
Expected payroll for next fiscal year		
Old defined benefit (Old DB)	\$ 73,307,658	\$ 69,329,992
Defined Benefit 1.75 (DB 1.75)	173,020,278	163,235,496
Defined contribution (DC)	<u>365,118,030</u>	<u>345,135,066</u>
Total payroll (DB and DC)	\$ 611,445,966	\$ 577,700,554
Government normal cost including expenses (DB)	\$ 6,852,625	\$ 6,863,012
As % of DB payroll	2.78%	2.95%
As % of total payroll (DB and DC)	1.12%	1.19%
Amortization of UAAL (DB)	\$ 156,424,332	\$ 139,696,287
As % of total payroll (DB and DC)	25.58%	24.18%
Government DC contributions	\$ 24,857,918	\$ 23,437,774
As % of DC payroll	6.81%	6.79%
As % of total payroll (DB and DC)	4.07%	4.06%
Total DB and DC contributions	\$ 188,134,875	\$ 169,997,073
% of total payroll (DB and DC)	30.77%	29.43%

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SECTION IV. VALUATION EXHIBITS

EXHIBIT 17. PROJECTION OF CONTRIBUTION RATE¹



¹ The contribution rate is the combined employer rate for the DB and DC plans.

SECTION IV. VALUATION EXHIBITS

EXHIBIT 17. PROJECTION OF CONTRIBUTION RATE (values)

Year Ending	PAYROLL ¹		CONTRIB RATE		CONTRIBUTIONS			Invest Earnings ³	Benefits/ Expenses	DB Fund Actuarial
	DB	DC	DB	DC ²	DB	DC ²	EE			
2023										\$ 2,019.30
2024	\$248.28	\$348.26	29.43%	22.59%	\$73.06	\$78.67	\$23.40	\$129.26	\$(266.90)	1,904.86
2025	246.33	365.12	30.77%	23.96%	75.80	87.49	21.72	132.25	(272.90)	1,978.04
2026	228.59	398.14	34.80%	28.04%	79.55	111.65	20.39	136.29	(278.13)	2,051.25
2027	214.68	427.72	34.85%	28.13%	74.82	120.32	19.14	141.39	(281.65)	2,128.90
2028	201.45	457.01	34.95%	28.26%	70.41	129.17	18.03	146.89	(283.56)	2,213.70
2029	189.77	485.15	35.05%	28.39%	66.51	137.75	17.04	152.93	(284.34)	2,307.68
2030	179.34	512.45	35.14%	28.51%	63.02	146.08	16.15	159.67	(283.82)	2,413.11
2031	170.05	539.04	35.22%	28.61%	59.89	154.21	15.30	167.24	(282.65)	2,531.57
2032	161.06	565.76	35.31%	28.72%	56.87	162.47	14.47	175.77	(280.45)	2,665.34
2033	152.32	592.67	23.03%	16.46%	35.08	97.53	13.72	182.15	(277.52)	2,718.84
2034	144.40	619.21	7.54%	0.98%	10.89	6.08	13.01	181.90	(274.36)	2,656.05
2035	136.96	645.75	6.08%	0.00%	8.33	-	12.19	177.29	(270.81)	2,582.52
2036	128.30	673.97	6.01%	0.00%	7.71	-	11.48	172.24	(266.72)	2,506.80
2037	120.84	701.48	6.02%	0.00%	7.27	-	10.77	167.06	(262.12)	2,429.34
2038	113.38	729.51	6.04%	0.00%	6.85	-	10.10	161.76	(257.43)	2,350.18
2039	106.27	757.68	6.05%	0.00%	6.43	-	9.40	156.35	(252.57)	2,269.35
2040	98.96	786.60	6.07%	0.00%	6.01	-	8.76	150.84	(247.23)	2,187.32
2041	92.19	815.51	6.09%	0.00%	5.61	-	8.13	145.26	(241.52)	2,104.41
2042	85.57	844.82	6.11%	0.00%	5.23	-	7.54	139.64	(235.34)	2,021.10
2043	79.38	874.27	6.13%	0.00%	4.87	-	6.99	134.00	(228.87)	1,937.74
2044	73.62	903.87	6.14%	0.00%	4.52	-	6.46	128.36	(222.13)	1,854.61
2045	68.04	933.89	6.16%	0.00%	4.19	-	5.96	122.76	(215.21)	1,771.98
2046	62.74	964.24	6.18%	0.00%	3.88	-	5.47	117.19	(207.94)	1,690.26
2047	57.59	995.06	6.18%	0.00%	3.56	-	5.03	111.71	(200.48)	1,609.79
2048	52.98	1,025.99	6.18%	0.00%	3.27	-	4.60	106.31	(193.00)	1,530.69
2049	48.39	1,057.55	6.18%	0.00%	2.99	-	4.16	101.00	(185.40)	1,453.15
2050	43.74	1,089.84	6.17%	0.00%	2.70	-	3.77	95.82	(177.79)	1,377.40
2051	39.73	1,122.20	6.17%	0.00%	2.45	-	3.38	90.75	(170.31)	1,303.40
2052	35.54	1,155.44	6.16%	0.00%	2.19	-	3.00	85.80	(163.02)	1,231.12
2053	31.53	1,189.22	6.16%	0.00%	1.94	-	2.59	80.96	(156.05)	1,160.28
2054	27.23	1,224.03	6.16%	0.00%	1.68	-	2.17	76.21	(149.22)	1,090.86
2055	22.89	1,259.66	6.15%	0.00%	1.41	-	1.78	71.56	(142.32)	1,023.04
2056	18.76	1,295.85	6.15%	0.00%	1.15	-	1.44	67.04	(135.21)	957.24
2057	15.17	1,332.31	6.15%	0.00%	0.93	-	1.17	62.67	(127.96)	893.88
2058	12.29	1,368.88	6.14%	0.00%	0.75	-	0.94	58.47	(120.64)	833.25
2059	9.88	1,405.82	6.12%	0.00%	0.60	-	0.76	54.47	(113.32)	775.64
2060	7.95	1,443.14	6.11%	0.00%	0.49	-	0.61	50.68	(106.17)	721.15
2061	6.39	1,480.98	6.09%	0.00%	0.39	-	0.48	47.09	(99.22)	669.81
2062	5.02	1,519.53	6.08%	0.00%	0.31	-	0.37	43.73	(92.39)	621.75

¹ Payroll is assumed to increase 2.50% per year.

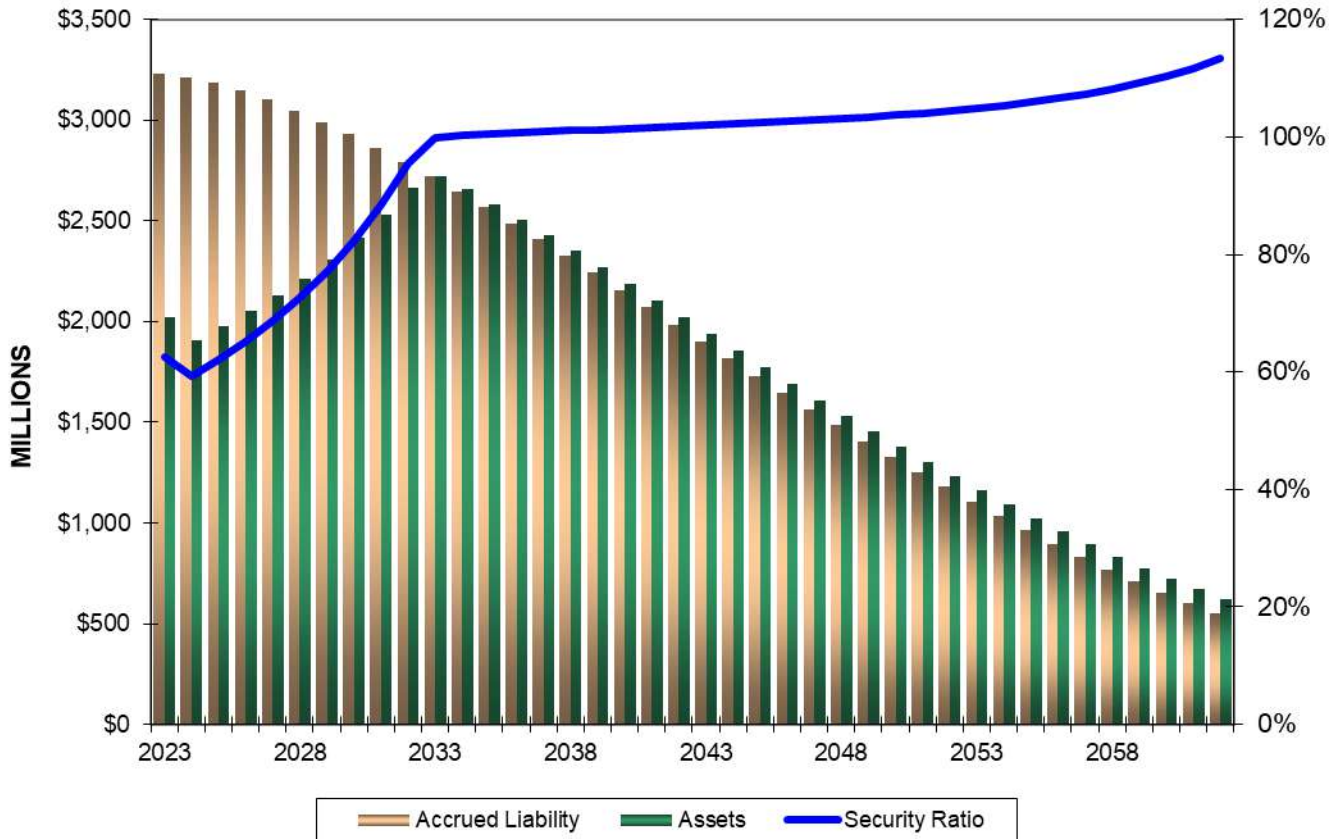
² DC rate and contributions are those for payment towards UAAL and plan expenses only.

³ Investment earnings are assumed to be 7.0% per year on the market value of assets.

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SECTION IV. VALUATION EXHIBITS

EXHIBIT 18. PROJECTION OF SECURITY RATIO



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SECTION IV. VALUATION EXHIBITS

EXHIBIT 18. PROJECTION OF SECURITY RATIO (values)

Year Ending	\$'s in millions					Security Ratio
	Payroll ¹	DB Rate	Contribs DB Plan	DB Fund AVA ²	Accrued Liability	
2023				\$2,019.30	\$3,232.57	62.47%
2024	\$611.45	29.43%	\$154.96	1,904.86	3,213.98	59.27%
2025	626.73	30.77%	165.74	1,978.04	3,185.08	62.10%
2026	642.40	34.80%	194.65	2,051.25	3,147.13	65.18%
2027	658.46	34.85%	198.77	2,128.90	3,101.40	68.64%
2028	674.92	34.95%	203.45	2,213.70	3,049.20	72.60%
2029	691.79	35.05%	208.36	2,307.68	2,991.37	77.14%
2030	709.09	35.14%	213.42	2,413.11	2,929.03	82.39%
2031	726.82	35.22%	218.58	2,531.57	2,862.57	88.44%
2032	744.99	35.31%	223.98	2,665.34	2,792.83	95.44%
2033	763.61	23.03%	135.15	2,718.84	2,720.41	99.94%
2034	782.70	7.54%	16.66	2,656.05	2,645.42	100.40%
2035	802.27	6.08%	7.80	2,582.52	2,568.00	100.57%
2036	822.33	6.01%	7.26	2,506.80	2,488.65	100.73%
2037	842.89	6.02%	6.83	2,429.34	2,407.76	100.90%
2038	863.96	6.04%	6.42	2,350.18	2,325.37	101.07%
2039	885.56	6.05%	5.99	2,269.35	2,241.53	101.24%
2040	907.69	6.07%	5.60	2,187.32	2,156.70	101.42%
2041	930.39	6.09%	5.21	2,104.41	2,071.20	101.60%
2042	953.65	6.11%	4.85	2,021.10	1,985.53	101.79%
2043	977.49	6.13%	4.51	1,937.74	1,899.99	101.99%
2044	1,001.93	6.14%	4.18	1,854.61	1,814.92	102.19%
2045	1,026.97	6.16%	3.86	1,771.98	1,730.54	102.39%
2046	1,052.65	6.18%	3.56	1,690.26	1,647.19	102.62%
2047	1,078.96	6.18%	3.27	1,609.79	1,565.09	102.86%
2048	1,105.94	6.18%	2.99	1,530.69	1,484.38	103.12%
2049	1,133.59	6.18%	2.70	1,453.15	1,405.24	103.41%
2050	1,161.93	6.17%	2.45	1,377.40	1,327.87	103.73%
2051	1,190.97	6.17%	2.19	1,303.40	1,252.25	104.09%
2052	1,220.75	6.16%	1.94	1,231.12	1,178.31	104.48%
2053	1,251.27	6.16%	1.68	1,160.28	1,105.83	104.92%
2054	1,282.55	6.16%	1.41	1,090.86	1,034.78	105.42%
2055	1,314.61	6.15%	1.15	1,023.04	965.33	105.98%
2056	1,347.48	6.15%	0.93	957.24	897.85	106.61%
2057	1,381.17	6.15%	0.76	893.88	832.71	107.35%
2058	1,415.69	6.14%	0.61	833.25	770.17	108.19%
2059	1,451.09	6.12%	0.49	775.64	710.45	109.18%
2060	1,487.36	6.11%	0.39	721.15	653.64	110.33%
2061	1,524.55	6.09%	0.31	669.81	599.73	111.69%
2062	1,562.66	6.08%	0.24	621.75	548.83	113.29%

¹ Payroll is assumed to increase 2.50% per year.

² Actuarial Value of Assets. Investment earnings are assumed to be 7.0% per year on the market value of assets.

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APPENDIX A. SUMMARY OF PLAN PROVISIONS

The following description is only a brief summary of the more important provisions of the retirement plan. Actual plan provisions are contained in Chapter 8 of the Guam Code, as modified by Public Law 33-186.

Membership Conditions and Exclusions (Old DB Plan): All employees of the Government of Guam hired on or before September 30, 1995 are required to participate as a condition of employment, except:

- a) Persons who are compensated on a fee basis;
- b) Independent contractors;
- c) Persons employed for a specific project;
- d) Persons employed in the Senior Citizens' Community Employment Program; and
- e) Persons with less than 20 years of service prior to September 30, 1995 who elect to transfer to the Government of Guam Defined Contribution Fund. Participants have an annual opportunity to transfer.

Membership is optional for:

- a) Temporary, seasonal, intermittent and part-time employees;
- b) Persons employed for a specific period of time and not domiciled in Guam; and
- c) Employees of a public corporation of the Government of Guam.

Membership is also applicable to members of the Legislature with special provisions for:

- a) The determination of average annual salary for pension computation purposes; and
- b) Contributions.

Membership Conditions and Exclusions (DB 1.75 Plan): All employees of the Government of Guam who were in the Defined Contribution Plan and were still employed had the option to transfer to the Defined Benefit 1.75 Plan effective January 1, 2018. Employees hired on or after January 1, 2018 are not eligible for the Old DB or DB 1.75 plans.

Pension Credits: Employees are entitled to pension credit for:

- a) Service rendered to the Government prior to May 1, 1951 when the Fund began operations.
- b) Service on or after May 1, 1951 for which contributions are required to be made by the employees.
- c) Casual or part-time employment under prescribed conditions for which contributions must be made.
- d) Unused and accumulated sick and annual (vacation) leaves with 12 days of service counted as a full month; 6 to 11 days, ½ month; and less than 6 days disregarded.
- e) For employees hired before June 1, 1989, pension credit is granted up to a maximum of 5 years for Federal service, provided the employee terminates membership in the Federal Civil Service Retirement Fund and makes a contribution to the Government of Guam Retirement Fund equal to the amount contributed by the member and his employer during the period which is equal in length to the period for which service credit is requested, and which ends on the member's

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termination date of such employment with interest from the date of such termination to the date of payment.

- f) For employees hired before June 1, 1989, educational leave time or periods of termination for educational training purposes, if contributions are made to the Fund with interest. Members who first joined the fund prior to January 31, 1987, may receive credit for up to the normal period of time required to complete degree without having been employed by the government prior to the period during which the degree was earned.
- g) Military service prior to May 1, 1951, if not considered for any Federal Government Pension other than for disability. If entry into military service occurred after May 1, 1951, total pension credit is limited to 5 years in the aggregate, provided the employee was in the service of the Government of Guam at date of entry into military service and returned to the Government of Guam service within one year following discharge from military service under conditions other than dishonorable, or within 6 months after completion of education under the various education benefits programs for veterans; otherwise the total credit is limited to three years.

Schedule for Computing Service: The following schedule shall govern the computation of pension credit: 12 days or more during any month constitutes a month of service; 6 to 11 days, $\frac{1}{2}$ month; less than 6 days is disregarded. Nine months or more during any year constitutes a year of service.

Vesting of Pension Credit: Vesting occurs after at least 5 years of service.

Upon separation from service, an employee may optionally leave the contribution credits in the Fund and qualify for a deferred retirement annuity, based upon the total pension credit. If the pension credit is 25 years or more, no refund of contributions is payable and the employee must accept a deferred retirement annuity.

Conditions for Service Retirement: With respect to any employee who originally became a member of the Fund prior to October 1, 1981:

- a) Such member may retire on a service retirement annuity at age 60 or over, or at age 55 in the case of a member of the uniformed personnel after at least 10 years of service. Upon retirement, a member of the uniformed personnel shall be considered one grade above that held at date of retirement.
- b) A member with at least 25 years of service may retire at any age on an unreduced retirement annuity.
- c) Any retired employee with at least 25 years of credit service shall be entitled to the full retirement annuity on and after September 30, 1981.
- d) Any member, active or inactive, may retire after 20 years of service, regardless of age. In such case, the retirement annuity shall be reduced $\frac{1}{4}$ of 1% for each month that the age of the member is less than 60 years (3% per year).

With respect to an employee who became a member of the Fund on or after October 1, 1981, and prior to August 22, 1984, the following provisions shall govern:

- a) Such member may retire on a service retirement annuity at age 60 or over, or at age 55 if a member of the uniformed personnel after at least 15 years of service and upon retirement shall be considered one rank grade above that held at such date.
- b) A member with at least 30 years of service shall be eligible for service retirement, regardless of age, without reduction for early retirement.

SECTION V. APPENDICES

- c) Any member, whether in an active or inactive status, may retire after 25 years of service, at any age, on an annuity reduced $\frac{1}{4}$ of 1% per month (3% per year) for each month member's age is less than 60.

With respect to any employee becoming a member of the Fund on or after August 22, 1984, and a member of the Old DB Plan:

- a) Such member may retire on a service retirement annuity at age 65 or over, or at age 60 in the case of a member of the uniformed personnel after at least 15 years of service. Upon retirement, a member of the uniformed personnel shall be considered one grade above that held at date of retirement.
- b) A member with at least 30 years of service may retire at any age on an unreduced retirement annuity.
- c) Any member, active or inactive, may retire after 25 years of service, regardless of age. In such case, the retirement annuity shall be reduced $\frac{1}{4}$ of 1% for each month that the age of the member is less than 65 years (3% per year).

With respect to any employee in the DB 1.75 Plan:

- a) Such member may retire on a service retirement annuity at age 62 or over.
- b) Any member, active or inactive, may retire after the attainment of age 55 with 25 years of service. In such case, the retirement annuity shall be reduced $\frac{1}{2}$ of 1% for each month that the age of the member is less than 62 years (6% per year).

Amount of Service Retirement Annuity (Old DB Plan): A basic annuity of 2.00% of "average annual salary" for each of the first 10 years of credited service; and 2.5% of "average annual salary" for each full year of pension credit above 10 years, plus twenty dollars (\$20.00) multiplied by years of credited service reduced by an amount equal to one hundredth of one percent (.01%) of said amount for each one dollar (\$1.00) that a member's average annual salary exceeds the amount of six thousand dollars (\$6,000).

The minimum amount of service retirement annuity payable by the Fund is \$1,200 per year. The maximum retirement annuity is 85% of "average annual salary."

Amount of Service Retirement Annuity (DB 1.75): A basic annuity of 1.75% of "average annual salary" for each year of credited service. The minimum amount of service retirement annuity payable by the Fund is \$1,200 per year. The maximum retirement annuity is 85% of "average annual salary."

Average Annual Salary: Average of three highest annual salaries received by a member during the entire period of pension credit. A minimum of \$6,000 applies to Old DB Plan members.

The annual salary of the member shall include the basic rate of salary on which contributions were made by the member and any salary on which the member made contributions as required under GCA, Section 8136(a). Effective October 1, 1986, salary can include payment for unused annual leave upon retirement for Old DB Plan members. In case of members of the Legislature, the average annual salary is the salary of the Director of Administration at the member's date of retirement, or the average of the three highest annual salaries received by the member during the period of membership credit, whichever is greater.

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Automatic Increase in Annuity: Effective July 1, 1984, any member retiring from service and entitled to benefits after September 1, 1972, is to receive each year, on the anniversary date of retirement, an increment of \$600 if the annual annuity is \$3,500 or less; \$400 if the annuity is between \$3,500 and \$6,300 per year; \$300 if the annuity is between \$6,300 and \$10,100; and \$200 if the annuity exceeds \$10,100 per year.

Disability Retirement: Upon total and permanent disability due to physical or mental causes, an employee under age 65 is entitled to a disability retirement annuity. For employees hired prior to August 22, 1984, the amount of the disability retirement annuity will be 66-2/3% of the employee's salary in effect on the date of disability. Subsequent employees will have an annuity amount based on 66-2/3% (50% for DB 1.75 Plan members) of the average of the highest three years of salary. If the disability was not due to occupational causes, the employee must have Government of Guam service credit of at least six years, or five years in the case of terminal illness, in order to qualify, except that new members since May 28, 1985, may not retire if a disability arises from impairment or conditions existing prior to employment.

A disability retirement annuitant must submit to a medical examination at least once a year during the first five years of disability, and at least once every three years thereafter, by a physician or physicians designated by the Board in order to establish continuing disability and entitlement to benefits. Should a disability annuitant resume gainful employment in a position other than the particular job in which he was engaged when declared disabled, the disability retirement benefit shall continue as initially determined.

A member receiving disability retirement benefits since December 1, 1972, is entitled to receive on the anniversary date of retirement, an annual increase of \$300 if the benefit is \$3,000 per year or less; \$250 per year where the annuity is between \$3,000 and \$6,000 per year; \$200 per year where the annuity is between \$6,000 and \$10,000 per year; and \$100 if the annuity exceeds \$10,000 per year.

Re-entry Into Service: A member on retirement who re-enters services as an employee eligible for membership shall have the annuity suspended during the period of employment without losing rights to automatic increases in the retirement annuity during the period of re-employment. This provision does not apply to Department of Education employees who occupy positions dealing with the Chamorro Language and Culture Program in Guam schools, persons employed as classroom teachers, guidance or health counselors when critical need arises, nor elected officials.

Benefits to Survivors: Benefits are payable to a surviving spouse and children under age 21, upon the death of a member while in service after at least three years of service, or occurring while on retirement. The benefit to children of an annuitant or member whose death occurs while in service after at least three years of service is payable until age 25 if they are full-time students in an accredited educational institution, or payable regardless of age if disabled and disability occurred before age 18.

If only a spouse survives the active or retired member, the annuity payable is 60% of the service or disability retirement annuity earned by the member, subject to a minimum of \$1,200 per year.

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The annuity to a child is \$2,880 per year, subject to a maximum payment to five or more minor children of \$14,400 per year. The term “child” or “children” includes any natural child or adopted child under age 21, or any permanently disabled child whose incapacity began before the child attained age 21.

A survivor annuitant is entitled to an automatic increase in annuity each year on the anniversary date of the annuity of \$600 if the annuity is \$3,500 per year or less; \$400 if the annuity is between \$3,500 and \$6,300 per year; \$300 if the annuity is between \$6,300 and \$10,100; and \$200 if the annuity is more than \$10,100 per year.

A surviving spouse or minor child surviving the member is entitled, in addition to the above, a death benefit of \$1,000 payable in a lump sum.

A survivor’s annuity terminates upon death or re-marriage under the age of 40, attainment of age 21 of the child, or the termination of the incapacity of a disabled child.

Optional Privilege at Retirement: Upon retirement from service, any unmarried employee, if in good health as determined by medical examination, may elect to receive, on an actuarial equivalent basis in lieu of the full retirement annuity, a reduced retirement annuity payable during the annuitant’s lifetime, plus an annuity to a designated beneficiary to become payable at death of the annuitant. The annuity to the beneficiary is to be paid at the same rate and under the same conditions that apply to a survivor of a married member whose death occurs while in service.

Death Benefit – Active and Retired Members Without Survivors: Upon death of a member while in service, leaving no survivors eligible for annuities, the designated beneficiary or estate is entitled to a refund of the contribution credits, plus interest, together with a death benefit of \$1,000 payable in a lump sum.

Upon death of a retired member, if no survivors’ annuities are payable, the death benefit to a designated beneficiary or the estate of the member consists of the excess, if any, of: (1) the total contribution credits of the member at retirement, plus interest, over (2) the total amount of annuity payments made to the retired member, plus the sum of \$1,000.

Death Benefit – Inactive Members: Upon the death of an inactive member with at least 20 years of pension credit, and survived by a spouse or minor children, the following benefit options are provided: (a) the surviving spouse of children, as the case may be, may elect to receive the annuities prescribed if the death of a member occurs while in service; or (b) a refund of the deceased member’s total contribution credits, plus interest.

Refund of Members’ Contributions: Upon complete separation from service, or transfer to the Government of Guam Defined Contribution Fund, a member with less than 25 years of pension credit may receive a refund of the total contributions, plus interest (except that no interest is payable if the total pension credit is less than one year).

Contributions by Members: Each Old DB Plan member shall contribute to the Fund 9½% of salary earned and accruing after October 1, 1997; and at the member’s option, 10½% of non-base pay subsequent to October 1, 1997. Each DB 1.75 Plan member shall contribute to the Fund 9½% of salary earned and accruing after January 1, 2018.

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APPENDIX B. ACTUARIAL COST METHOD AND ASSUMPTIONS

	September 30, 2023		September 30, 2022	
Actuarial Cost Method	Entry Age Normal		Entry Age Normal	
Interest Rate	7.00%		7.00%	
Long-term Expected Rate of Return on Plan Assets	7.00%		7.00%	
Salary Increases	<u>Service</u>	<u>% Increase</u>	<u>Service</u>	<u>% Increase</u>
	0 – 5	6.0%	0 – 5	6.0%
	6 – 10	4.5%	6 – 10	4.5%
	11 – 15	3.0%	11 – 15	3.0%
	16 – 20	3.0%	16 – 20	3.0%
	Over 20	3.0%	Over 20	3.0%
Total Payroll Growth (DB and DC)				
First year	n/a		4.00%	
After first year	2.50%		2.50%	
Cost of Living Adjustment	Specified in Plan		Specified in Plan	
Mortality				
Healthy Retiree	PUB-2010 General Retiree table 130% before age 80 +4 for males +2 for females projected generationally using 50% of Scale MP-2020 from 2010		PUB-2010 General Retiree table 130% before age 80 +4 for males +2 for females projected generationally using 50% of Scale MP-2020 from 2010	
Healthy Beneficiaries	PUB-2010 General Contingent Survivors table 130% before age 80 +3 for males +4 for females projected generationally using 50% of Scale MP-2020 from 2010		PUB-2010 General Contingent Survivors table 130% before age 80 +3 for males +4 for females projected generationally using 50% of Scale MP-2020 from 2010	
Disability				
Incidence	Custom age-based table based upon actual experience (see attached)		Custom age-based table based upon actual experience (see attached)	
Post-disability mortality	PUB-2010 Disabled Retiree table 130% before age 80 +4 for males +2 for females projected generationally using 50% of Scale MP-2020 from 2010		PUB-2010 Disabled Retiree table 130% before age 80 +4 for males +2 for females projected generationally using 50% of Scale MP-2020 from 2010	

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	September 30, 2023	September 30, 2022
Withdrawal Rates	Service-based rates (see attached)	Service-based rates (see attached)
Retirement Age	40% assumed to retire at earliest eligibility for unreduced benefits. 20% per year thereafter until age 75 100% at age 75	40% assumed to retire at earliest eligibility for unreduced benefits. 20% per year thereafter until age 75 100% at age 75
Return of Contributions	100% of current Old DB Plan employees who withdraw before retirement and who have less than 20 years of service are assumed to elect a return of contributions Terminated or inactive members with at least 5 years of service and an account balance of at least \$10,000 and who have not withdrawn their contributions are assumed to retire upon eligibility for unreduced benefits. All other employees who have previously withdrawn are assumed to elect a return of contributions. Contributions earn 4.5% interest	100% of current Old DB Plan employees who withdraw before retirement and who have less than 20 years of service are assumed to elect a return of contributions Terminated or inactive members with at least 5 years of service and an account balance of at least \$10,000 and who have not withdrawn their contributions are assumed to retire upon eligibility for unreduced benefits. All other employees who have previously withdrawn are assumed to elect a return of contributions. Contributions earn 4.5% interest
Marital Status	Retiree data included spouse information. For active employees, 75% are assumed to have spouses at retirement. The assumed age difference is 3 years (+3 for a male spouse; -3 for a female spouse).	Retiree data included spouse information. For active employees, 75% are assumed to have spouses at retirement. The assumed age difference is 3 years (+3 for a male spouse; -3 for a female spouse).
Leave Adjustments	Assumed to add 1.5 years of service (Old DB only) and increase average earnings (Old DB only) by 3% at retirement	Assumed to add 1.5 years of service (Old DB only) and increase average earnings (Old DB only) by 3% at retirement
Administrative Expenses	\$7,402,000 per year (equal to budgeted expense for year ending 9/30/24), allocated 70% to DB and 30% to DC.	\$6,798,000 per year (equal to budgeted expense for year ending 9/30/23), allocated 70% to DB and 30% to DC.
Survivor Benefit – Minor Children	An average of 0.2 eligible child survivors for each retiree, with payments paid for 6 years. Payments to current child survivors are assumed to be payable through age 21.	An average of 0.2 eligible child survivors for each retiree, with payments paid for 6 years. Payments to current child survivors are assumed to be payable through age 21.

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	September 30, 2023	September 30, 2022
Asset Valuation Method	3-year phase-in of gains/losses relative to interest rate assumption	3-year phase-in of gains/losses relative to interest rate assumption
Data Inconsistencies	None	None

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SECTION V. APPENDICES

Probabilities of Separation from Active Service
(per 100 working at each age)

MALE					FEMALE				
Age	Death	Disability	Service	Withdrawal	Age	Death	Disability	Service	Withdrawal
20	0.04	0.03	0	15.0	20	0.01	0.02	0	15.0
21	0.04	0.03	1	13.0	21	0.01	0.02	1	13.0
22	0.04	0.03	2	10.0	22	0.01	0.02	2	10.0
23	0.04	0.03	3	8.0	23	0.01	0.02	3	8.0
24	0.04	0.03	4	7.0	24	0.01	0.02	4	7.0
25	0.04	0.03	5	6.0	25	0.01	0.02	5	6.0
26	0.05	0.03	6	5.0	26	0.02	0.02	6	5.0
27	0.05	0.03	7	4.0	27	0.02	0.02	7	4.0
28	0.05	0.03	8	3.0	28	0.02	0.02	8	3.0
29	0.05	0.03	9	2.0	29	0.02	0.02	9	2.0
30	0.06	0.03	10	2.0	30	0.02	0.02	10	2.0
31	0.06	0.03	11	2.0	31	0.01	0.02	11	2.0
32	0.07	0.03	12	2.0	32	0.03	0.02	12	2.0
33	0.07	0.03	13	2.0	33	0.03	0.02	13	2.0
34	0.07	0.03	14	2.0	34	0.03	0.02	14	2.0
35	0.08	0.03	15	2.0	35	0.04	0.02	15	2.0
36	0.09	0.03	16	2.0	36	0.04	0.02	16	2.0
37	0.09	0.03	17	2.0	37	0.04	0.02	17	2.0
38	0.10	0.03	18	2.0	38	0.05	0.02	18	2.0
39	0.11	0.03	19	2.0	39	0.05	0.02	19	2.0
40	0.12	0.05	20 & over	2.0	40	0.06	0.03	20 & over	2.0
41	0.13	0.05			41	0.06	0.03		
42	0.14	0.05			42	0.07	0.03		
43	0.15	0.05			43	0.07	0.03		
44	0.17	0.05			44	0.08	0.03		
45	0.18	0.10			45	0.09	0.05		
46	0.19	0.10			46	0.09	0.05		
47	0.21	0.10			47	0.10	0.05		
48	0.23	0.10			48	0.11	0.05		
49	0.25	0.10			49	0.12	0.05		
50	0.26	0.15			50	0.13	0.10		
51	0.28	0.15			51	0.14	0.10		
52	0.31	0.15			52	0.15	0.10		
53	0.33	0.15			53	0.16	0.10		
54	0.36	0.15			54	0.17	0.10		
55	0.38	0.25			55	0.19	0.15		
56	0.41	0.25			56	0.20	0.15		
57	0.45	0.25			57	0.22	0.15		
58	0.48	0.25			58	0.24	0.15		
59	0.52	0.27			59	0.26	0.14		
60	0.56	0.38			60	0.29	0.19		
61	0.61	0.38			61	0.32	0.19		
62	0.66	0.38			62	0.35	0.19		
63	0.71	0.38			63	0.38	0.19		
64	0.77	0.38			64	0.43	0.19		

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SECTION V. APPENDICES

APPENDIX C. SUMMARY OF PARTICIPANT DATA

Active Non-Uniformed – Old DB Plan

Age	COUNT			ANNUAL SALARIES		
	Males	Females	Total	Males	Females	Total
Under 20	-	-	-	-	-	-
20 – 24	-	-	-	-	-	-
25 – 29	-	-	-	-	-	-
30 – 34	-	-	-	-	-	-
35 – 39	-	-	-	-	-	-
40 – 44	-	-	-	-	-	-
45 – 49	22	31	53	\$ 2,256,422	\$ 1,834,128	\$ 3,090,550
50 – 54	95	137	232	5,568,425	8,680,019	14,248,444
55 – 59	98	158	256	5,888,225	10,185,436	16,073,661
60 – 64	70	99	169	4,769,435	6,766,515	11,535,950
65 – 69	25	44	69	1,918,851	2,821,757	4,740,608
70 & Over	<u>10</u>	<u>27</u>	<u>37</u>	<u>*</u>	<u>1,881,591</u>	<u>1,881,591</u>
Total	320	496	816	\$19,401,357	\$32,169,447	\$51,570,804

* Not shown if fewer than 20 members. The totals only sum the cells that are displayed.

Age	SERVICE									Total
	0 - 4	5 - 9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
Under 20	-	-	-	-	-	-	-	-	-	-
20 – 24	-	-	-	-	-	-	-	-	-	-
25 – 29	-	-	-	-	-	-	-	-	-	-
30 – 34	-	-	-	-	-	-	-	-	-	-
35 – 39	-	-	-	-	-	-	-	-	-	-
40 – 44	-	-	-	-	-	-	-	-	-	-
45 – 49	3	3	3	3	3	27	11	-	-	53
50 – 54	3	-	5	7	7	84	119	7	-	232
55 – 59	2	6	7	9	7	52	131	40	2	256
60 – 64	4	2	7	8	8	33	66	30	11	169
65 – 69	1	1	2	4	1	13	28	12	7	69
70 & Over	<u>-</u>	<u>-</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>8</u>	<u>11</u>	<u>5</u>	<u>12</u>	<u>37</u>
Total	13	12	25	31	26	217	366	94	32	816

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Active Uniformed – Old DB Plan

Age	COUNT			ANNUAL SALARIES		
	Males	Females	Total	Males	Females	Total
Under 20	-	-	-	-	-	-
20 – 24	-	-	-	-	-	-
25 – 29	-	-	-	-	-	-
30 – 34	-	-	-	-	-	-
35 – 39	-	-	-	-	-	-
40 – 44	-	-	-	-	-	*
45 – 49	10	-	10	*	*	*
50 – 54	43	5	48	\$ 4,364,042	*	\$ 4,364,042
55 – 59	30	5	35	3,801,042	*	3,801,042
60 – 64	16	3	19	*	*	*
65 – 69	1	2	3	*	*	*
70 & Over	<u>2</u>	<u>-</u>	<u>2</u>	<u>*</u>	<u>-</u>	<u>*</u>
Total	102	15	117	\$ 8,165,852	*	\$ 8,165,852

* Not shown if fewer than 20 members. The totals only sum the cells that are displayed.

Age	SERVICE									Total
	0 – 4	5 – 9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
Under 20	-	-	-	-	-	-	-	-	-	-
20 – 24	-	-	-	-	-	-	-	-	-	-
25 – 29	-	-	-	-	-	-	-	-	-	-
30 – 34	-	-	-	-	-	-	-	-	-	-
35 – 39	-	-	-	-	-	-	-	-	-	-
40 – 44	-	-	-	-	-	-	-	-	-	-
45 – 49	-	-	-	-	1	9	-	-	-	10
50 – 54	-	1	-	1	3	18	24	1	-	48
55 – 59	-	-	1	-	1	5	17	10	1	35
60 – 64	-	-	1	-	-	7	5	5	1	19
65 – 69	-	-	-	-	-	-	2	-	1	3
70 & Over	<u>-</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>2</u>
Total	-	2	2	1	5	39	49	16	3	117

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Active Total – Old DB Plan

Age	COUNT			ANNUAL SALARIES		
	Males	Females	Total	Males	Females	Total
Under 20	-	-	-	-	-	-
20 – 24	-	-	-	-	-	-
25 – 29	-	-	-	-	-	-
30 – 34	-	-	-	-	-	-
35 – 39	-	-	-	-	-	-
40 – 44	-	-	-	-	-	-
45 – 49	32	31	63	\$ 2,138,179	\$ 1,834,128	\$ 3,972,307
50 – 54	138	142	280	9,932,466	9,113,288	19,045,754
55 – 59	128	163	291	9,690,035	10,612,192	20,302,227
60 – 64	86	102	188	6,428,370	7,162,662	13,591,033
65 – 69	26	46	72	2,002,955	2,988,993	4,991,948
70 & Over	<u>12</u>	<u>27</u>	<u>39</u>	<u>*</u>	<u>1,881,591</u>	<u>2,620,799</u>
Total	422	511	933	\$30,192,006	\$33,592,855	\$63,784,860

* Not shown if fewer than 20 members. The totals only sum the cells that are displayed.

Age	SERVICE									Total
	0 - 4	5 – 9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
Under 20	-	-	-	-	-	-	-	-	-	-
20 – 24	-	-	-	-	-	-	-	-	-	-
25 – 29	-	-	-	-	-	-	-	-	-	-
30 – 34	-	-	-	-	-	-	-	-	-	-
35 – 39	-	-	-	-	-	-	-	-	-	-
40 – 44	-	-	-	-	-	-	-	-	-	-
45 – 49	3	3	3	3	4	36	11	-	-	63
50 – 54	3	1	5	8	10	102	143	8	-	280
55 – 59	2	6	8	9	8	57	148	50	3	291
60 – 64	4	2	8	8	8	40	71	35	12	188
65 – 69	1	1	2	4	1	13	30	12	8	72
70 & Over	<u>-</u>	<u>1</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>8</u>	<u>12</u>	<u>5</u>	<u>12</u>	<u>39</u>
Total	13	14	27	32	31	256	415	110	35	933

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Active – DB 1.75 Plan

Age	COUNT			ANNUAL SALARIES		
	Males	Females	Total	Males	Females	Total
Under 20	-	-	-	-	-	-
20 – 24	2	2	4	*	*	*
25 – 29	24	16	40	\$ 837,667	*	\$ 837,667
30 – 34	132	162	294	5,990,924	\$ 6,726,783	12,717,707
35 – 39	135	143	278	6,436,733	6,538,082	12,974,816
40 – 44	154	185	339	8,125,117	9,000,487	17,125,604
45 – 49	197	236	433	11,504,911	13,052,774	24,557,685
50 – 54	251	220	471	16,458,717	12,738,668	29,197,385
55 – 59	189	186	375	13,083,770	10,711,221	23,794,991
60 – 64	121	125	246	7,858,146	7,078,644	14,936,790
65 – 69	42	63	105	3,364,193	3,765,729	7,129,922
70 & Over	<u>25</u>	<u>30</u>	<u>55</u>	<u>1,830,132</u>	<u>1,740,624</u>	<u>3,570,756</u>
Total	1,272	1,368	2,640	\$75,490,311	\$71,353,012	\$146,843,323

* Not shown if fewer than 20 members. The totals only sum the cells that are displayed.

Age	SERVICE									Total
	0 – 4	5 – 9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
Under 20	-	-	-	-	-	-	-	-	-	-
20 – 24	-	4	-	-	-	-	-	-	-	4
25 – 29	-	39	1	-	-	-	-	-	-	40
30 – 34	-	224	66	4	-	-	-	-	-	294
35 – 39	-	134	104	40	-	-	-	-	-	278
40 – 44	-	106	83	109	41	-	-	-	-	339
45 – 49	-	93	77	82	92	88	1	-	-	433
50 – 54	-	83	66	94	62	140	26	-	-	471
55 – 59	-	53	72	81	46	75	36	12	-	375
60 – 64	-	16	38	62	32	65	27	6	-	246
65 – 69	-	11	13	22	25	24	10	-	-	105
70 & Over	<u>-</u>	<u>3</u>	<u>4</u>	<u>14</u>	<u>19</u>	<u>8</u>	<u>4</u>	<u>3</u>	<u>-</u>	<u>55</u>
Total	-	766	524	508	317	400	104	21	-	2,640

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SECTION V. APPENDICES

Service Retirees

Age	COUNT			ANNUAL BENEFITS**		
	Males	Females	Total	Males	Females	Total
Under 25	-	-	-	-	-	-
25 – 29	-	-	-	-	-	-
30 – 34	-	-	-	-	-	-
35 – 39	-	-	-	-	-	-
40 – 44	-	-	-	-	-	-
45 – 49	4	-	4	*	*	*
50 – 54	68	46	114	\$ 4,535,470	\$ 2,125,290	\$ 6,660,760
55 – 59	259	185	444	14,904,225	8,923,353	23,827,577
60 – 64	437	352	789	21,473,293	15,360,539	36,833,832
65 – 69	506	556	1,062	21,531,806	21,164,339	42,696,145
70 & Over	<u>1,271</u>	<u>1,669</u>	<u>2,940</u>	<u>48,966,292</u>	<u>54,212,589</u>	<u>103,178,881</u>
Total	2,545	2,808	5,353	\$111,411,086	\$ 101,786,110	\$213,197,196

* Not shown if fewer than 20 members. The totals only sum the cells that are displayed.

** Annual benefits shown do not include ad hoc COLAs or Supplemental Annuity Payments.

Age	ANNUAL BENEFIT LEVEL									Total
	<\$5k	\$5-10k	\$10-15k	\$15-20k	\$20-25k	\$25-30k	\$30-40k	\$40-50k	\$50k+	
Under 40	-	-	-	-	-	-	-	-	-	-
40 – 44	-	-	-	-	-	-	-	-	-	-
45 – 49	-	-	-	1	-	1	1	-	1	4
50 – 54	-	-	2	1	6	14	11	20	60	114
55 – 59	-	1	9	14	12	26	80	95	207	444
60 – 64	6	5	19	28	64	72	154	157	284	789
65 – 69	5	27	37	48	89	129	251	206	270	1062
70 – 74	1	11	39	67	119	165	329	219	183	1133
75 – 79	-	7	31	65	103	140	234	137	124	841
80 – 84	-	1	33	55	76	80	136	66	75	522
85 – 89	-	1	37	48	48	37	66	24	34	295
90 & Over	<u>-</u>	<u>1</u>	<u>23</u>	<u>32</u>	<u>29</u>	<u>16</u>	<u>25</u>	<u>9</u>	<u>14</u>	<u>149</u>
Total	12	54	230	359	546	680	1,287	933	1,252	5,353

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SECTION V. APPENDICES

Disabled Retirees

Age	COUNT			ANNUAL BENEFITS**		
	Males	Females	Total	Males	Females	Total
Under 25	-	-	-	-	-	-
25 – 29	-	-	-	-	-	-
30 – 34	-	-	-	-	-	-
35 – 39	-	-	-	-	-	-
40 – 44	-	-	-	-	-	-
45 – 49	4	-	4	*	-	*
50 – 54	4	4	8	*	*	*
55 – 59	11	5	16	*	*	*
60 – 64	12	7	19	*	*	*
65 – 69	19	12	31	*	*	*
70 & Over	<u>34</u>	<u>52</u>	<u>86</u>	<u>\$ 879,428</u>	<u>\$1,091,601</u>	<u>\$ 1,971,029</u>
Total	84	80	164	\$ 879,428	\$1,091,601	\$ 1,971,029

* Not shown if fewer than 20 members. The totals only sum the cells that are displayed.

** Annual benefits shown do not include ad hoc COLAs or Supplemental Annuity Payments.

Age	ANNUAL BENEFIT LEVEL									Total
	<\$5k	\$5-10k	\$10-15k	\$15-20k	\$20-25k	\$25-30k	\$30-40k	\$40-50k	\$50k+	
Under 40	-	-	-	-	-	-	-	-	-	-
40 – 44	-	-	-	-	-	-	-	-	-	-
45 – 49	-	-	-	2	-	1	-	1	-	4
50 – 54	-	-	1	4	1	-	1	1	-	8
55 – 59	-	-	1	2	1	4	4	4	-	16
60 – 64	-	1	1	8	3	4	0	-	2	19
65 – 69	-	-	2	11	7	5	5	-	1	31
70 – 74	-	-	3	10	7	6	5	2	-	33
75 – 79	-	-	2	8	6	6	4	-	-	26
80 – 84	-	-	-	11	7	-	1	-	-	19
85 – 89	-	-	2	1	2	2	1	-	-	8
90 & Over	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total	-	1	12	57	34	28	21	8	3	164

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SECTION V. APPENDICES

Surviving Spouses, QDRO and Child Pensioners

Age	COUNT			ANNUAL BENEFITS**		
	Males	Females	Total	Males	Females	Total
Under 20	51	51	102	\$ 146,179	\$ 146,880	\$ 293,059
20 – 24	9	10	19	*	*	*
25 – 29	4	3	7	*	*	*
30 – 34	2	4	6	-	*	*
35 – 39	1	6	7	*	*	*
40 – 44	5	19	24	*	*	*
45 – 49	11	21	32	*	301,471	301,471
50 – 54	10	71	81	*	1,284,142	1,284,142
55 – 59	11	94	105	*	1,596,055	1,596,055
60 – 64	21	147	168	330,882	2,879,019	3,209,901
65 – 69	30	257	287	545,482	5,026,367	5,571,850
70 & Over	<u>227</u>	<u>911</u>	<u>1,138</u>	<u>3,777,496</u>	<u>17,069,672</u>	<u>20,847,168</u>
Total	382	1,594	1,976	\$4,800,040	\$28,303,607	\$33,103,647

* Not shown if fewer than 20 members. The totals only sum the cells that are displayed.

** Annual benefits shown do not include ad hoc COLAs or Supplemental Annuity Payments.

*** Payees receiving benefits under Qualified Domestic Relations Orders (QDROs) are included with surviving spouses.

Age	ANNUAL BENEFIT LEVEL									Total
	<\$5k	\$5-10k	\$10-15k	\$15-20k	\$20-25k	\$25-30k	\$30-40k	\$40-50k	\$50k+	
Under 40	137	-	-	1	-	-	2	-	1	141
40 – 44	15	1	6	1	1	-	-	-	-	24
45 – 49	13	3	4	4	2	5	1	-	-	32
50 – 54	8	9	24	14	12	5	6	3	-	81
55 – 59	13	9	28	29	9	5	8	4	-	105
60 – 64	5	17	42	35	31	21	12	4	1	168
65 – 69	20	14	60	78	58	21	25	6	5	287
70 – 74	10	16	94	97	49	29	28	2	5	330
75 – 79	11	16	93	75	55	22	30	6	1	309
80 – 84	10	6	68	67	35	18	17	5	3	229
85 – 89	-	11	61	53	19	13	8	-	-	165
90 & Over	<u>2</u>	<u>8</u>	<u>46</u>	<u>34</u>	<u>7</u>	<u>4</u>	<u>3</u>	<u>1</u>	<u>-</u>	<u>105</u>
Total	244	110	526	488	278	143	140	31	16	1,976

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SECTION V. APPENDICES

Inactive and Terminated Members Who are Assumed Not to Withdraw Contributions

Age	COUNT			ANNUAL BENEFITS		
	Males	Females	Total	Males	Females	Total
Under 25	-	-	-	-	-	-
25 – 29	-	-	-	-	-	-
30 – 34	-	-	-	-	-	-
35 – 39	-	-	-	-	-	-
40 – 44	-	-	-	-	-	-
45 – 49	1	-	1	*	-	*
50 – 54	9	9	18	*	*	*
55 – 59	13	7	20	*	*	*
60 – 64	9	9	18	*	*	*
65 – 69	2	2	4	*	*	*
70 & Over	<u>13</u>	<u>5</u>	<u>18</u>	<u>*</u>	<u>*</u>	<u>*</u>
Total	47	32	79	*	*	*

* Not shown if fewer than 20 members. The totals only sum the cells that are displayed.

APPENDIX D. RISK DISCLOSURE

The purpose of this appendix is to identify, assess, and provide illustrations of risks that are significant to the Plan, and in some cases to the Plan's participants. Historical data is included.

The results of the actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match the assumptions. As an example, investments may perform better or worse than assumed in any single year and over any longer time horizon. It is therefore important to consider the potential impacts of these likely differences when making decisions that may affect the future financial health of the Plan, or of the Plan's participants.

In addition, as plans mature they accumulate larger pools of assets and liabilities. This increases the potential risk to plan funding and the finances of those who are responsible for plan funding. As an example, it is more difficult for a plan sponsor to deal with the effects of a 10% investment loss on a plan with \$1 billion in assets and liabilities than if the same plan sponsor is responsible for a 10% investment loss on a plan with \$1 million in assets and liabilities. Since pension plans make long-term promises and rely on long-term funding, it is important to consider how mature the Plan is today, and how mature it may become in the future.

Actuarial Standard of Practice No. 51 (ASOP 51) addresses these issues by providing actuaries with guidance for assessing and disclosing the risk associated with measuring pension liabilities and the determination of pension plan contributions. Specifically, it directs the actuary to:

- Identify risks that may be significant to the Plan.
- Assess the risks identified as significant to the Plan. The assessment does not need to include numerical calculations.
- Disclose plan maturity measures and historical information that are significant to understanding the Plan's risks.

ASOP 51 states that if in the actuary's professional judgment, a more detailed assessment would be significantly beneficial in helping the individuals responsible for the Plan to understand the risks identified by the actuary, then the actuary should recommend that such an assessment be performed.

This appendix uses the framework of ASOP 51 to communicate important information about: significant risks to the Plan, the Plan's maturity, and relevant historical plan data.

SECTION V. APPENDICES**Investment Risk**

Definition: The potential that investment returns will be different than expected.

Identification: To the extent that actual investment returns differ from the assumed investment return, the Plan's future assets, funding contributions, and funded status may differ significantly from those presented in this valuation.

Assessment: If the prior year's investment performance had been 150 basis points less than the 7.0% investment return assumption, it would have resulted in assets on a market value basis approximately \$26 million lower than expected. The asset loss would be recognized in the actuarial value of assets as a \$9 million loss in each of the next three years. A \$9 million decrease in actuarial value of assets would increase the contribution rate by 0.19% (from 30.77% to 30.96% in this valuation).

Interest Rate Risk

Definition: The potential that interest rates will be different than expected.

Identification: The pension liabilities reported herein have been calculated by computing the present value of expected future benefit payments using the interest rate(s) described in Appendix B. If interest rates in future valuations differ from this valuation, future pension liabilities, funding contributions, and funded status may differ significantly from those presented in this valuation. As a general rule, using a higher interest rate to compute the present value of future benefit payments will result in a lower pension liability, and vice versa.

Assessment: If the interest rate changes by 1%, the estimated change in pension liability is approximately 10%.

Demographic Risks

Definition: The potential that mortality or other demographic experience will be different than expected.

Identification: The pension liabilities reported herein have been calculated by assuming that participants will follow patterns of demographic experience (e.g., mortality, withdrawal, disability, retirement, form of payment election, etc.) as described in Appendix B. If actual demographic experience or future demographic assumptions are different from what is assumed to occur in this valuation, future pension liabilities, funding contributions, and funded status may differ significantly from those presented in this valuation. Note that we periodically perform an actuarial experience study of the Plan and provide recommendations for revisions where appropriate. An experience study has been performed for the period October 1, 2015 to September 30, 2020, and the recommendations from that study were first reflected in the actuarial valuation as of September 30, 2022.

Retirement Risk

Definition: The potential for participants to retire and receive subsidized benefits more valuable than expected.

SECTION V. APPENDICES

Identification: The Old DB Plan has valuable early retirement benefits. For example, for an employee who originally became a member of the Fund prior to October 1, 1981, the benefit is unreduced at 25 years of service (regardless of age). If the participant has reached 20 years of service, the benefits is reduced at 3% per year below age 60. For employees who became members of the Fund after October 1, 1981, the early retirement benefits are also subsidized but not as subsidized as for those prior to October 1, 1981.

Duration Risk

Definition: Duration is a measure of the weighted average time until the plan's benefits are expected to be paid. It is an indicator of sensitivity to changes in interest rates: the higher the plan's duration, the more sensitive a plan's obligations are to changes in interest rates. Duration typically decreases as a plan matures and retiree liabilities exceed liabilities for active members.

Identification: The combined duration for the Old DB Plan and the DB 1.75 plan is approximately 10 years, which implies that plan liabilities would be expected to increase about 10% in response to a 1% decrease in interest rate.

Amortization/Funding Period

Definition: The Unfunded Actuarial Accrued Liability (UAAL) is the portion of the liability that has not yet been funded (equals liabilities minus assets). This amount is amortized over a specific period of time and is included in the determination of the contributions that are required each year.

Identification: The plan currently has a UAAL of \$1,213 million, which is approximately 38% of the total liabilities. This amount is currently amortized over 9.58 years which produces a contribution requirement for this component of \$156.4 million, which represents approximately 83% of the total of DB and DC contributions required for this year (\$188.1 million).

Assessment: Based on the current amortization method, the employer contribution rate is projected to drop substantially in 2034. The employer contribution rate will also become more and more volatile as the remaining period is reduced. For example, in the actuarial valuation as of September 30, 2032, any investment gains or losses for the prior year will be amortized in less than 1 year. As we did in the 2015-2020 experience study, we continue to recommend a change in the amortization method be considered for future valuations to reduce the future volatility in the employer contribution rate and spread out the projected decline in the employer contribution rate.

Low-Default-Risk Obligation Measure (LDRM)

Effective for measurement dates February 15, 2023 or later, Actuarial Standard of Practice 4 (ASOP 4) states that when performing a funding valuation, the actuary should calculate and disclose a low-default-risk obligation measure (LDRM) of the benefits earned or accrued under the actuarial cost method used as of the measurement date. The actuary should select a discount rate derived from low-default-risk fixed income securities. We have used the Bond Buyer General Obligation 20-Bond Municipal Bond Index. The index is a 20-year high quality AA municipal bond rate and, based on Section 3.11.c. of ASOP 4, we believe this index meets the requirements for a discount rate for the LDRM. The index was 4.09% as of September 30, 2023.

SECTION V. APPENDICES

This required disclosure shows significantly higher plan liabilities and a lower funded ratio than under the funding valuation assumption, as shown in the following chart. It provides the participating employers and other interested parties with additional funding metrics of the Plan for informational purposes, but does not impact the funding of the Plan which is based on the valuation assumptions.

	Bond Buyer Index*	Plan's Current Assumption
Interest Rate	4.09%	7.00%
Accrued Liability on September 30, 2023	\$4.28 billion**	\$3.23 billion
Funded Ratio on September 30, 2023 (Actuarial Value of Assets)	47%	62%

* This would be considered a "low-default-risk obligation measure (LDRM)" using the language of ASOP 4.

** Calculated using the same actuarial assumptions and methods that were used for this valuation, except for the interest rate.

GGRF's investment policy and strategy is complex, and its target asset allocation reflects a balance of risk and return. The expected return based on GGRF's target allocation, and consequently the investment return assumption, is significantly higher than the discount rate based on the Bond Buyer Index. Investing in asset classes with a low default risk would be expected to reduce future investment returns and therefore increase future contributions needed and lower the current Funded Ratio. However, the lower investment risk levels would be expected to result in lower year-to-year volatility in the contribution rate, and a portfolio with a lower default risk might provide more benefit security for members if the associated liabilities are adequately funded. Conversely, investing in asset classes with higher expected returns and volatility would be expected to decrease future contributions and increase the current Funded Ratio, but it would increase the year-to-year volatility of the contribution rate and could provide less benefit security for members. A change away from the current return-seeking-with-reasonable-risk investment strategy is not being considered by GGRF.

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APPENDIX E. GLOSSARY OF KEY TERMS

Actuarial Accrued Liability or Total Pension Liability. The Present Value of Future Benefits allocated to past service in accordance with the actuarial cost method. GASB 67 uses the term Total Pension Liability.

Actuarial Cost Method. A method of allocating the present value of benefits to past and future periods. Actuarial cost methods take into consideration the effect of wage inflation.

Actuarial Gains and Losses. Changes to the Actuarial Accrued Liability due to deviations from the actuarial assumptions. These can include gains and losses from investments, employee turnover, disability, retirement, mortality, and administrative expenses.

Actuarial Value of Assets. A method of valuing Fund assets that may smooth gains and losses that occur in the market value over a period of time.

GASB. Government Accounting Standards Board. GASB Statements No. 67, and 68 are accounting standards issued by GASB that require certain items be disclosed in the Fund's financial statements.

Fiduciary Net Position. The market value of Fund assets.

Net Pension Liability. The dollar value of the Total Pension Liability that exceeds the market value of Fund assets. A fully funded plan will have no Net Pension Liability.

Normal Cost or Service Cost. The value of benefits earned for one year of service. The normal cost is calculated in accordance with the actuarial cost method. The accumulation of all normal costs assigned to past service equals the Actuarial Accrued Liability. GASB 68 uses the term Service Cost.

Present Value of Benefits. The sum of all benefits expected to be paid in the future by the retirement system, with the payments discounted to the present using the valuation interest rate. This includes benefits to be earned in the future for current employees.

Present Value of Future Normal Cost. The sum of all future normal costs expected for current employees, with the costs discounted back to the present using the valuation interest rate.

Security Ratio. The percentage of the Actuarial Accrued Liability that is funded by the Fund assets. A fully funded plan will have a security ratio of 100%.

Unfunded Actuarial Accrued Liability. The dollar value of the Actuarial Accrued Liability that exceeds the Actuarial Value of Assets. A fully funded plan will have no unfunded actuarial accrued liability.