Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve

PERS
of MISSISSIPPI

REPORT OF THE ANNUAL GASB STATEMENT NO. 68

REQUIRED INFORMATION FOR THE

MISSISSIPPI HIGHWAY SAFETY PATROL RETIREMENT SYSTEM

PREPARED AS OF JUNE 30, 2022

Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

October 5, 2022

Board of Trustees
Public Employees' Retirement System of Mississippi
429 Mississippi Street
Jackson, MS 39201-1005

Ladies and Gentlemen:

Presented in this report is information to assist the State in meeting the requirements of the Governmental Accounting Standards Board (GASB) Statement No. 68 as a result of sponsoring the Mississippi Highway Safety Patrol Retirement System (System). The information is presented for the period ending June 30, 2023.

GASB Statement No. 68 establishes accounting and financial reporting requirements for governmental employers who provide pension benefits to their employees through a trust.

The annual actuarial valuation used as a basis for much of the information presented in this report was performed as of June 30, 2021. The valuation was based upon data, furnished by the Retirement System staff, concerning active, inactive, and retired members along with pertinent financial information.

The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the System, and on actuarial assumptions that are, individually and in the aggregate, internally consistent and reasonably based on the actual experience of the System. In addition, the calculations were completed in compliance with the laws governing the System and, in our opinion, meet the requirements of GASB 68. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144
Phone (678) 388-1700 • Fax (678) 388-1730
www.CavMacConsulting.com
Offices in Kennesaw, GA • Bellevue, NE

In order to prepare the results in this report we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

These results are only for financial reporting and may not be appropriate for funding purposes or other types of analysis. Calculations for purposes other than satisfying the requirements of GASB 67 and GASB 68 may produce significantly different results. Future actuarial results may differ significantly from the current results presented in this report due to such factors as changes in plan experience or changes in economic or demographic assumptions.

Respectfully submitted,

Edward J. Koebel

Ben Mobley

Edward J. Koebel, FCA, EA, MAAA
Chief Executive Officer

Ben D. Mobley, ASA, FCA, MAAA
Consulting Actuary

Table of Contents

Section I – Summary of Principal Results

($ IN THOUSANDS)

	2022
Valuation Date (VD):	June 30, 2021
Measurement Date (MD):	June 30, 2022
Reporting Date (RD):	June 30, 2023
Membership Data:	
Retirees and Survivors	761
Terminated Vested Employees	40
Inactive Nonvested Members	24
Active Members	478
Total	1,303
Single Equivalent Interest Rate (SEIR):	
Long-Term Expected Rate of Return	7.55%
Municipal Bond Index Rate	3.37%
Fiscal Year in which Plan's Fiduciary Net Position is projected to be depleted from future benefit payments for current members	N/A
Single Equivalent Interest Rate	7.55%
Net Pension Liability:	
Total Pension Liability (TPL)	$ 581,926
Fiduciary Net Position (FNP)	405,372
Net Pension Liability (NPL = TPL – FNP)	$ 176,554
FNP as a percentage of TPL	69.66%
Pension Expense:	$15,759
Deferred Outflows of Resources:	$18,118
Deferred Inflows of Resources:	$2,476

Section II – Introduction

The Governmental Accounting Standards Board issued Statement No. 68 (GASB 68), "Accounting and Financial Reporting For Pensions", in June 2012. GASB Statement No. 71, "Pension Transition for Contributions Made Subsequent to the Measurement Date", should be applied simultaneously with the provisions of GASB 68. The Mississippi Highway Safety Patrol Retirement System (System) is a single-employer defined benefit pension plan.

This report, prepared as of June 30, 2022 (the Measurement Date), presents information to assist the State in meeting the requirements of GASB 68 for the fiscal year ending June 30, 2023 (Reporting Date). The material provided in this report is based on the data we received to prepare the annual actuarial valuation of the Mississippi Highway Safety Patrol Retirement System (System) as of June 30, 2021. The results of the June 30, 2021 valuation were detailed in a report dated December 8, 2021.

Two major items in GASB 68 are the requirements to include a Net Pension Liability (NPL) on the plan sponsor's balance sheet and to determine a Pension Expense (PE) that may bear little relationship to the funding requirements for the System.

Pension Expense includes amounts for service cost (the Normal Cost under Entry Age Normal (EAN) for the year), interest on the Total Pension Liability (TPL), changes in benefit structure, amortization of increases/decreases in liability due to actuarial experience and actuarial assumption changes, and amortization of investment gains/losses. The actuarial experience and assumption change impacts are amortized over the average expected remaining service life of the System membership as of the measurement date, and investment gains/losses are amortized over five years. The development of the PE is shown in Section VI.

The unamortized portions of each year's experience, assumption changes and investment gains/losses are used to develop deferred inflows and outflows, which also must be included on the employer's financial statement. The development of these deferrals is presented in Section VII.

Section II – Introduction

Among the assumptions needed for the liability calculation is a Single Equivalent Interest Rate (SEIR). To determine the SEIR, the FNP must be projected into the future for as long as there are anticipated benefits payable under the plan's provision applicable to the membership and beneficiaries of the System on the Measurement Date. Future contributions were projected to be made in accordance with the Funding Policy adopted by the Board. If the FNP is not projected to be depleted at any point in the future, as the results currently indicate, the long term expected rate of return on plan investments expected to be used to finance the benefit payments may be used as the SEIR.

If, however, at a future measurement date, the FNP is projected to be depleted, the SEIR is determined as the single rate that will generate a present value of benefit payments equal to the sum of the present value determined by discounting all projected benefit payments through the date of depletion by the long term expected rate of return, and the present value determined by discounting those benefits after the date of depletion by a 20-year tax-exempt municipal bond (rating AA/Aa or higher) rate. The rate used, if necessary, for this purpose is the monthly average of the Bond Buyers General Obligation 20-year Municipal Bond Index Rate (formerly published monthly by the Board of Governors of the Federal Reserve System). We have determined that the FNP is projected to not be depleted during the projection period and a discount rate of 7.55 percent as of June 30, 2022 will meet the requirements of GASB 68.

The sections that follow provide the results of all the necessary calculations, as well as additional disclosure items needed as Required Supplementary Information (RSI) or for required financial statement footnotes. The employer may also refer to the 2022 PERS Annual Comprehensive Financial Report on the PERS website, www.pers.ms.gov for calculations and note disclosure.

Section III – Membership Data

Data regarding the membership of the System for use as a basis for the actuarial valuation and the GASB 68 requirements were furnished by the System office. The following table summarizes the membership of the System as of June 30, 2021, the Valuation Date.

Membership

	Number
Retired Members or Beneficiaries Currently Receiving Benefits	761
Inactive Members Assumed Eligible for a Benefit at Retirement Date	40
Inactive Members Assumed Not to Receive Service Retirement Benefits	24
Active Members	478
Total	1,303

Section IV – Notes to Financial Statements

The actuarial assumptions utilized in developing the TPL are outlined in Schedule A. The TPL as of June 30, 2022 was determined by an actuarial valuation prepared as of June 30, 2021 and by the investment experience for the fiscal year ending June 30, 2021. The following actuarial assumptions are applied to all periods included in the measurement:

Inflation	2.40 percent
Salary increases	3.00 – 8.56 percent, including inflation
Investment rate of return	7.55 percent, net of pension plan investment expense, including inflation

Mortality rates for service retirees were based on the PubS.H-2010(B) Retiree Table with the following adjustments: For males, 95% of male rates up to age 60, 110% for ages 61 to 75 and 101% for ages above 77. For females, 84% of female rates up to age 72 and 100% for ages above 76. Mortality rates for disability retirees were based on the PubG.H-2010 Disabled Table adjusted 134% for males and 121% for females. Mortality rates for Contingent Annuitants were based on the PubS.H-2010(B) Contingent Annuitant Table, adjusted 97% for males and 110% for females. Mortality rates will be projected generationally using the MP-2020 projection scale to account for future improvements in life expectancy.

The actuarial assumptions used for the purposes of determining the TPL were based on the results of an actuarial experience study for the period July 1, 2016 to June 30, 2020. The experience report is dated April 20, 2021.

The long-term expected rate of return on pension plan investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected nominal returns, net of pension plan investment expense and the assumed rate of inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

Section IV – Notes to Financial Statements

The most recent target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic Equity	27.00%	4.60%
International Equity	22.00	4.50
Global Equity	12.00	4.80
Fixed Income	20.00	(0.25)
Real Estate	10.00	3.75
Private Equity	8.00	6.00
Cash Equivalents	1.00	(1.00)
Total	100.00%	

Discount Rate. The discount rate used to measure the total pension liability was 7.55 percent. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate of 7.25 percent and that employer contributions will be made at the rate set in the Board's Funding Policy (currently 49.08 percent). Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability.

Plan Description. MHSPRS is a single-employer defined benefit plan, administered by the Public Employees' Retirement System, that provides retirement benefits to sworn officers of the Mississippi Highway Safety Patrol. Membership in MHSPRS is a condition of employment granted upon hiring for all officers of the Mississippi Highway Safety Patrol who have completed a course of instruction in an authorized highway patrol training school on general law enforcement and who serve as sworn officers of the highway patrol in the enforcement of the laws of the State of Mississippi. Members and employers are statutorily required to contribute certain percentages of salaries and wages as specified by the Administrative Board of MHSPRS. Current rates are 49.08 percent for employer contributions and 7.25 percent for member contributions. MHSPRS employers contributed $16.0 million based on payroll and $3.5 from additional fees. Members contributed $2.4 million for fiscal year 2022 (reporting year 2023).

Section IV – Notes to Financial Statements

Participating members who withdraw from service at or after age 55 with at least five years of membership service, or after reaching age 45 with at least 20 years of creditable service, or with 25 years of service at any age, are entitled, upon application, to an annual retirement allowance payable monthly for life in an amount equal to 2.5 percent of average compensation during the four highest consecutive years of earnings, reduced actuarially equivalent based on valuation assumptions. MHSPRS also provides certain death and disability benefits. In the event of death prior to retirement of any member whose spouse and/or children are not entitled to a retirement allowance, the deceased member's accumulated contributions and interest are paid to the designated beneficiary. A member who terminates employment from the highway patrol and who is not eligible to receive monthly retirement benefits may request a full refund of his or her accumulated employee contributions plus interest. Upon withdrawal of contributions, a member forfeits service credit represented by those contributions.

A Cost-of-Living Adjustment (COLA) payment is made to eligible retirees and beneficiaries. The COLA is equal to 3.0 percent of the annual retirement allowance for each full fiscal year of retirement up to the year in which the retired member reaches age 60, with 3.0 percent compounded for each fiscal year thereafter.

Plan provisions and the Administrative Board's authority to determine contribution rates for MHSPRS are established by Miss. Code Ann. § 25-13-1 et seq., (1972, as amended) and may be amended only by the Mississippi Legislature. The MHSPRS plan financial report is included in the Annual Comprehensive Financial Report of the Public Employees' Retirement System available at www.PERS.ms.gov.

Section V – Net Pension Liability

As stated previously, the NPL is equal to the TPL minus the FNP. That result as of June 30, 2022 is presented in the table below, along with additional required figures ($ thousands).

	June 30, 2022
Total Pension Liability	$581,926
Fiduciary Net Position	405,372
Net Pension Liability	$176,554
Ratio of Fiduciary Net Position to Total Pension Liability	69.66%
Covered payroll	$30,895
Net Pension Liability as a percentage of covered payroll	571.46%

In addition to the results in the table above, the sensitivity of the NPL to changes in the discount rate must be disclosed. The following presents the NPL of the System, calculated using the discount rate of 7.55 percent, as well as what the System's NPL would be if it were calculated using a discount rate that is 1-percentage-point lower (6.55 percent) or 1-percentage-point higher (8.55 percent) than the current rate ($ thousands):

	1% Decrease (6.55%)	Current Discount Rate (7.55%)	1% Increase (8.55%)
System's Net Pension Liability	$247,433	$176,554	$117,847

Section V – Net Pension Liability

The following table details the changes in the NPL from the beginning to the end of the measurement year.

CHANGES IN THE NET PENSION LIABILITY
($ in Thousands)

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) – (b)
Balances at June 30, 2021	$ 576,150	$ 463,984	$ 112,166
Changes for the year:			
Service cost	7,711		7,711
Interest	41,965		41,965
Benefit Changes	0		0
Difference between expected and actual experience	(3,244)		(3,244)
Change in Assumptions	0		0
Contributions - employer		19,476	(19,476)
Contributions - employee		2,356	(2,356)
Net investment income		(39,469)	39,469
Benefit payments, including refunds of employee contributions	(40,656)	(40,656)	0
Administrative expense		(319)	319
Other changes	0	0	0
Net changes	5,776	(58,612)	64,388
Balances at June 30, 2022	$ 581,926	$ 405,372	$ 176,554

Section VI – Pension Expense

As noted earlier, the Pension Expense (PE) consists of a number of different items. GASB 68 refers to the first as Service Cost which is the Normal Cost using the Entry Age Normal actuarial funding method. The second item is interest on the beginning of year TPL and the cash flow during the year at the 7.55% rate of return in effect as of the previous Measurement Date.

The next three items refer to any change that occurred in the TPL under EAN due to benefit changes, actual experience, or assumptions. Benefit changes, which are reflected immediately in PE can be positive, if there is a benefit improvement for existing System members, or negative if there is a benefit reduction. For the year ended June 30, 2022, there were no benefit changes to be recognized.

The next item to be recognized is the portion of current year changes in TPL due to Plan experience. The portion to recognize in the current year is determined by spreading the total change over the remaining service life of the entire System membership. For the year ended June 30, 2022, the remaining service life is 4.22.

The last item under changes in TPL is changes in actuarial assumptions. There were no changes in assumptions since the last Measurement Date. The change in TPL due to changes in actuarial assumptions is spread over the remaining service life of the entire HSPRS membership just like Plan experience in the prior paragraph.

Member contributions for the year and projected earnings on the FNP, again at the rate used to calculate the liabilities are subtracted from the amount determined thus far. One-fifth of current-period differences between actual and projected earnings on the FNP are recognized in the pension expense.

The current year portions of previously determined experience, assumption, and earnings amounts, recognized as deferred outflows and inflows (see Section VII), are included next. Finally administrative expenses and other miscellaneous items are included.

Section VI – Pension Expense

The calculation of the Pension Expense for the year ended June 30, 2022 is shown in the following table:

Pension Expense
For the Year Ended June 30, 2022
($ thousands)

Service Cost	$7,711
Interest on the total pension liability	41,965
Current-period benefit changes	0
Expensed portion of current-period difference between expected and actual experience in the total pension liability	(769)
Expensed portion of current-period changes of assumptions	0
Member contributions	(2,356)
Projected earnings on plan investments	(34,308)
Expensed portion of current-period differences between actual and projected earnings on plan investments	14,756
Administrative expense	319
Other	0
Recognition of beginning deferred outflows of resources as pension expense	2,779
Recognition of beginning deferred inflows of resources as pension expense	(14,337)
Pension Expense	$15,759

Section VII – Deferred Outflows/Inflows

Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce pension expense they are labeled deferred inflows. If they will increase pension expense they are labeled deferred outflows. As noted in the previous section, the amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average remaining service life of the active and inactive System members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five year period.

The table below provides a summary of the deferred inflows and outflows ($ in thousands) as of June 30, 2022 (Measurement Date).

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$3,842	$2,476
Changes of assumptions	1,153	0
Net difference between projected and actual earnings on plan investments	13,123	0
Employer contributions subsequent to the measurement date	See note	0
Total	$18,118	$2,476

NOTE: The deferred outflows of resources reported by the State should include contributions made by the State during its fiscal year that will be reflected in the net pension liability in the next measurement period.

Amortization periods for fiscal year 2023 are 4.22 years for the average expected remaining service life of members and 5.0 year for investment gains/losses.

In order to properly report PE and deferred outflows/inflows of resources in future years, it will be necessary for employers to maintain schedules for amortizing deferred amounts.

Section VII – Deferred Outflows/Inflows

Amounts reported as deferred outflows of resources related to pensions resulting from State contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ended June 30, 2023 (Reporting Date). Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense.

Deferred Outflows and Inflows for Differences between Expected and Actual Experience ($ in thousands)

				Balances as of June 30, 2023 (Reporting Date)	
Year	Experience Losses (a)	Experience Gains (b)	Amounts Recognized in Pension Expense through 2022 (c)	Deferred Outflows (a) – (c)	Deferred Inflows (b) – (c)
2022	$0	$3,244	$769	$0	$2,475
2021	7,018	0	3,176	3,842	0
2020	0	7	6	0	1
2019	0	0	0	0	0
2018	17,311	0	17,311	0	0
Total				$3,842	$2,476

Deferred Outflows and Inflows for Differences from Assumption Changes ($ in thousands)

				Balances as of June 30, 2023 (Reporting Date)	
Year	Assumption Losses (a)	Assumption Gains (b)	Amounts Recognized in Pension Expense through 2022 (c)	Deferred Outflows (a) – (c)	Deferred Inflows (b) – (c)
2022	$0	$0	$0	$0	$0
2021	1,677	0	758	919	0
2020	0	0	0	0	0
2019	2,286	0	2,052	234	0
2018	0	0	0	0	0
Total				$1,153	$0

Section VII – Deferred Outflows/Inflows

Deferred Outflows and Inflows for Differences from Investment Experience ($ in thousands)					
				Balances as of June 30, 2023 (Reporting Date)	
Year	**Investment Losses**	**Investment Gains**	**Amounts Recognized in Pension Expense through 2022**	**Deferred Outflows**	**Deferred Inflows**
	(a)	**(b)**	**(c)**	**(a) – (c)**	**(b) – (c)**
2022	$73,777	$0	$14,755	$59,022	$0
2021	0	88,158	35,264	0	52,894
2020	16,668	0	10,002	6,666	0
2019	1,653	0	1,324	329	0
2018	0	1,828	1,828	0	0
Total				$66,017	$52,894
Net difference between projected and actual earnings on investments				$13,123	

Amortization of Collective Deferrals ($ in thousands)

Fiscal Year End	Reporting Year End	2017 Investment Gain Amount Recognized	2017 Investment Gain EOY Balance	2017 Experience Gain Amount Recognized	2017 Experience Gain EOY Balance	2017 Assumption Changes Gain Amount Recognized	2017 Assumption Changes Gain EOY Balance	2018 Investment Gain Amount Recognized	2018 Investment Gain EOY Balance	2018 Experience Loss Amount Recognized	2018 Experience Loss EOY Balance
6/30/2021	6/30/2022	$4,183	$0	$488	$0	$306	$0	$365	$368	($4,253)	($299)
6/30/2022	6/30/2023	0	0	0	0	0	0	368	0	(299)	0
6/30/2023	6/30/2024	0	0	0	0	0	0	0	0	0	0
6/30/2024	6/30/2025	0	0	0	0	0	0	0	0	0	0
6/30/2025	6/30/2026	0	0	0	0	0	0	0	0	0	0
6/30/2026	6/30/2027	0	0	0	0	0	0	0	0	0	0
6/30/2027	6/30/2028	0	0	0	0	0	0	0	0	0	0
6/30/2028	6/30/2029	0	0	0	0	0	0	0	0	0	0

Amortization of Collective Deferrals ($ in thousands)

Fiscal Year End	Reporting Year End	2019 Investment Loss Amount Recognized	2019 Investment Loss EOY Balance	2019 Assumption Changes Loss Amount Recognized	2019 Assumption Changes Loss EOY Balance	2020 Investment Loss Amount Recognized	2020 Investment Loss EOY Balance	2020 Experience Gain Amount Recognized	2020 Experience Gain EOY Balance	2021 Investment Gain Amount Recognized	2021 Investment Gain EOY Balance
6/30/2021	6/30/2022	($331)	($660)	($513)	($747)	($3,334)	($10,000)	$2	$3	$17,632	$70,526
6/30/2022	6/30/2023	(331)	(329)	(513)	(234)	(3,334)	(6,666)	2	1	17,632	52,894
6/30/2023	6/30/2024	(329)	0	(234)	0	(3,334)	(3,332)	1	0	17,632	35,262
6/30/2024	6/30/2025	0	0	0	0	(3,332)	0	0	0	17,632	17,630
6/30/2025	6/30/2026	0	0	0	0	0	0	0	0	17,630	0
6/30/2026	6/30/2027	0	0	0	0	0	0	0	0	0	0
6/30/2027	6/30/2028	0	0	0	0	0	0	0	0	0	0
6/30/2028	6/30/2029	0	0	0	0	0	0	0	0	0	0

Section VII – Deferred Outflows/Inflows

Amortization of Collective Deferrals ($ in thousands)											
		2021 Experience Loss		2021 Assumption Changes Loss		2022 Experience Gain		2022 Investment Loss		Total Deferrals	
Fiscal Year End	Reporting Year End	Amount Recognized	EOY Balance	Amount Recognized	EOY Balance	Amount Recognized	EOY Balance	Amount Recognized	EOY Balance	Amount Recognized	EOY Balance
6/30/2021	6/30/2022	($1,588)	($5,430)	($379)	($1,298)	$0	$0	$0	$0	$12,578	$52,463
6/30/2022	6/30/2023	(1,588)	(3,842)	(379)	(919)	769	2,475	(14,755)	(59,022)	($2,428)	($15,642)
6/30/2023	6/30/2024	(1,588)	(2,254)	(379)	(540)	769	1,706	(14,755)	(44,267)	($2,217)	($13,425)
6/30/2024	6/30/2025	(1,588)	(666)	(379)	(161)	769	937	(14,755)	(29,512)	($1,653)	($11,772)
6/30/2025	6/30/2026	(666)	0	(161)	0	769	168	(14,755)	(14,757)	$2,817	($14,589)
6/30/2026	6/30/2027	0	0	0	0	168	0	(14,757)	0	($14,589)	$0
6/30/2027	6/30/2028	0	0	0	0	0	0	0	0	$0	$0
6/30/2028	6/30/2029	0	0	0	0	0	0	0	0	$0	$0

Section VIII – Required Supplementary Information

There are several tables of Required Supplementary Information (RSI) that need to be included in the System's financial statements. They are provided in Schedule C. In addition, the following should be noted regarding the RSI.

Changes of assumptions.

- 2021
  - The expectation of retired life mortality was changed to the PubS.H-2010(B) Retiree Table with the following adjustments:
    - For males, 95% of male rates up to age 60, 110% for ages 61 to 75, and 101% for ages above 77.
    - For females, 84% of female rates up to age 72 scaled up to 100% for ages above 76.
    - Projection scale MP-2020 will be used to project future improvements in life expectancy generationally.
  - The expectation of contingent life mortality was changed to the PubS.H-2010(B) Retiree Table with the following adjustments:
    - For males, 97% of male rates for all ages.
    - For females, 110% of female rates for all ages.
    - Projection scale MP-2020 will be used to project future improvements in life expectancy generationally.
  - The expectation of disabled mortality was changed to PubG.H-2010 Disabled Retiree Table for disabled retirees with the following adjustments:
    - For males, 134% of male rates at all ages.
    - For females, 121% of female rates at all ages.
    - Projection scale MP-2020 will be used to project future improvements in life expectancy generationally.
  - The investment rate of return assumption was reduced from 7.75% to 7.55%.
  - The price inflation assumption was reduced from 2.75% to 2.40%.
  - The wage inflation assumption was reduced from 3.00% to 2.65%.
  - Withdrawal rates, pre-retirement mortality rates, disability rates, and service retirement rates were also adjusted to reflect actual experience more closely.

- 2019
  - The expectation of retired life mortality was changed to the PubS.H-2010(B) Retiree Table with the following adjustments:
    - For males, 112% of male rates from ages 18 to 75 scaled down to 105% for ages 80 to 119.
    - For females, 85% of the female rates from ages 18 to 65 scaled up to 102% for ages 75 to 119.
    - Projection scale MP-2018 will be used to project future improvements in life expectancy generationally.
  - The expectation of disabled mortality was changed to PubT.H-2010 Disabled Retiree Table for disabled retirees with the following adjustments:
    - For males, 137% of male rates at all ages.
    - For females, 115% of female rates at all ages.
    - Projection scale MP-2018 will be used to project future improvements in life expectancy generationally.
  - The price inflation assumption was reduced from 3.00% to 2.75%.
  - The wage inflation assumption was reduced from 3.25% to 3.00%.
  - Pre-retirement mortality rates were also adjusted to reflect actual experience more closely.
- 2017
  - The expectation of retired life mortality was changed to the RP-2014 Healthy Annuitant Blue Collar Mortality Table projected with Scale BB to 2022.
  - The wage inflation assumption was reduced from 3.75% to 3.25%.
  - Pre-retirement mortality, withdrawal and disability retirement rates were also adjusted to reflect actual experience more closely.
  - Assumed rates of salary increase were adjusted to reflect actual and anticipated experience more closely.
- 2016
  - The assumed rate of interest credited to employee contributions was changed from 3.50% to 2.00%.

- 2015
  - The expectation of retired life mortality was changed to the RP-2014 Healthy Annuitant Blue Collar Table projected to 2016 using Scale BB rather than the RP-2000 Mortality Table, which was used prior to 2015.
  - The expectation of disabled mortality was changed to the RP-2014 Disabled Retiree Table, rather than the RP-2000 Disabled Mortality Table, which was used prior to 2015.
  - Withdrawal rates, pre-retirement mortality rates, disability rates and service retirement rates were also adjusted to reflect actual experience more closely.
  - Assumed rates of salary increase were adjusted to reflect actual and anticipated experience more closely.
  - The price inflation and investment rate of return assumptions were changed from 3.50% to 3.00% and 8.00% to 7.75%, respectively.

Changes in benefit provisions.

- *2016*
  - The interest rate on employee contributions shall be calculated based on the money market rate as published by the Wall Street Journal on December 31 of each preceding year with a minimum rate of one percent and a maximum rate of five percent.

Method and assumptions used in calculations of actuarially determined contributions. The actuarially determined contribution rates in the schedule of employer contributions are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported (Fiscal Year End 2022 Employer Contributions are developed from June 30, 2020 valuation). The following actuarial methods and assumptions were used to determine the most recent contribution rate reported in that schedule:

Actuarial cost method	Entry age
Amortization method	Level percentage of payroll, open
Remaining amortization period	21.7 years
Asset valuation method	5-year smoothed market
Price Inflation	2.75 percent
Salary increase	3.00 percent to 8.56 percent, including inflation
Investment rate of return	7.75 percent, net of pension plan investment expense, including inflation

Schedule A – Statement of Actuarial Assumptions and Methods

INTEREST RATE: 7.55% per annum, compounded annually (net of investment expenses only). The expected return on assets consists of 2.40% price inflation and 5.15% real rate of return.

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of separation from active service are as follows:

Age	Withdrawal		Death*		Disability		Service	Service Retirement**
	Less than 20 years of service	20 or more years of service	Males	Females	Non-Duty	Duty		
25	7.000%	3.500%	0.0567%	0.0189%	0.0360%	0.0023%	5	7.5%
30	4.000	2.000	0.0630	0.0259	0.0450	0.0068	10	7.5%
35	2.750	1.375	0.0714	0.0350	0.0585	0.0180	15	7.5%
40	2.000	1.000	0.0893	0.0483	0.0765	0.0248	20	7.5%
45	2.000	1.000	0.1218	0.0665	0.1125	0.0225	25	20.0%
50	2.000	1.000	0.1764	0.0917	0.1890	0.0180	30	15.0%
55	0.000	0.000	0.2594	0.1274	0.3420	0.0068	35	35.0%
60	0.000	0.000	0.3980	0.1757	0.5805	0.0023	40+	100.0%

* Adjusted Base Rates.
** The annual rate of service retirement is 100% at age 63.

It is assumed that a member will be granted 1¾ years of service credit for unused leave at termination of employment. In addition, it is assumed that, on average, ¼ year of service credit for peace-time military service will be granted to each member.

SALARY INCREASES: Representative values of the assumed annual rates of salary increases are as follows:

Age	Merit & Seniority	Annual Rates of Base (Economy)	Increase Next Year
20	5.91%	2.65%	8.56%
25	2.66	2.65	5.31
30	1.84	2.65	4.49
35	1.84	2.65	4.49
40	1.84	2.65	4.49
45	1.35	2.65	4.00
50	0.85	2.65	3.50
55	0.85	2.65	3.50
60	0.35	2.65	3.00

DEATH AFTER RETIREMENT:

*Service Retirees**

Membership Table	Adjustment to Rates	Projection Scale
PubS.H-2010(B) Retiree	Male: 95% up to age 60, 110% for ages 61 to 75, and 101% for ages above 77 Female: 84% up to age 72, 100% for ages above 76	MP-2020

*Contingent Annuitants**

Membership Table	Adjustment to Rates	Projection Scale
PubS.H-2010(B) Contingent Annuitant	Male: 97% for all ages Female: 110% for all ages	MP-2020

*Disabled Retirees**

Membership Table	Adjustment to Rates	Projection Scale
PubG.H-2010 Disabled	Male: 134% for all ages Female: 121% for all ages	MP-2020

* Please note that none of the recommended tables have any setbacks or setforwards.

Representative values of the assumed rates of death after retirement are as follows:

	Rates of Death After Retirement*					
	Service Retirees		Contingent Annuitants		Disabled Retirees	
AGE	Male	Female	Male	Female	Male	Female
45	0.2983%	0.0983%	0.7692%	0.5104%	1.4660%	1.1919%
50	0.4190%	0.1638%	0.8837%	0.6556%	2.2780%	1.7956%
55	0.5197%	0.2738%	1.0156%	0.7843%	2.9855%	2.1078%
60	0.7771%	0.4578%	1.2397%	1.0131%	3.6475%	2.4684%
65	1.3211%	0.7652%	1.6286%	1.4157%	4.5426%	2.9730%
70	2.1758%	1.2785%	2.4153%	1.9998%	5.8129%	3.8127%
75	3.8566%	2.3659%	3.7209%	3.0052%	7.6661%	5.2683%
80	6.2640%	4.2530%	5.7734%	4.7289%	10.8125%	7.7779%
85	11.0605%	7.3240%	9.2228%	7.8562%	15.7785%	11.9947%
90	17.6902%	12.6470%	14.6577%	13.4530%	22.7224%	17.5353%

*Adjusted Base Rates

Schedule A – Statement of Actuarial Assumptions and Methods

PAYROLL GROWTH: 2.65% per annum, compounded annually.

ADMINISTRATIVE EXPENSES: 0.28% of payroll.

TIMING OF DECREMENT AND PAY INCREASES: Middle of Year.

ASSUMED INTEREST RATE ON EMPLOYEE CONTRIBUTIONS: 2.00%

MARRIAGE ASSUMPTION: 100% married with the husband three years older than his wife.

SURVIVING CHILD BENEFITS ASSUMPTION: A small load is applied for surviving children.

ASSET VALUATION METHOD: Market value of assets.

MAXIMUM COVERED EARNINGS ASSUMPTION GROWTH: 2.65%

MODIFIED CASH REFUND: Benefits were valued with a twelve-year certain period for retirees and five-year certain for active members to estimate the value of the modified cash refund feature.

VALUATION METHOD: The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable at retirement, disability, or death. The calculations are based on the member's age, years of service, sex, compensation, expected future salary increases, and an assumed future interest earnings rate (currently 7.55%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to current benefit recipients to obtain the present value of all expected benefits payable to the present group of members and survivors.

The employer contributions required to support the benefits of HSPRS are determined following a level funding approach and consist of a normal contribution and an accrued liability contribution.

Under the entry age normal cost method, the actuarial present value of each member's projected benefits is allocated on a level basis over the member's compensation between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The actuarial present value of benefits allocated to prior years of service is called the actuarial accrued liability. The unfunded actuarial accrued liability represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains/losses. The accrued liability contribution amortizes the balance of the unfunded actuarial accrued liability over a period of years from the valuation date.

Schedule B – Summary of Main Benefit and Contribution Provisions

The following summary presents the main benefit and contribution provisions of the System in effect June 30, 2022, as interpreted in preparing the actuarial valuation.

DEFINITIONS

Average Compensation	Average annual covered earnings of an employee during the four highest consecutive years of service.
Covered Earnings	Gross salary not in excess of the maximum amount on which contributions were required.
Fiscal Year	Year commencing on July 1 and ending June 30.
Credited Service	Service while a contributing member plus additional service as described below.
Unused Sick and Vacation Leave	Service credit is provided at no charge to members for unused sick and vacation time that has accrued at the time of retirement. A payment of up to 240 hours of leave may be used in the Average Compensation definition.
Additional Service	Additional service credit may be granted for service prior to July 1, 1958, active duty military service, and retroactive service

Schedule B – Summary of Main Benefit and Contribution Provisions

The maximum covered earnings for employers and employees over the last ten years are as follows:

EMPLOYER AND EMPLOYEE RATES OF CONTRIBUTION AND MAXIMUM COVERED EARNINGS

Fiscal Date From	Fiscal Date To	Employer Rate	Employee Rate	Maximum Covered Earnings*
1/1/2012	6/30/2012	35.21%	7.25%	
7/1/2012	6/30/2017	37.00	7.25	
7/1/2018	6/30/2021	49.08	7.25	

* Maximum covered earnings equal wages paid, not to exceed wages paid to the Commissioner of the Department of Public Safety (currently $183,240).

Effective July 1, 2021, additional contributions from SB 2659 and HB 1015 are estimated to be $3,700,000 combined.

Schedule B – Summary of Main Benefit and Contribution Provisions

BENEFITS

Superannuation Retirement

Condition for Retirement

A retirement allowance is payable to any member who retires and has attained age 55 and completed at least five years of membership service or has attained age 45 and completed at least 20 years of creditable service, or has completed 25 years of creditable service regardless of age.

Any member who has attained age 63 shall be retired forthwith. Effective July 1, 2011, the Commissioner of Public Safety is authorized to allow a member who has attained age 63 to continue in active service. Such continued service may be authorized annually until the member attains age 65.

Amount of Allowance

The annual retirement allowance payable to a retired member is equal to:

1. A member's annuity which is the actuarial equivalent of the member's accumulated contributions at the time of his or her retirement, plus

2. An employer's annuity which, together with the member's annuity, is equal to 2-1/2% of his or her average compensation for each year of membership service, plus

3. A prior service annuity equal to 2-1/2% of average compensation for each year of prior service.

The aggregate amounts of (2) and (3) above shall not exceed 100% of average compensation, regardless of service, for retirements on or after January 1, 2000.

The minimum allowance for both service and disability retirement based on the following table for each year of creditable service, reduced if necessary as indicated below.

Service	Monthly Benefit
Less than 10 years	$250
10-15 years	$300
15 or more years	$500

The annual retirement allowance payable to a member who retires under condition (a) above prior to age 55 is computed in accordance with the above formula except that the employer's annuity and prior service annuity are reduced actuarially based on mortality table and interest rate used in the valuation.

Deferred Vested

Condition for Vesting

Any member who withdraws from service prior to his or her attainment of age 55 but after having completed five or more years of creditable service is entitled to receive, in lieu of a refund of his or her accumulated contributions, a retirement allowance commencing at age 55.

Amount of Allowance

The annual retirement allowance payable at age 55 is equal to:

1. A member's annuity which is the actuarial equivalent of the member's accumulated contributions at the time of his or her retirement, plus

2. An employer's annuity which, together with the member's annuity, is equal to 2-1/2% of his or her average compensation for each year of membership service, plus

3. A prior service annuity equal to 2-1/2% of average compensation for each year of prior service.

The aggregate amounts of (2) and (3) above shall not exceed 100% of average compensation, regardless of service, for retirements on or after January 1, 2000; 85% for retirements prior to January 1, 2000.

The minimum allowance for both service and disability retirement based on the following table for each year of creditable service, reduced if necessary as indicated below.

Service	Monthly Benefit
Less than 10 years	$250
10-15 years	$300
15 or more years	$500

Schedule B – Summary of Main Benefit and Contribution Provisions

Disability Retirement

Non-Duty-Related	Non-duty related disability benefits are available to vested members under the age of 55. Vested members age 55 or older are not eligible for disability benefits but may apply for service retirement benefits. For purposes of disability benefits, average annual compensation is calculated using the last two years of salary before retirement.
Duty-Related	If the member becomes permanently disabled due to sickness or injury caused or sustained as a direct result of duty, they may be eligible for duty-related disability retirement. They are covered for this benefit from the first day of employment if they have not reached age 55, regardless of their years of service. Duty-related disability retirement benefits are calculated at either 50 percent of average compensation of the last two years of salary before retirement (this portion is not taxable) or the non-duty-related disability retirement amount, whichever provides the higher benefit.

Death Benefits

Non-Duty-Related	If the member is vested, their spouse and dependent children may be eligible to receive certain statutory benefits. Claims for non-duty-related death benefits are calculated at 2.5 percent of average compensation for each year of service credit, as calculated under Option 9, Maximum Benefit. Under this option, 50 percent of the accrued benefit is payable to the member's spouse until death, with 25 percent of the accrued benefit payable to one dependent child and 50 percent of the accrued benefit payable for two or more dependent children (under age 19 and never married or under age 23 if a full-time student and never married). Upon application and approval by the Medical Board, benefits to a physically or mentally disabled child may continue as long as the disability exists.
Duty-Related	Coverage for duty-related death benefits begins on the first day of employment and is available to the member's spouse and dependent children regardless of their vesting status. If they are vested, their spouse and dependent children may be eligible to receive benefits under either non-duty or duty-related death benefit provisions, whichever provided the higher benefit.

Claims for duty-related death benefits are calculated at 50 percent of average compensation, payable to the member's spouse until death, with 25 percent of average compensation payable to one dependent child and 50 percent of average compensation payable for two or more dependent children (under age 19 and never married or under age 23 if a full-time student and never married). Upon application and approval by the Medical Board, benefits to a physically or mentally disabled child may continue as long as the disability exists.

Death After Retirement

Upon the death of a highway patrolman who has retired for service or disability and who has not elected any other optional form of benefit, his widow or her widower is eligible for a benefit equal to 50% of his or her retirement allowance and each child (but not more than 2) who has not attained age 19 (23 if a full-time student) is eligible for a benefit equal to 25% of his or her retirement allowance. The benefit to the widow is payable for life and to children until they attain age 19 (23 if a full-time student) or for life if they are totally and permanently disabled.

Refund of Contributions

Upon a member's termination of employment for any reason before retirement, his or her accumulated contributions, together with regular interest thereon, are refunded. Upon the death of a member who is not eligible for any other death benefit, his or her accumulated contributions, together with regular interest thereon, are paid to his or her beneficiary.

Effective July 1, 2016, the interest rate on employee contributions shall be calculated based on the money market rate as published by the Wall Street Journal on December 31 of each preceding year with a minimum rate of one percent and a maximum rate of five percent.

Normal Form of Benefit

The normal form of benefit is an allowance payable during the life of the member. Upon death the benefits described above are payable.

Optional Benefits

A member upon retirement may elect to receive his allowance in one of the following forms which are computed to be actuarially equivalent to the applicable retirement allowance.

Option 1. Reduced allowance with the provision that if the pensioner dies before he receives the value of the member's annuity as it was at the time of retirement, the balance shall be paid to his or her beneficiary.

Option 2. Upon his or her death, his or her reduced retirement allowance shall be continued throughout the life of, and paid to, his or her beneficiary.

Option 3. Upon his or her death, 50% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary and the other 50% of his or her reduced retirement allowance to some other designated beneficiary.

Option 4. Upon his or her death, 75% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary.

Option 4A. Upon his or her death, 50% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary.

Option 4B. A reduced retirement allowance shall be continued throughout the life of the pensioner, but with the further guarantee of payment to the pensioner or his or her beneficiary for a specified number of years certain.

Option 4C. A member may elect any option with the added provision that the member shall receive, so far as possible, the same total amount annually (considering both HSPRS and Social Security benefits) before and after the earliest age at which the member becomes eligible for a Social Security benefit. This option was only available to those who retired prior to July 1, 2004.

Option 9. Upon his or her death, spouse will receive 50% of the benefit member was receiving for life. Each dependent child (under age 19 and never married or under age 23 if a full-time student and never married) will receive 25% of the benefit member was receiving with a maximum of 50% for the support and care of two or more children. Any contribution and interest remaining after member death and after all monthly benefits due to spouse and children have been paid will be refunded to designated beneficiaries. If the member marries after retirement while receiving benefits under this option, they may apply to Pop-Down to Option 2 to provide 100% beneficiary protection to new spouse, or Pop-down to Option 4 or Option 4A for other beneficiary protections for the new spouse. PLSO is available with this option, if eligible.

A member who elects Option 2, Option 4, or Option 4A, at retirement may revert to the normal form of benefit if the designated beneficiary predeceases the retired member or if the retired member divorces the designated beneficiary. A member who elects the normal form of benefit or Option 1 at retirement may select Option 2, Option 4, or Option 4A to provide beneficiary protection to a new spouse if married after retirement.

A member who qualifies for an unreduced retirement allowance may select a partial lump-sum option at retirement. Under this option, the retiree has the option of taking a partial lump-sum distribution equal to either 12, 24, or 36 times the base maximum monthly benefit. With each lump-sum amount, the base maximum monthly benefit will be actuarially reduced. A member selecting this option may also select any of the regular options except Option 1, the prorated single-life annuity, and Option 4-C, the Social Security leveling provision. The benefit is then calculated using the new reduced maximum benefit as a starting point in applying the appropriate option factors for the reduction.

Post-Retirement Adjustments In Allowances

The allowances of retired members are adjusted annually by an amount equal to (a) 3% of the annual retirement allowance for each full fiscal year of retirement prior to the year in which the member reaches age 60*, plus (b) 3% compounded for each year thereafter beginning with the fiscal year in which the member turns age 60*.

A prorated portion of the annual adjustment will be paid to the member, beneficiary, or estate of any member or beneficiary who is receiving the annual adjustment in a lump sum, but whose benefits are terminated between July 1 and December 1.

Those members who retired on or before July 1, 1999 received an ad hoc benefit increase in the amount of $3.50 per month per each full fiscal year of retirement through June 30, 1999 plus $1.00 per month for each year of credited service. The benefits were increased on July 1, 1999.

*this age will be reduced in five phases to age 55 if the actuary certifies that reducing the age will not result in the amortization period of the unfunded accrued liability exceeding 20 years.

CONTRIBUTIONS

Members contribute 7.25% of compensation and the employer contributes 49.08% of compensation. Funds from SB 2659 and HB 1015 are also provided.

Schedule C – Required Supplementary Information

SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
($ in Thousands)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total pension liability										
Service cost	$6,461	$6,361	$6,858	$7,328	$7,205	$7,372	$8,104	$8,235	$7,711	
Interest	33,396	34,503	35,869	37,086	37,338	39,532	40,624	41,571	41,965	
Changes of benefit terms	0	0	0	0	0	0	0	0	0	
Difference between expected and actual experience	2,652	1,013	3,536	(5,780)	17,311	0	(7)	7,018	(3,244)	
Changes of assumptions	0	19,176	0	(3,598)	0	2,286	0	1,677	0	
Benefit payments	(28,220)	(28,909)	(29,913)	(31,001)	(32,315)	(34,671)	(35,455)	(37,433)	(40,521)	
Refund of Contributions	(42)	(163)	(52)	(144)	(103)	(16)	(48)	(67)	(134)	
Net change in total pension liability	$14,247	$31,981	$16,298	$3,891	$29,436	$14,503	$13,218	$21,001	$5,776	
Total pension liability – beginning	$431,575	$445,822	$477,803	$494,101	$497,992	$527,428	$541,931	$555,149	$576,150	
Total pension liability – ending (a)	$445,822	$477,803	$494,101	$497,992	$527,428	$541,931	$555,149	$576,150	$581,926	
Plan fiduciary net position										
Contributions – employer	$13,500	$13,695	$14,755	$14,809	$15,128	$19,375	$20,144	$19,563	$19,476	
Contributions – member	1,963	1,938	2,128	2,147	2,271	2,340	2,428	2,378	2,356	
Net investment income	51,575	10,812	1,704	44,499	27,719	25,280	11,196	115,761	(39,469)	
Benefit payments	(28,220)	(28,909)	(29,913)	(31,001)	(32,315)	(34,671)	(35,455)	(37,433)	(40,522)	
Administrative expense	(200)	(198)	(217)	(203)	(250)	(312)	(328)	(320)	(319)	
Refund of Contributions	(42)	(163)	(52)	(144)	(103)	(16)	(48)	(67)	(134)	
Other	0	0	0	0	0	0	0	0	0	
Net change in plan fiduciary net position	$38,576	($2,825)	($11,595)	$30,107	$12,450	$11,996	($2,063)	$99,882	($58,612)	
Plan fiduciary net position – beginning	$287,456	$326,032	$323,207	$311,612	$341,719	$354,169	$366,165	$364,102	$463,984	
Plan fiduciary net position – ending (b)	$326,032	$323,207	$311,612	$341,719	$354,169	$366,165	$364,102	$463,984	$405,372	
Net pension liability – ending (a) – (b)	$119,790	$154,596	$182,489	$156,273	$173,259	$175,766	$191,047	$112,166	$176,554	

Schedule C – Required Supplementary Information

SCHEDULE OF THE NET PENSION LIABILITY
($ in Thousands)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total pension liability	$445,822	$477,803	$494,101	$497,992	$527,428	$541,931	$555,149	$576,150	$581,926	
Plan fiduciary net position	326,032	323,207	311,612	341,719	354,169	366,165	364,102	463,984	405,372	
Net pension liability	$119,790	$154,596	$182,489	$156,273	$173,259	$175,766	$191,047	$112,166	$176,554	
Plan fiduciary net position as a percentage of the total pension liability	73.13%	67.64%	63.07%	68.62%	67.15%	67.57%	65.59%	80.53%	69.66%	
Covered payroll	$25,554	$25,505	$27,380	$28,845	$29,555	$31,811	$32,346	$29,780	$30,895	
Net pension liability as a percentage of covered payroll	468.77%	606.14%	666.50%	541.77%	586.23%	552.53%	590.64%	376.65%	571.46%	

Schedule C – Required Supplementary Information

SCHEDULE OF EMPLOYER CONTRIBUTIONS
($ in Thousands)

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Contractually Required Employer contribution	$18,663	$18,160	$19,594	$19,383	$14,430	$14,431	$14,025	$13,226	$13,595	$13,098
Contributions in relation to the actuarially determined contribution	19,476	19,563	20,144	19,375	15,128	14,809	14,755	13,695	13,500	13,366
Annual contribution deficiency (excess)	$(813)	$(1,403)	($550)	$8	($698)	($378)	($730)	($469)	$95	($268)
Covered payroll	$30,895	$29,780	$32,346	$31,811	$29,555	$28,845	$27,380	$25,505	$25,554	$25,816
Actual contributions as a percentage of covered payroll	63.04%	65.69%	62.28%	60.91%	51.19%	51.34%	53.89%	53.70%	52.83%	51.77%