HMEPS

HOUSTON MUNICIPAL EMPLOYEES PENSION SYSTEM

A Component Unit of the City of Houston, Texas

2022 Annual Comprehensive Financial Report

FOR THE YEAR ENDED JUNE 30, 2022 AND JUNE 30, 2021

HOUSTON MUNICIPAL EMPLOYEES PENSION SYSTEM

A COMPONENT UNIT OF THE CITY OF HOUSTON, TEXAS

ANNUAL COMPREHENSIVE FINANCIAL REPORT FOR THE YEARS
ENDED JUNE 30, 2022 AND JUNE 30, 2021
PREPARED BY THE PENSION ADMINISTRATION STAFF
DAVID L. LONG, EXECUTIVE DIRECTOR

HOUSTON MUNICIPAL EMPLOYEES PENSION SYSTEM
1201 LOUISIANA, SUITE 900
HOUSTON, TEXAS 77002-5608
713-595-0100
WWW.HMEPS.ORG

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EMERGE

LEVY PARK at the Upper Kirby District

WE TURN UP ANEW NO MATTER THE CIRCUMSTANCE.

INVESTMENT INFORMATION:

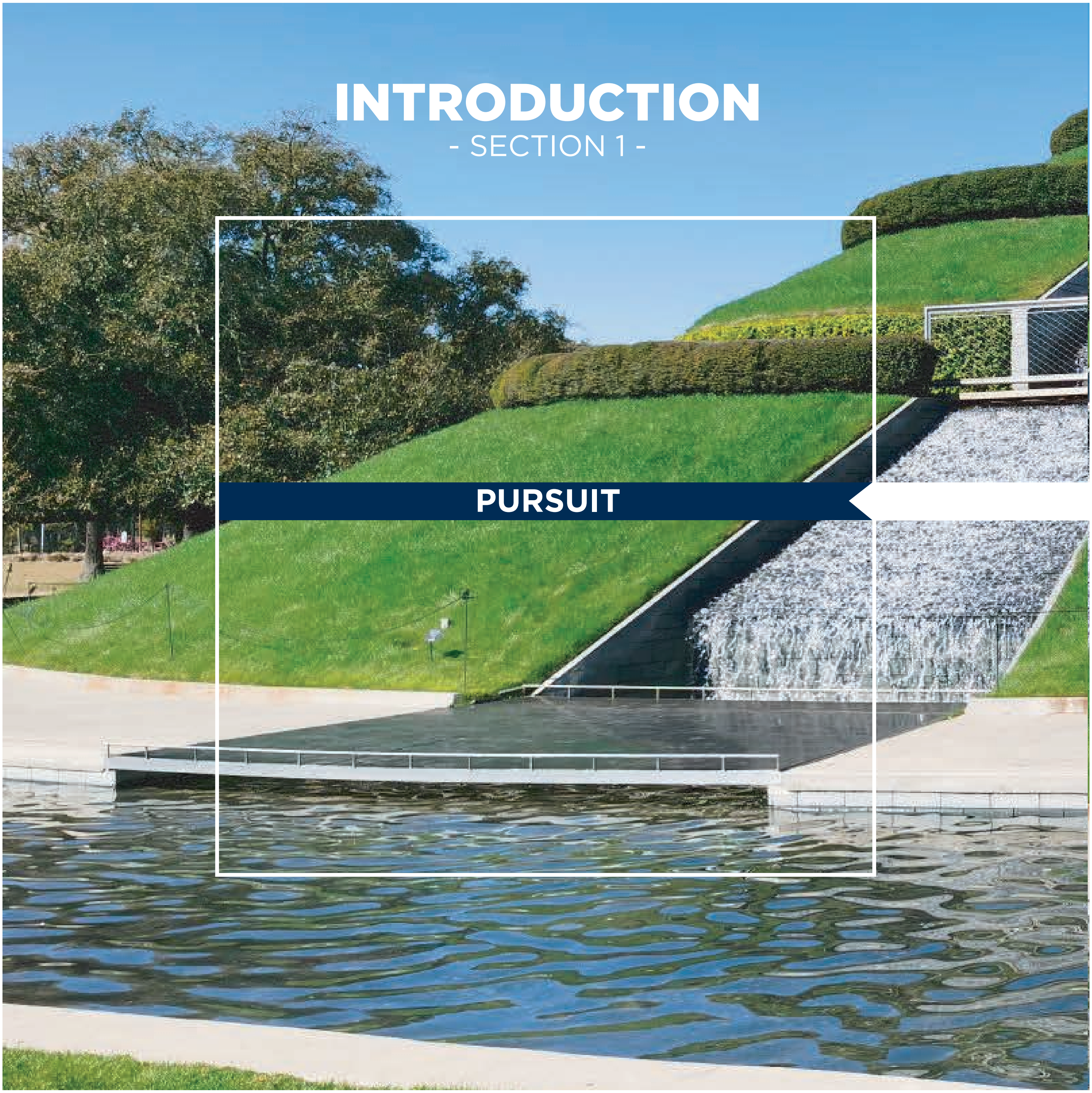
ACTUARIAL INFORMATION:

STATISTICAL INFORMATION:

HMEPS

INTRODUCTION
- SECTION 1 -

PURSUIT



Hermann Park - McGovern Centennial Gardens

WE CHANGE, WE IMPROVE, WE PURSUE EXCELLENCE

HMEPS

HOUSTON MUNICIPAL EMPLOYEES PENSION SYSTEM

HMEPS
HOUSTON MUNICIPAL EMPLOYEES PENSION SYSTEM

December 20, 2022

Will Jones, Finance Director
Finance Department
611 Walker, 10th Floor
Houston, Texas 77002

Dear Mr. Jones:

We are pleased to present the Annual Comprehensive Financial Report (Annual Report) of the Houston Municipal Employees Pension System (the System), a Component Unit of the City of Houston, Texas (the City), for the fiscal years ended June 30, 2022 and June 30, 2021. The accuracy, fairness of presentation, and completeness of this report are the responsibility of the Board of Trustees (the Board) of the System. To the best of our knowledge and belief, the enclosed data is accurate in all material respects and is reported in a manner designed to present fairly the financial position and results of the operations of the System. The System's basic financial statements will be included in the annual financial report of the City.

ACCOUNTING SYSTEM AND INTERNAL CONTROLS

The financial statements have been prepared in accordance with generally accepted accounting principles (GAAP) and presented in accordance with guidance provided by applicable statements issued by the Governmental Accounting Standards Board (GASB).

The System's independent auditors have audited the financial statements and issued an unmodified opinion as of June 30, 2022 and 2021 (pages 12-14). The purpose of the audit is to give reasonable assurance to users of those financial statements, the Board, and participants of the System, that the financial statements present fairly, in all material respects, information regarding the System's net position held in trust for pension benefits and in conformity with accounting principles generally accepted in the United States of America.

A significant responsibility of the Board is to ensure that the System has in place an adequate system of internal controls. A system of internal controls is an entity's plan of organization and its coordinated methods and measures adopted to safeguard its assets, ensure the accuracy and reliability of the accounting system and promote adherence to management policies. These controls include strategic design of the entity's business systems, the appropriate segregation of duties and responsibilities, sound practices in the performance of those duties, retaining capable personnel, and the organizational structure itself. For each implemented control, the cost of the control should not exceed the benefits to be derived. An objective of these controls is to provide reasonable assurance that the financial statements are free of any material misstatement. We believe the System's internal controls are adequate and are working as designed.

FINANCIAL INFORMATION

The Management's Discussion and Analysis (MD&A) that immediately follows the Independent Auditors' Report provides condensed financial information and activities for the current and prior two fiscal years of the System. It provides a narrative introduction, overview, and analysis of the basic financial statements. The MD&A complements this letter of transmittal and should be read in conjunction with it.

PLAN HISTORY AND PROFILE

The System was created in 1943 under Chapter 358, Acts of the 48th Texas Legislature, Regular Session, Article 6243g, Vernon's Annotated Revised Texas Civil Statutes, and was reenacted and continued under HB1573, 77th Texas Legislature, as Article 6243h, Vernon's Annotated Revised Texas Civil Statutes, as amended (the Statute).

The System is a multiple-employer, defined benefit pension plan that provides service retirement, disability retirement, and death benefits for eligible participants, which includes all municipal employees, except police officers and firefighters (other than certain police officers in the System as authorized by the Statute) employed full time by the City, elected City officials, and the full-time employees of the System (collectively referred to as "participants"). The System's plan net assets are used to pay benefits for eligible participants of Group A, Group B, and Group D. The System is administered by an eleven-member Board of Trustees. The Trustees include four elected trustees who are members of the System, two elected trustees who are retirees of the System, a trustee appointed by the elected trustees, the mayor's appointee, the controller's appointee, and two city council appointees.

The Actuarial Section of this Annual Report contains additional information on the System's funding and benefits, as well as the annual risk-sharing valuation process for purposes of the funding corridor, corridor midpoints, and legacy liability that are integral to the contribution requirements.

BUDGET

The costs of administering the System, consisting of operating administrative expenses and capitalized items, are paid by the System from current earnings pursuant to an annual fiscal budget adopted by the Board.

FUNDING STATUS

The System's funding objective is to establish contributions which, when combined with present assets and future investment returns, will be sufficient to meet the financial obligations to present and future retirees and beneficiaries.

HMEPS receives contributions from two sources: employer contributions and member contributions. Under the Statute, the System's actuary assumes that the System's investments will return 7.0 percent annualized over the long-term. The differences between the assumed and actual investment return are phased in over 5 years, yielding an actuarial value of assets. This smoothing is intended to avoid extreme volatility in employer contribution rates due to short-term fluctuations in the investment markets. The funded ratio, the ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL), is a standard measure of a plan's funded status. In the absence of benefit improvements or reduced funding, a plan's funded ratio should increase over time, until it reaches 100%. The funded status alone is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

As of July 1, 2021, HMEPS' AVA and AAL were $3.32 billion and $5.29 billion, respectively, resulting in a funded ratio of 62.8%. A historical perspective of the System's funding levels is presented in the following graph.

HISTORICAL FUNDED STATUS

MARKET ENVIRONMENT

There was a notable shift in the performance of financial markets during the course of fiscal year 2022. In the first half of the fiscal year, global equities continued the strong performance of the previous year in response to the economy's steady growth after the COVID-19 pandemic. The Federal Reserve kept interest rates at historically low levels. Two major events reversed the strong performance in the second half of the fiscal year. Geopolitical concerns heightened in February 2022 after Russia invaded neighboring Ukraine. At the same time, energy prices spiked and inflationary pressures affected the wider economy. In response, the Federal Reserve began a series of interest rate hikes in an effort to control inflation. Higher interest rates caused fixed income assets to have a meaningful decrease in value. Despite uncertainty in other areas of the economy, job growth was strong throughout the fiscal year, and the unemployment rate at the end of the fiscal year was 3.6%.

U.S. equity markets performed strongly in the first half of the fiscal year with the Wilshire 5000 Index gaining 9.7% through December 31, 2021. The invasion of Ukraine and inflation fears wiped away those gains and more and the Wilshire 5000 ended the fiscal year down 13.2%. This was the first fiscal year since the global financial crisis of 2008-2009 that the Wilshire 5000 declined in value. While large cap value stocks performed the best, all styles and capitalization sizes posted negative returns.

International equities followed a similar pattern to U.S. stocks with the MSCI ACWI ex-U.S. (net) Index performing well in the first half of the fiscal year but reversing those gains and more in the second half. The MSCI ACWI ex-U.S. (net) Index was down 18.4% during FY 2022.

Investment grade fixed income securities declined significantly in fiscal year 2022 as inflation led to rising interest rates. Investment grade bonds as represented by the Barclay's U.S. Aggregate Bond Index posted a return of -10.3% for the fiscal year. High yield bonds as represented by the Merrill Lynch High Yield Master Trust II Index returned -12.7% for the fiscal year as rising interest rates were a negative impact. HMEPS' Private Credit portfolio had a positive return of 7.7% for the fiscal year as nearly all the investments are refinanced or held to maturity and are less sensitive to rising interest rates.

Among the alternative asset classes, Real Estate and Private Equity returned 13.4% and 22.4% respectively in FY 2022. Because private market investments are not traded on an exchange, their reported returns tend to be more stable compared to the public markets. The Inflation-linked asset class was among the best performing sections of the portfolio, returning 24.9% as commodity prices, including energy prices, increased significantly due to inflationary pressures.

Overall, the System's investments returned 5.2% for fiscal year 2022. Through the efforts of the Board of Trustees, the System's investment portfolio is more broadly diversified than many other public pension plans and tends to perform well in most market environments. During the 10-year period ending June 30, 2022, the system's annualized return was 10.2%.

MEMBER SERVICES

During FY 2022, the Benefits Division successfully provided important pension information to participants and timely processed new applications, including retirements, DROP distributions, refunds and survivor benefits:

- HMEPS participated in 21 joint virtual presentations held for new employee orientations for the benefit of 1,789 attendees.
- Staff members processed 2,200 benefit applications, including retirement, DROP, survivor benefits, refunds, cash balance account, and lump-sum payments.
- Staff members conducted 248 individual meetings with participants.
- HMEPS participated in the virtual Spring Financial Retirement Educational Event, an annual event co-sponsored by the System that provides City of Houston employees and retirees with information about pensions, deferred compensation, Social Security and Medicare to help them better plan for their financial future. This event benefited approximately 130 attendees.

INVESTMENTS

The System's strategic asset allocation policy is designed to manage risk by diversifying among public and private asset classes. In order to develop a strategic asset allocation policy, risk-return assumptions and correlations for asset classes are examined taking into account current and forecasted economic conditions. The current strategic asset allocation policy has been in place since October 2017.

The target allocation to Global Equity is 32.5%. The target allocation to Fixed Income is 10%, while Real Estate is 12.5%, Private Credit is 5%, and Private Equity is 17%. The target allocation of the Absolute Return asset class is 8%, and the target allocation for the Inflation-Linked asset class is 15%. During fiscal year 2022, the System rebalanced its portfolio to move closer to these strategic asset allocation policy targets. With the help of the System's alternative investment consultant, Cliffwater LLC, the System committed to five private equity partnerships, three private real estate partnerships, two private credit partnerships, and two inflation-linked asset class partnerships.

The System's investment portfolio closed its 2022 fiscal year at $3.9 billion in total assets. The total investment return for the fiscal year was 5.2%. The System's investment performance was 13.1%, 11.1% and 10.2% for the past three-, five- and ten-year periods. Compared to similar investment portfolios (Wilshire TUCS Master Trusts – Public Universe), the fund posts in the top 5% for all these periods. The best performing asset classes for fiscal year 2022 were the Inflation-linked asset class (+24.9%) and Private Equity (+22.4%).

In the upcoming fiscal year, the System will continue to work with its consultants to identify attractive public and private market investments consistent with the strategic asset allocation policy.

BOARD GOVERNANCE

During FY 2022, the Board's membership did not change. Appointed Board members serve three-year terms. Elected Board members serve staggered four-year terms, with elections for two active members and one retiree occurring every even-numbered year. The next Board election will occur in 2024.

CERTIFICATE OF ACHIEVEMENT

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Houston Municipal Employees Pension System for its annual comprehensive financial report for the fiscal year ended June 30, 2021. This was the 28th consecutive year that the System has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government unit must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current annual comprehensive financial report continues to meet the Certificate of Achievement Program's requirements and we are submitting it to the GFOA to determine its eligibility for another certificate.

ACKNOWLEDGEMENT

This Annual Report was prepared through the combined efforts of the System staff and was subject to the scrutiny of the Board. It is intended to provide information to its user that may be a basis for a general understanding of the System. This Annual Report is being forwarded to the City of Houston, the Texas Pension Review Board, the GFOA, and other interested parties who may from time to time request it.

In Closing…

A core purpose of the System is to help provide for the financial security of its participants when they are eligible to receive benefits. Municipal public sector employees are vital to providing and maintaining important city services for Houston residents, workers and visitors. Quality employees are attracted to and retained by the public sector in part by the security and benefits offered by a sound pension system.

Houston experienced a challenging few years due to the pandemic and its effects on the economy and day-to-day life. Throughout, City of Houston employees, often on the front lines, continued to be resilient and worked hard for the betterment of the city and those who live, work and visit here. Many HMEPS members also volunteered their time and expertise to help keep people safe, healthy, sheltered and nourished. The System is proud to serve these members and all of the dedicated municipal employees and retirees who have made tremendous contributions to Houston and its citizens.

Sincerely,

Sherry Mose
Chairman

David L. Long
Executive Director


Sherry Mose
Chairman


Lenard Polk
Vice Chairman

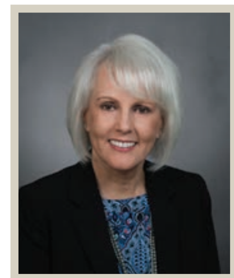

Rhonda Smith
Secretary


Roderick J. Newman
Elected Trustee

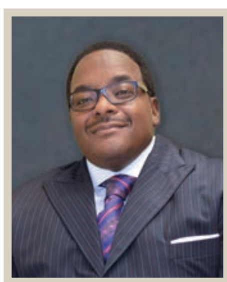

Roy W. Sanchez
Elected Trustee


Lonnie Vara
Elected Trustee

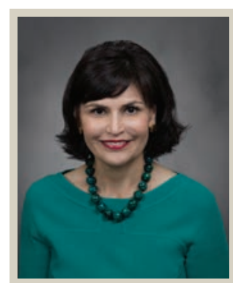
BOARD OF TRUSTEES


Barbara Chelette
Appointed Trustee


David Donnelly
Mayoral Appointee


Edward J. Hamb II
Controller Appointee


Adrian Patterson
Council Appointee


Denise Castillo-Rhodes
Council Appointee


David L. Long
Executive Director

BOARD COMMITTEES

Audit Committee
Budget and Oversight Committee
Disability Committee
External Affairs Committee
Investment Committee
Personnel and Procedures Committee

ADMINISTRATIVE ORGANIZATION

EXECUTIVE DIRECTOR

GENERAL COUNSEL

CHIEF INVESTMENT OFFICER

Investment Managers' Services
Market Research
Performance Measurement

MEMBER SERVICES

Benefit Administration Services
Communications
Member Services

OPERATIONS

Accounting
Financial Reporting
Records
Technology Support

For more information on investment professionals who provide services to HMEPS, refer to the *Supplementary Information* beginning on page 53 and the Schedule of Fees and Commissions Paid table on page 68.

CERTIFICATE OF ACHIEVEMENT FOR EXCELLENCE IN FINANCIAL REPORTING

The Government Finance Officers Association (GFOA) of the United States and Canada awarded a "Certificate of Achievement for Excellence in Financial Reporting" to Houston Municipal Employees Pension System for its annual comprehensive financial report for the fiscal year ended June 30, 2021. This was the 28th consecutive year that HMEPS has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government unit must publish an easily readable and efficiently organized annual comprehensive financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe our current annual comprehensive financial report continues to meet the Certificate of Achievement program requirements and we are submitting it to GFOA to determine eligibility for another certificate.

Government Finance Officers Association

Certificate of
Achievement
for Excellence
in Financial
Reporting

Presented to

Houston Municipal Employees Pension System
Texas

For its Annual Comprehensive
Financial Report
For the Fiscal Year Ended

June 30, 2021

Christopher P. Morrill

Executive Director/CEO

PROFESSIONAL CONSULTANTS (FY 2022)

ACTUARY
Gabriel, Roeder, Smith & Company

AUDITOR
Moss Adams, L.L.P.
Weaver and Tidwell, L.L.P.

COMMUNICATION SERVICES
KLM Public Affairs, LLC

GOVERNMENTAL REPRESENTATION
HillCo Partners, L.L.C.
Locke Lord L.L.P.

INVESTMENT CONSULTANTS
Cliffwater, L.L.C.
Wilshire Associates, Inc.

INVESTMENT PERFORMANCE ANALYSIS
Cliffwater, L.L.C.
Wilshire Associates, Inc.

LEGAL COUNSEL
Baker Botts, L.L.P.
DLA Piper L.L.P.
Ice Miller L.L.P.
Jackson Walker, L.L.P.
Locke Lord L.L.P.

MASTER CUSTODIAN/TRUSTEE
State Street Bank and Trust Company

OTHER POSTEMPLOYMENT BENEFITS
US Bank
HighMark Capital Management
Public Agency Retirement Services

INVESTMENT MANAGERS (FY 2022)

ABSOLUTE RETURN
Anchorage Capital Group, L.L.C.
Angelo Gordon & Co., L.P.
Brigade Capital Management, L.P.
Davidson Kempner Capital Management, L.P.
Graham Capital Management, L.P.
MKP Capital Management, L.L.C.
Sculptor Capital Management, Inc.
Samlyn Capital, L.L.C.

FIXED INCOME
AllianceBernstein Holding, L.P.
BlackRock, Inc.
Polen Capital, formerly DDJ Capital Management, L.L.C.
GMO L.L.C.
Loomis, Sayles & Company, L.P.
Pugh Capital Management, Inc.

GLOBAL EQUITY
Baillie Gifford & Co.
BlackRock, Inc.
DePrince, Race & Zollo, Inc.
Globeflex Capital, L.P.
Invesco, Ltd.
Neumeier Poma Investment Counsel, L.L.C.
Schroders PLC
T. Rowe Price Associates, Inc.

INFLATION-LINKED
BlackRock, Inc.
Carnelian Energy Capital Management, L.P.
Cohen & Steers Capital Management, Inc.
EIV Capital, L.L.C.
EnCap Investments, L.P.
Global Forest Partners, L.P.
NGP Energy Capital Management, L.L.C.
Oaktree Capital Management, L.P.
Quantum Energy Partners, L.P.
Riverstone Investment Group, L.L.C.
Salient Partners, L.P.
State Street Global Advisors, Inc.
Tailwater Capital, L.L.C.
Taurus Funds Management, Pty. Ltd.
Tillridge Global Agribusiness Partners
Tortoise Capital Advisors, L.L.C.

PRIVATE CREDIT
Angelo, Gordon & Co., L.P.
DRC Capital, L.L.P.
Orbimed Advisors, L.L.C.
Summit Capital Partners, L.L.C.

PRIVATE EQUITY
Adams Street Partners, L.L.C.
Anchorage Capital Group, L.L.C.
Carrick Capital Management, L.L.C.
Centerbridge Partners, L.P.
Clearlake Capital Group, L.P.
GTCR, L.L.C.
HarbourVest Partners, L.L.C.
Hellman & Friedman, L.L.C.
ICV Partners, L.L.C.
JMI Management, Inc.
Lexington Partners, Inc.
New Enterprise Associates, L.L.C.
New Mainstream Capital Management Holding, L.L.C.
Oaktree Capital Management, L.P.
Onex Corporation
Orbimed Advisors, L.L.C.
PacVen Walden Management Co., Ltd.
Pegasus Capital Advisors, L.P.
Pharos Capital Group, L.L.C.
Platinum Equity, L.L.C.
Siris Capital Group, L.L.C.
Summit Capital Partners, L.L.C.
Sun Capital Partners, Inc.
TCMI, Inc.
The CapStreet Group, L.L.C.
The Carlyle Group, Inc.
The Jordan Company, L.P.
TrueBridge Capital Partners, L.L.C.
Valor Management, L.L.C.
Vista Equity Partners Management, L.L.C.
Wayzata Investment Partners, L.L.C.

REAL ESTATE
Aermont Capital, L.L.P.
Aetos Capital Real Estate, L.P.
Angelo, Gordon & Co., L.P.
Artemis Real Estate Partners, L.L.C.
Berkeley Partners Management, L.L.C.
Crow Holdings Capital
FIG, L.L.C.
GEM Realty Capital, Inc.
Kildare Partners U.S., L.L.C.
Lone Star Global Acquisitions, L.L.C.
Long Wharf Capital, L.L.C.
Morgan Stanley & Co., L.L.C.
Oak Street Real Estate Capital, L.L.C.
Orion Capital Managers, L.L.P.
Pennybacker Capital Management, L.L.C.
The Prime Group, Inc.
Rockpoint Group, L.L.C.
Starwood Capital Group Global, L.P.
State Street Global Advisors, Inc.

FINANCIAL
- SECTION 2 -

EFFORT

Redevelopment of the existing Houston Farmer’s Market

YOUR HARD WORK CREATES A BETTER FUTURE

HMEPS

HOUSTON MUNICIPAL EMPLOYEES PENSION SYSTEM

MOSSADAMS

Report of Independent Auditors

The Board of Trustees
Houston Municipal Employees Pension System

Report on the Audit of the Financial Statements

Opinions

We have audited the financial statements of the pension plan and HMEPS OBEB trust of the Houston Municipal Employees Pension System (the System) as of and for the year ended June 30, 2022, and the related notes to the financial statements, which collectively comprise the System's basic financial statements as listed in the table of contents.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the respective financial position of the pension plan and HMEPS OBEB trust of the Houston Municipal Employees Pension System as of June 30, 2022, and the respective changes in financial position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinions

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards (Government Auditing Standards)*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the System and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the System's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the System's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the System's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control–related matters that we identified during the audit.

2021 Financial Statements

The financial statements of Houston Employees Retirement System as of and for the year ended June 30, 2021, were audited by other auditors, whose report thereon dated November 24, 2021, expressed an unmodified opinion on the presentation of those financial statements in accordance with accounting principles generally accepted in the United States of America.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, schedule of changes in net pension liability and related ratios, schedule of contribution – pension plan, schedule of investment returns – pension plan, notes to pension plan – required supplementary information, schedule of changes in net HMEPS OPEB (asset) liability and related ratios, schedule of contribution – HMEPS OPEB trust, and schedule of investment returns – HMEPS OPEB trust (collectively, the required supplementary information) be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Houston Municipal Employees Pension System's basic financial statements. The investment summary; investment expenses, professional services, and administration expenses; and summary of cost of investment and professional services (collectively, the supplementary information) are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplementary information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Other Information

The introductory, investment, actuarial, and statistical sections are presented for purposes of additional analysis and are not a required part of the basic financial statements of the System. Such additional information has not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

Moss Adams LLP

Houston, Texas
November 7, 2022, except for consideration of
Other Information as to which the date
is December 28, 2022

HOUSTON MUNICIPAL EMPLOYEES PENSION SYSTEM
(A Component Unit of the City of Houston, Texas)
Management Discussion and Analysis

The Board of Trustees (the Board) of the Houston Municipal Employees Pension System (the System or HMEPS) is pleased to provide this overview and analysis of the financial performance and activities of the System for the fiscal years ended June 30, 2022 and 2021. We encourage the readers to consider the information presented here in conjunction with the basic financial statements.

This report is prepared in accordance with the principles of governmental accounting and reporting promulgated by the Governmental Accounting Standards Board (GASB). Investments are stated at fair value, and revenues include the recognition of unrealized gains and losses. The accrual basis of accounting is used to record assets, liabilities, revenues, and expenses. Revenue recognition occurs when earned without regard to the date of collection. Expense recognition occurs when the corresponding liabilities are incurred, regardless of payment date.

OVERVIEW OF THE FINANCIAL STATEMENTS

This discussion and analysis is intended to serve as an introduction to the System's financial statements.

SYSTEM'S BASIC FINANCIAL STATEMENTS

There are two basic financial statements presented herewith. The Statements of Fiduciary Net Position as of June 30, 2022 and 2021 indicate the net position available to meet future payments and give a snapshot at a particular point in time. The Statements of Changes in Fiduciary Net Position for the fiscal years ended June 30, 2022 and 2021 provide a view of the fiscal year's additions to and deductions from the System.

NOTES TO BASIC FINANCIAL STATEMENTS

The notes are an integral part of the basic financial statements and provide additional background information that is essential for a complete understanding of the data provided in the System's financial statements.

REQUIRED SUPPLEMENTARY INFORMATION

The required supplementary information (the RSI) consists of:

Schedule 1 – Schedule of Changes in Net Pension Liability and Related Ratios – Information about the components of the net pension liability and related ratios includes the System's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percentage of covered payroll. It should be noted though that actuarial information is based upon assumptions about future events, and therefore, the figures presented are estimates.

Schedule 2 – Schedule of Contributions – Pension Plan – Details the actuarially determined contribution calculated for employers, actual contributions, covered payroll, and actual contributions as a percentage of payroll.

Schedule 3 – Schedule of Investment Returns – Pension Plan – A comparative schedule presenting the annual money-weighted rate of return on System investments for each fiscal year.

Schedule 4 – Schedule of Changes in Net OPEB (Asset) Liability and Related Ratios – These are calculations made by the System's actuary that provide actuarial information that contributes to the understanding of the changes in the actuarial funding of and the funded status of the other postemployment benefits (OPEB) over a number of years. It should be noted that actuarial information is based upon assumptions about future events, and therefore, the figures presented are estimates.

Schedule 5 – Schedule of Contributions – HMEPS OPEB Trust – Details the actuarially determined contribution calculated for employers, actual contributions, covered payroll, and actual contributions as a percentage of payroll.

Schedule 6 – Schedule of Investment Returns – HMEPS OPEB Trust – A comparative schedule presenting the annual money-weighted rate of return on OPEB trust investments for each fiscal year.

SUPPLEMENTARY INFORMATION

Supplementary information consists of:

Schedule 7 – Investment Summary – This lists the System's investments by type presented both at cost and fair value.

Schedule 8 – Investment Expenses, Professional Services and Administrative Expenses – This provides additional information for purposes of a more detailed analysis.

Schedule 9 – Summary of Costs of Investment and Professional Services – This provides additional information for purposes of a more detailed analysis.

COMPARATIVE FINANCIAL STATEMENTS

Below is a condensed and comparative summary of major classes of Fiduciary Net Position at fair value. (In thousands of dollars).

	JUNE 30		
	2022	2021	2020
ASSETS			
Cash and cash equivalents	$ 13,277,957	$ 11,776,797	$ 5,196,199
Receivables	25,829,987	19,853,160	24,586,130
Investments	3,970,544,295	3,875,363,537	2,881,575,364
Net OPEB asset	4,239,681	6,034,930	2,257,363
Capital assets, net	2,056,778	311,507	306,805
Total assets	4,015,948,698	3,913,339,931	2,913,921,861
Deferred outflows of resources	766,507	59,431	226,744
LIABILITIES			
Investment purchases and foreign exchange payables	$ 12,413,039	$ 4,528,493	$ 5,104,601
Accrued and other liabilities	41,499,878	28,167,093	16,606,438
Total liabilities	53,912,917	32,695,586	21,711,039
Deferred inflows of resources	1,352,777	3,041,212	2,035,243
Fiduciary net position restricted for benefits	$ 3,961,449,511	$ 3,877,662,564	$ 2,890,402,323

Below is a comparative summary of changes in fiduciary net position restricted for benefits.

	YEAR ENDED JUNE 30,		
	2022	2021	2020
ADDITIONS			
Contributions	$ 229,995,123	$ 218,261,736	$ 209,182,036
Net investment income (loss)	188,202,700	1,086,450,877	(114,857,707)
Other income	465,948	486,744	479,257
Total additions	418,663,771	1,305,199,357	94,803,586
DEDUCTIONS			
Benefits paid and contributions refunded	329,139,530	314,778,067	308,855,979
Administrative expenses and professional fees	5,737,294	3,161,049	4,935,878
Total deductions	334,876,824	317,939,116	313,791,857
Net increase (decrease) in net position	83,786,947	987,260,241	(218,988,271)
Fiduciary net position restricted for benefits Beginning of year	3,877,662,564	2,890,402,323	3,109,390,594
End of year	$ 3,961,449,511	$ 3,877,662,564	$ 2,890,402,323

FINANCIAL HIGHLIGHTS (IN THOUSANDS OF DOLLARS, UNLESS OTHERWISE NOTED)

FINANCIAL ANALYSIS

Fiduciary net position may serve as a useful indicator of a plan's financial position. The System's fiduciary net position as of June 30, 2022 was $3.96 billion, an increase of $83.79 million or 2% over the prior fiscal year. The fiduciary net position as of June 30, 2021 was $3.87 billion, an increase of $987.26 million or 34% from the prior year.

The System received cash contributions from the City of Houston (the City) of $197.34 million, $184.94 million and $176.59 million for fiscal years 2022, 2021 and 2020, respectively. Participant contributions were $32.65 million, $33.32 million and $32.58 million for fiscal years 2022, 2021 and 2020 respectively.

Net investment income was $188.20 million for the year ended June 30, 2022, a decrease of $898.25 million from the prior fiscal year. Net investment income was $1.10 billion for the year ended June 30, 2021, up significantly from the net investment loss of $114.86 million in fiscal year 2020.

Total benefit payments were $328.01 million, $314.38 million and $308.21 million for fiscal years 2022, 2021 and 2020, respectively. This represented increases in total benefit payments for these years of 4.3%, 2.0% and 5.8%, respectively.

Total benefit payments exceeded total employee and employer contributions by $98.01 million in fiscal year 2022, $96.11 million in fiscal year 2021 and $99.02 million in fiscal year 2020.

Costs of administering the System, including professional fees, were $5.74 million, $3.16 million and $4.94 million for fiscal years 2022, 2021 and 2020, respectively. The decrease in expenses seen in 2021 and the subsequent increase seen in 2022 are mainly due to changes in OPEB investment income, which is aggregated in the administration expenses figure. The outsized investment income recorded in 2021 reduced the System's expenses for the year.

The funded ratio is a standard measure of a plan's funded status representing the ratio of the actuarial value of assets to the actuarial accrued liability. The funded ratio for the pension plan as of the last actuarial report, July 1, 2021, is 62.8% compared to 59.2% on July 1, 2020, and 59.3% on July 1, 2019. As of July 1, 2021, the System's unfunded actuarial accrued liability was $1.97 billion.

Capital assets, net of accumulated depreciation and amortization, at the end of fiscal years 2022, 2021 and 2020 were $2.06 million, $312 thousand and $307 thousand, respectively. The large increase in 2022 is due to the adoption of GASB No. 87 Leases, which required the System to recognize a right-to-use asset for lease arrangements. The standard requires the restatement of all periods presented in the financial statements. However, the System determined that this was not practical as the fiduciary net position is used in the calculation of the net pension liability that gets disclosed in the RSI and in the System's financial statements as well as the City's. Management has examined the impact of GASB No. 87 on the fiduciary net position for 2021 and 2020 and determined the impact to be negligible to the users of the financial statements and this discussion and analysis.

CURRENTLY KNOWN FACTS, CONDITIONS, OR DECISIONS

Financial markets saw meaningful volatility in fiscal year 2022. In the first half of the period, the economy continued to benefit from the recovery from the COVID-19 pandemic. Strong market performance reversed quickly in February 2022 due to geopolitical risks following the Russian invasion of Ukraine. Inflation increased significantly during the latter half of the period resulting in the Federal Reserve ending its accommodative monetary policy. The Federal Reserve raised the Federal Funds rate three times between March and June for a cumulative increase of 1.5%. Further increases in interest rates are expected in an effort to tame inflation. Despite the economic and geopolitical uncertainty, job growth was strong during the period, and the fiscal year ended with an unemployment rate of 3.6%.

U.S. equity markets performed strongly in the first half of the fiscal year with the Wilshire 5000 Index gaining 9.7% through December 31, 2021. The invasion of Ukraine and inflation fears wiped away those gains and more causing the Wilshire 5000 to close the fiscal year down 13.2%. The was the first fiscal year since the Global Financial Crisis of 2008-2009 that the Wilshire 5000 declined in value. While large cap value stocks performed the best, all styles and all market capitalization sizes within the U.S. equity market posted negative returns for the period.

International equity markets followed a similar pattern to U.S. stocks with the MSCI ACWI ex- U.S. (net) Index performing well in the first half of the fiscal year but reversed those gains and more in the second half of the period. The MSCI ACWI ex-U.S. (net) Index was down 18.4% for fiscal year 2022.

Investment grade fixed income securities declined significantly in fiscal year 2022 as inflation led to rising interest rates. Investment grade bonds as represented by the Bloomberg Barclays Aggregate Bond Index posted a return of -10.4% for the fiscal year. High yield bonds, as represented by the BofA Merrill Lynch U.S. High Yield Master II Index returned - 12.7% for the fiscal year, driven by the rising interest rate environment. HMEPS' Private Credit portfolio produced a positive investment return of 7.7% for the fiscal year as nearly all the portfolio's holdings are refinanced at higher rates, or held to maturity.

At June 30, 2022, the System's total pension liability was $5.56 billion. The System's Fiduciary Net Position was $3.96 billion, leaving a Net Pension Liability of $1.61 billion. The Plan's Fiduciary Net Position as a percentage of total pension liability was 71.06%.

The Fiduciary Net Position of $3.96 billion increased by $85.26 million or 2.2% during fiscal year 2022. This compares to an increase of $985.23 million or 34.2% in the Fiduciary Net Position during fiscal year 2021.

INVESTMENT REVIEW

The System's investment portfolio closed its 2022 fiscal year at $3.97 billion, up from $3.88 billion at the beginning of the fiscal year. The gross rate of return during fiscal year 2022 was 5.2%, compared with 38.7% during fiscal year 2021. The portfolio's strong relative performance was largely driven by the System's alternative investment asset classes, including Real Estate and Private Equity, which returned 13.4% and 22.4%, respectively for the period. Because private market investments are not traded on an exchange, their investment returns are typically more stable compared to the public market investments. The Inflation-linked asset class was the best performer, returning 24.9% as commodity prices, including energy prices, increased significantly due to inflationary pressures.

Through the efforts of the Board of Trustees, the System's investment portfolio is more broadly diversified than many public pension plans and tends to perform well in most market environments. During the 10-year period ending June 30, 2022, the System's annualized investment return was 10.2%.

CONTACTING THE SYSTEM'S FINANCIAL MANAGEMENT

This financial report is designed to provide our participants, business partners, and other stakeholders with a general overview of the System's financial activities. Questions about this report should be directed to the Executive Director of the Houston Municipal Employees Pension System at 1201 Louisiana, Suite 900, Houston, Texas 77002.

STATEMENTS OF FIDUCIARY NET POSITION

June 30, 2022 and 2021 (in whole dollars)

	JUNE 30, 2022			JUNE 30, 2021
	PENSION PLAN	HMEPS OPEB TRUST	TOTAL	TOTAL
ASSETS				
Cash and cash equivalents	$ 12,718,204	$ 559,753	$ 13,277,957	$ 11,776,797
Receivables				
Employer and employee contribution receivables	14,098,511	–	14,098,511	13,648,415
Investment sale proceeds and foreign exchange receivables	6,818,965	–	6,818,965	1,885,055
Dividend and interest receivables	4,878,950	33,561	4,912,511	4,319,690
Total receivables	25,796,426	33,561	25,829,987	19,853,160
Investments				
Short-term investment funds	177,418,509	–	177,418,509	125,347,138
Global equity	1,020,111,731	4,433,059	1,024,544,790	1,190,675,032
Fixed income	242,208,347	4,333,868	246,542,215	303,696,576
Absolute return	130,356,439	–	130,356,439	144,475,395
Inflation linked	592,120,405	–	592,120,405	495,943,783
Private credit	104,326,507	–	104,326,507	97,343,729
Private equity	1,238,474,767	–	1,238,474,767	1,110,219,835
Real estate	421,205,718	–	421,205,718	383,623,381
Securities lending collateral arrangements	35,554,945	–	35,554,945	24,038,668
Total investments	3,961,777,368	8,766,927	3,970,544,295	3,875,363,537
Net OPEB asset	4,239,681	–	4,239,681	6,034,930
Capital Assets	2,056,778	–	2,056,778	311,507
Total assets	4,006,588,457	9,360,241	4,015,948,698	3,913,339,931
DEFERRED OUTFLOWS OF RESOURCES - HMEPS OPEB	766,507	–	766,507	59,431
LIABILITIES				
Investment purchases and foreign exchange payables	12,413,039	–	12,413,039	4,528,493
Accrued liabilities	5,683,433	261,500	5,944,933	4,128,425
Securities lending arrangements obligation	35,554,945	–	35,554,945	24,038,668
Total liabilities	53,651,417	261,500	53,912,917	32,695,586
DEFERRED INFLOWS OF RESOURCES - HMEPS OPEB	1,352,777	–	1,352,777	3,041,212
FIDUCIARY NET POSITION RESTRICTED FOR BENEFITS	$ 3,952,350,770	$ 9,098,741	$ 3,961,449,511	$ 3,877,662,564

See accompanying notes to these financial statements.

STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION

June 30, 2022 and 2021 (in whole dollars)

	YEAR ENDED JUNE 30, 2022			JUNE 30, 2021
	PENSION PLAN	HMEPS OPEB TRUST	TOTAL	TOTAL
ADDITIONS				
Contributions				
Employer	$ 197,340,533		$ 197,340,533	$ 184,936,998
Participant	32,654,590	–	32,654,590	33,324,738
Total contributions	229,995,123	–	229,995,123	218,261,736
Other income	465,948	–	465,948	486,744
Investment Income (loss)				
Interest on bonds and deposits	11,169,992	481	11,170,473	13,104,562
Dividends	29,607,531	180,669	29,788,200	23,581,453
Earnings from limited partnerships and real estate trusts	4,828,207	–	4,828,207	27,940,987
Net appreciation (depreciation) on investments	152,875,956	(1,368,116)	151,507,840	1,030,120,678
Total investment income (loss)	198,481,686	(1,186,966)	197,294,720	1,094,747,680
Proceeds from lending securities	162,288	–	162,288	139,982
Less costs of securities lending	(85,266)	–	(85,266)	(46,650)
Net proceeds from lending securities	77,022	–	77,022	93,332
Less investment expenses	(9,169,042)	–	(9,169,042)	(8,390,135)
Total net investment income (loss)	189,389,666	(1,186,966)	188,202,700	1,086,450,877
Total additions	419,850,737	(1,186,966)	418,663,771	1,305,199,357
DEDUCTIONS				
Benefits paid to participants	327,772,923	233,825	328,006,748	314,376,050
Contribution refunds to participants	1,132,782	–	1,132,782	402,017
Professional services	724,517	–	724,517	664,396
Administration expenses	4,956,414	56,363	5,012,777	2,496,653
Total deductions	334,586,636	290,188	334,876,824	317,939,116
NET INCREASE (DECREASE) IN FIDUCIARY NET POSITION	85,264,101	(1,477,154)	83,786,947	987,260,241
FIDUCIARY NET POSITION RESTRICTED FOR BENEFITS				
Beginning of year	3,867,086,669	10,575,895	3,877,662,564	2,890,402,323
End of year	$ 3,952,350,770	$ 9,098,741	$ 3,961,449,511	$ 3,877,662,564

NOTE 1 – DESCRIPTION OF PLAN

The Houston Municipal Employees Pension System (the System) was created under Chapter 358, Acts of the 48th Texas Legislature, Regular Session, 1943 (Article 6243g, Vernon's Texas Civil Statutes) and reenacted and continued under HB1573, 77th Texas Legislature, Article 6243h, Vernon's Texas Civil Statutes (the Pension Statute), as amended. The System is a cost-sharing multiple-employer defined benefit pension plan with two participating employers covering all municipal employees, except police officers and firefighters (other than certain police officers in the System as authorized by the Pension Statute), employed full time by the City of Houston, Texas (the City), elected City Officials, and the full time employees of the System (collectively referred to as participants). The System includes three contributory groups (Groups A, B and D) and provides for service, disability and death benefits for eligible participants. The System's net position is used to pay benefits for eligible participants of Group A, Group B, and Group D.

The System is governed by a Board of Trustees (the Board) consisting of eleven trustees – four elected by the active plan members, two elected by the retired plan members, one appointed by the mayor of the City, one appointed by the controller of the City, one appointed by the elected trustees, and two appointed by the governing body of the City. The appointed trustees must have expertise in at least one of the following areas: accounting, finance, pension, investment or actuarial science. The System can only be terminated or amended by an act of the Legislature of the State of Texas or by an agreement between the City and the Board pursuant to the Pension Statute.

PARTICIPATION

Participants newly hired on or after January 1, 2008 automatically become members of Group D. Participants hired before September 1, 1981 participate in Group A, unless they elected before December 1, 1981 or after May 1, 1996 to transfer to Group B. Participants hired or rehired after September 1, 1981 but before September 1, 1999, may make a one-time irrevocable election to participate in Group A; otherwise, they participate in Group B. Participants hired or rehired on or after September 1, 1999 and before January 1, 2008 participate in Group A; except that Executive Officials of the City and the Executive Director of the System (Executive Officials) participated in Group C. Effective January 1, 2005, the Executive Officials of the City and the Executive Director of the System automatically became Group A members pursuant to the First Amendment to Meet and Confer Agreement, dated December 21, 2004.

The most recent actuarial report shows the following System participants as of July 1, 2021 and 2020:

	2021	2020
Retirees and beneficiaries currently receiving benefits	11,481	11,373
Former employees - vested but not yet receiving benefits	3,789	3,661
Former employees - non-vested	3,837	3,398
Vested active participants	7,700	7,605
Non-vested active participants	3,879	3,989
TOTAL PARTICIPANTS	30,686	30,026

RETIREMENT ELIGIBILITY

Effective January 1, 2008, new employees participate in Group D with:

- Normal retirement eligibility at age 62 with five years of credited service
- Option to elect an early reduced retirement benefit

A former employee who is rehired as an employee by the City or by the System on or after January 1, 2008 is a member of the group in which the employee participated at the time of the employee's immediately preceding separation from service.

For those participants in Group A and Group B employed effective January 1, 2005, a participant who terminates employment with the City or the System is eligible for a normal retirement pension beginning on the member's effective retirement date after the date the member completes at least five years of credited service and attains:

- 62 years of age, or
- A combination of years of age and years of credited service, including parts of years, the sum of which equals the number 75, provided the participant is at least 50 years of age, or
- Any combination of age and credited service that when added together equal 70 or more, provided that the member, prior to January 1, 2005 completed at least five years of credited service and attained a combination of age and credited service that when added together equal 68 or more.

PENSION BENEFITS

Pension benefits are based on a participant's average monthly salary and years of credited service, as defined in the Pension Statute. The maximum normal retirement pension is 90.0% of the participant's average monthly salary.

Pension benefits are increased annually by a Cost of Living Adjustment (COLA) equal to a calculated percentage of the original benefit amount, not compounded, for all persons receiving a pension or survivor benefit as of January 1 of the year in which the increase is made (except for Group D members who terminated employment prior to July 1, 2017 who do not receive COLAs). The amount of the COLA is the rolling five-year net investment return minus 5.0%, and then multiplied by 50.0%, but not less than 0% or more than 2.0%.

A participant who is eligible to receive a deferred benefit may elect to receive his or her pension benefit in an early lump sum distribution if the actuarial present value of the participant's benefit is less than $20,000 on the date of termination. Early lump-sum distributions are subject to approval by the Board.

DISABILITY BENEFITS

Service-connected disability benefits for covered participants are based on the participant's normal accrued benefit, but are not less than 20.0% of the participant's average monthly salary. There is no minimum credited service requirement to qualify for service-connected disability benefits.

Participants with at least five years of credited service who become disabled may qualify for a non-service connected disability allowance equal to the participant's normal accrued pension benefit.

SURVIVOR BENEFITS

Survivor benefits are provided for a participant's surviving spouse and/or dependent children. A deceased participant must have had at least five years of credited service at the time of his or her death to qualify for survivor benefits unless death was caused by a service-connected incident as defined by the Pension Statute. For a Group D member, eligibility for survivor benefits for a death that occurs while actively employed is determined in the same manner as for Group A and Group B. For a death that occurs after the Group D participant's termination of employment, the payment of a death benefit depends on whether the participant elected an optional annuity.

A Group D participant with at least five years of credited service has the option to elect an actuarially equivalent amount under one of three joint and survivor (J&S) annuity options in lieu of a normal benefit with no survivor benefit. If a Group D participant with at least five years of credited service elects a normal benefit, no death or survivor benefit is payable. If a Group D participant with at least five years of credited service makes no optional annuity election and dies prior to retirement, the surviving spouse is eligible to receive an amount equal to the amount that would have been paid if the participant had elected a 50.0% joint and survivor annuity and named the surviving spouse as the designated beneficiary.

Effective July 1, 2011, eligible unmarried Group A and Group B members who terminate service on or after June 30, 2011 have the option to select an annuity option in lieu of a normal benefit.

The optional annuity election, which was already available to vested Group D members and vested Group B members who separated from service prior to September 1997, allows eligible participants to elect to take a reduced pension and provide an annuity (50.0% J&S, 100.0% J&S, or 10-year guarantee) to a designated annuitant.

In order to qualify for survivor benefits other than under an annuity option, a surviving spouse must have been married to the deceased participant at the time the participant's employment with the City or System was terminated and at the time of the participant's death. To qualify for benefits, a child must be the unmarried natural or legally adopted dependent child of the deceased participant at the time of the participant's death and (a) must be under age 21 or (b) have been totally and permanently disabled before age 18 and before the participant's termination of employment. Dependent benefits are payable to the legal guardian of the dependent(s) unless the dependent is at least 18 years of age.

DEFERRED RETIREMENT OPTION PLAN (DROP)

A Group A or Group B participant who is eligible to retire, except that he or she has not retired and remains a full-time employee of the City, or the System, or has been separated from service for not more than thirty calendar days, may elect to participate in the Deferred Retirement Option Plan (DROP). The DROP provides that a monthly amount (monthly DROP credit) will be credited to a notional account (DROP Account). Beginning January 1, 2018 interest is credited to the DROP Account at a rate equal to half of the System's rolling five-year net investment return, but not less than 2.5% or more than 7.5%. Interest is compounded at an interval approved by the Board. The first day of DROP participation is the DROP Entry Date. The day a participant's fully executed DROP election is accepted by the System is the DROP Election Date.

DROP participants who are active employees receive the COLA if the employee is at least age 62 on January 1 of that year. Effective January 1, 2005, a participant's election to participate in DROP cannot establish a DROP entry date that occurs prior to the date of the System's receipt of the member's request to participate in DROP. The monthly DROP credit is based on the participant's years of credited service and average monthly salary as of DROP Entry Date, and benefit accrual rates in effect on DROP Election Date.

DROP participation terminates when a DROP participant's employment with the City, or the System, terminates. The balance of the participant's notional DROP account (DROP Benefit) at the time of such termination is an amount equal to the sum of a participant's monthly DROP credits and interest accrued on such amount up to the time the participant's employment terminates. A DROP Benefit is subject to approval by the Board. A DROP participant eligible to receive a DROP Benefit distribution may elect to receive the distribution in a lump-sum, partial distribution, in substantially equal periodic payments over a period of time approved by the Board, or in a combination of a lump-sum followed by substantially equal periodic payments over a period of time approved by the Board until the balance of the DROP Benefit is depleted. The DROP Benefit is not available to a DROP participant until such participant's employment with the City or the System has terminated and the participant has made a DROP distribution election.

Group D participants do not participate in DROP.

DROP balances for all active and inactive participants totaled $725.4 million in fiscal year 2022, and $689.4 million in fiscal year 2021.

GROUP D CASH BALANCE COMPONENT

In addition to the required Group D member contributions, Group D members contribute an additional 1% of salary to a notional cash balance account beginning in calendar year 2018. On separation from service, if a Group D participant has less than one year of service while contributing to the account, the participant is eligible to receive only a distribution of the contributions credited to the account, without interest. If the participant has at least one year of contributions to the account, the participant is eligible to receive a distribution of contributions credited to the account, including interest.

The Group D Cash Balance interest rate is credited bi-weekly and is equal to half of the System's rolling five-year net investment return, with a minimum of 2.5% and maximum of 7.5%, divided by 26.

REFUNDS OF PARTICIPANT CONTRIBUTIONS (BESIDES THE GROUP D CASH BALANCE PLAN)

All participants who terminate employment prior to being approved for retirement may request a refund of their accumulated employee contributions, if any, without interest, in lieu of a pension or in the event the participant has fewer than five years of credited service.

CONTRIBUTIONS AND FUNDING POLICY

All active participants are required to contribute to the System. Effective July 2018, Group A participants contribute 8% of salary, Group B participants contribute 4% of salary, and Group D participants contribute 2% of salary. Group D participants also contribute an additional 1% of salary.

The City is required to contribute the "Total City Contribution" to the System, which consists of the sum of (a) an actuarially determined percentage of payroll (City Contribution Rate) multiplied by actual payroll and (b) a fixed dollar amount (City Contribution Amount) which is based on the Unfunded Actuarial Accrued Liability (UAAL) as of July 1, 2016 (Legacy Liability). The Legacy Liability payment is amortized over 30 years, beginning on July 1, 2017 and grows at 2.75% per year regardless of the actual payroll growth rate.

For the year ended June 30, 2022, the City Contribution Rate was 8.41% of payroll and the City Contribution Amount was $138,246,872. In fiscal year 2021, the City Contribution Rate was 8.36% of payroll, and the City Contribution Amount was $134,546,835.

NOTE 2 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

REPORTING ENTITY

The System is a component unit of the City. Therefore, its basic financial statements and required supplemental information are included in the City's Annual Comprehensive Financial Report.

BASIS OF ACCOUNTING

The accompanying basic financial statements have been prepared on the accrual basis of accounting and in accordance with generally accepted accounting principles (GAAP). Participant and employer contributions are recognized as revenues in the period in which they are due pursuant to the Pension Statute and formal recommitments. Investment income is recognized as additions when earned. The net appreciation/(depreciation) in the fair value of investments is recorded as an increase/(decrease) to investment income based upon investment valuations, which includes both realized and unrealized gains and losses on investments. Benefits and refunds are recognized when due and payable in accordance with the terms of the Pension Statute. Expenses are recognized when the liability is incurred.

INVESTMENT VALUATION AND INVESTMENTS TRANSACTIONS

Investments are reported at fair value. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. The fair value of limited partnerships and real estate trusts are based on the System's valuation of estimates and assumptions from information and representations provided by the respective general partners. As the information provided by the general partners is less timely than public market information, estimates of fair value of limited partnerships and other alternative investment holdings are generally based on information that is quarter- lagged and cash-adjusted using cash flows subsequent to the latest report available. Therefore, there could be differences between the valuation of the limited partnerships and real estate trusts reported by the respective general partners and the valuation included in the financial statements for these investments.

Sales of investments and foreign exchange contracts are recorded on the trade date. Receivables are recorded when the sale has occurred but are pending final settlement. Purchases of investments and foreign exchange contracts are recorded on the trade date. Payables are recorded when the sale has occurred but are pending final settlement.

CAPITAL ASSETS

Capital assets are recorded at cost less accumulated depreciation and amortization. Depreciation and amortization expense is computed using the straight-line method over the estimated useful lives of the related assets ranging from three to ten years. Any gain or loss on the retirement of assets is recognized currently. Maintenance and repairs are charged to expense while expenditures for improvements greater than or equal to $5,000 are capitalized.

Included in capital assets are the right-to-use assets from lease contracts entered into by the System. The System implemented GASB No. 87 Leases (GASB 87) as of July 1, 2021. The System evaluated contracts that were formerly accounted for as operating leases to determine whether they meet the definition of a lease as defined in GASB 87. The contract to lease office space met the definition of a lease and the System calculated and recognized a right-to-use asset and lease liability of $2,432,651 as of July 1, 2021. The beginning net position was not restated for the adoption of GASB 87.

Due to the importance of the net position in the System's disclosure of net pension liability by the City and their disclosures of the liability, the System elected to present the implementation as of July 1, 2021 and did not restate its capital assets and liabilities for the year ending June 30, 2021. The System examined the impact of this omission and determined that it was not significant to users of the financial statements.

The System recognizes lease contracts or equivalents that have a term exceeding one year and the cumulative future payments on the contract exceed $100,000 that meet the definition of an other than short-term lease. The System uses a discount rate that is explicitly stated or implicit in the contract. When a readily determinable discount rate is not available, the discount rate is determined using the System's incremental borrowing rate at the start of the lease for a similar asset type and term length to the contract. Short-term lease payments are expensed when incurred.

USE OF ESTIMATES

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the basic financial statements and the reported amounts of additions and deductions during the reporting period. Accordingly, actual results could differ from those estimates.

NEW ACCOUNTING PRONOUNCEMENTS

GASB Statement No. 96, ***Subscription-Based Information Technology Arrangements***. The primary objective of this statement is to increase the usefulness of governments' financial statements by requiring recognition of certain subscription-based agreements to be recognized as an intangible asset with a corresponding liability that previously were classified as administration expenses and recognized as outflows of resources based on the payment provisions of the contract. The System is currently examining the impact of their custodian agreement and investment analysis subscriptions for applicability of this statement. This statement is effective for the year ending June 30, 2023 for the System.

GASB Statement No. 99, ***Omnibus 2022***. This statement makes amendments to various GASB Statements. Amendments made to Statement Nos. 87 and 96 will impact the System. Management is currently assessing the applicability of the statement to their lease contract and subscription agreements. This statement is effective for the year ending June 30, 2023 for the System.

GASB Statement No. 101, ***Compensated Absences***. This statement requires that liabilities be recognized for (1) leave that has not been used and (2) leave that has been used but not yet paid in cash or settled through noncash means. In estimating the leave that is more likely than not to be used or otherwise paid or settled, relevant factors such as employment policies related to compensated absences and historical information about the use or payment of compensated absences should be considered. This statement is effective for the year ending June 30, 2025 for the System. Management does not expect a significant impact to their reporting of compensated absences.

RECLASSIFICATIONS

Certain reclassifications have been made to the fiscal year 2021 financial statements to conform to the fiscal year 2022 financial statement presentation. These reclassifications had no effect on changes in fiduciary net position.

NOTE 3 – NET PENSION LIABILITY

The components of the net pension liability of the City are as follows:

		JUNE 30, 2022		JUNE 30, 2021
Total pension liability	$	5,562,145,984	$	5,440,061,635
Fiduciary net position		3,952,350,770		3,867,086,669
City's net pension liability	$	1,609,795,214	$	1,572,974,966
Plan fiduciary net position as a percentage of the total pension liability		71.06%		71.09%

The total pension liability as of June 30, 2022, was determined by an actuarial valuation as of July 1, 2021, and rolled-forward using generally accepted actuarial principles. Actuarial valuation of the System involves estimates and assumptions about events in the future. Amounts determined regarding the net pension liability are subject to revision as actual results are compared with past expectations and new estimates are made regarding the future. As of the end of fiscal year 2021, the last experience study was performed in 2015 based on the 5-year period ending June 30, 2014. The following are the actuarial assumptions used to determine the total pension liability:

METHODS AND ASSUMPTIONS USED TO DETERMINE CONTRIBUTION RATES

Actuarial Cost Method	Entry Age Normal
Asset Valuation Method	5-year smoothed market, direct offset of deferred gains or losses
Inflation	2.25%
Salary Increases	3.00% to 5.25% including inflation
Investment Rate of Return	7.00%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2015 valuation pursuant to an experience study of the period 2009 – 2014.
Mortality	RP-2000 Mortality Table scaled by 125% for males and 112% for females. The rates are then projected on a fully generational basis by scale BB.
Note	The actuarially determined contribution includes the Legacy Liability payment as specified by the July 1, 2016 Risk Sharing Valuation Study and a calculated employer rate equal to the normal cost and the amortization of any new unfunded liabilities over a closed 30 year period from the valuation date the liability base was created.

DISCOUNT RATE

The discount rate used to measure the total pension liability was 7.0%. The projection of cash flows used to determine the discount rate assumed that the System's contributions will continue to follow the current funding policy. Based on the actuarial assumptions applied, the System's fiduciary net position is projected to be available to make all projected future benefit payments of current plan members for all future years and hence, the blended GASB discount rate is equal to the long-term rate of return of 7.0%. Therefore, the long-term expected rate of return on pension plan investments of 7.0% was applied to all periods of projected benefit payments to determine the total pension liability. The table below illustrates the sensitivity of the City's net pension liability to changes in the discount rate if it were calculated using a single discount rate that is one percentage-point lower or one percentage point higher than the single discount rate.

JUNE 30	1% DECREASE 6.0%	CURRENT DISCOUNT RATE 7.0%	1% INCREASE 8.0%
2022	$ 2,180,571,979	$ 1,609,795,214	$ 1,129,984,396
2021	2,143,094,762	1,572,974,965	1,095,299,291

NOTE 4 – CASH AND CASH EQUIVALENTS

For cash deposits and cash equivalents, custodial credit risk is the risk that in the event of a bank failure, the System's deposits may not be returned to it. The System's deposits are held by State Street Bank and Trust Company and U.S. Bank. As of June 30, 2022 and 2021, the System had fair value cash balances of $13,618,072 and $11,726,879, respectively. Management believes that the System's credit risk exposure is mitigated by the financial strength of the banking institutions in which the deposits are held.

NOTE 5 – INVESTMENTS

The System invests in global equities and fixed income securities. A security is a transferable financial instrument that evidences ownership or creditorship. Decisions as to individual equity security selection, security size and quality, number of industries and holdings, current income levels, turnover, and other tools employed by active managers are left to the managers' discretion, subject to the standards of fiduciary prudence, as set out in the respective manager's Investment Management Agreement. Additionally, the System invests in commingled funds, limited partnerships, real estate trusts, and loans and mortgages that are evidenced by contracts rather than securities and classified as absolute return, inflation linked, private credit, private equity and real estate on the statement of net position. The general investment objective is to obtain a reasonable long-term total return consistent with the degree of risk assumed while emphasizing the preservation of capital.

This objective is accomplished through the System's asset allocation policy, as follows for June 30, 2022:

ASSETS	TARGET ALLOCATION	ACTUAL ALLOCATION
Global equity	32.5%	26.4%
Private equity	17.0%	31.4%
Fixed income	10.0%	6.5%
Real estate	12.5%	10.7%
Absolute return	8.0%	3.3%
Inflation linked	15.0%	15.1%
Private credit	5.0%	2.5%
Cash	0.0%	4.1%
TOTAL	100.0%	100.0%

CREDIT RISK

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligation to the System. The quality ratings of investments in fixed income securities are set forth in the Investment Policy Statement. All issues purchased by investment grade fixed income managers must be of investment grade quality, unless expressly authorized by the Board. Fixed income investments should emphasize high-quality and reasonable diversification.

The quality ratings of investment in fixed income securities as described by nationally recognized statistical rating organizations at June 30, 2022 and 2021, are as follows:

QUALITY RATING	2022		2021	
	FAIR VALUE	PERCENTAGE	FAIR VALUE	PERCENTAGE
AAA	$ 1,479,052	0.60%	$ 4,845,498	1.60%
AA	977,168	0.40%	580,904	0.19%
A	4,088,597	1.66%	4,441,138	1.46%
BBB	21,892,924	8.88%	37,836,137	12.46%
BB	25,146,022	10.20%	26,275,253	8.65%
B	28,778,200	11.67%	34,919,453	11.50%
CCC	21,906,136	8.89%	26,982,090	8.88%
D	–	0.00%	664,378	0.22%
Commingled funds	54,881,101	22.26%	67,178,974	22.12%
Not available	87,393,015	35.44%	99,972,751	32.92%
TOTAL	$ 246,542,215	100.0%	$ 303,696,576	100.0%

CUSTODIAL CREDIT RISK

For an investment, custodial credit risk is the risk that, in the event of the failure of the counterparty, the System will not be able to recover the value of its investment or collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial risk if the securities are uninsured, are not registered in the name of the System, and are held by either the counterparty or the counterparty's trust department or agent but not in the System's name.

CONCENTRATION OF CREDIT RISK

The allocation of assets among various asset classes is set by the Board. For major asset classes (e.g., global equity, fixed income, real estate, private equity, inflation-linked, absolute return, and private credit), the System will further diversify by employing managers with demonstrated skills in complementary areas of expertise. The managers retained will utilize varied investment approaches, but, when combined will exhibit characteristics that are similar, but not identical, to the asset class proxy utilized in the strategic asset allocation plan. The investment portfolio as of June 30, 2022 and 2021, contained no concentration of investments in any one entity that represented 5% or more of the total investment portfolio, excluding passive index funds.

INTEREST RATE RISK

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of the investment. Duration is a measure of a debt investment's exposure to fair value changes arising from changes in interest rates. It uses the present value of cash flows, weighted for those cash flows as a percentage of the investment's full price. The greater the duration of a bond, or a portfolio of bonds, the greater its price volatility will be in response to a change in interest rates and vice-versa. Duration is the measure of a bond price's sensitivity to a 100-basis point change in interest rates. The duration of the System's debt securities is managed by the active managers.

At June 30, 2022, the following table shows the System's investments by type, fair value and the effective duration rate.

	DOMESTIC	INTERNATIONAL	TOTAL	EFFECTIVE DURATION
Collateralized mortgage obligations	$ 4,617,309	$ –	$ 4,617,309	3.3
Convertible bonds	3,446,361	56,280	3,502,641	0.8
Corporate bonds	88,629,818	15,556,677	104,186,495	5
GNMA/FNMA/FHLMC	20,090,494	–	20,090,494	5.3
Municipal	369,754	–	369,754	10.6
Government issues	28,946,959	644,648	29,591,607	7.8
Misc. receivable (auto/credit card)	3,331,733	–	3,331,733	1.4
Other asset backed securities	976,121	–	976,121	N/A
Bank loan	24,470,061	524,900	24,994,961	N/A
Commingled funds	54,881,100	–	54,881,100	N/A
TOTAL	$ 229,759,710	$ 16,782,505	$ 246,542,215	

At June 30, 2021, the following table shows the System's investments by type, fair value and the effective duration rate.

	DOMESTIC	INTERNATIONAL	TOTAL	EFFECTIVE DURATION
Collateralized mortgage obligations	$ 11,009,455	$ –	$ 11,009,455	3.9
Convertible bonds	4,702,199	–	4,702,199	0.8
Corporate bonds	109,602,096	23,435,466	133,037,562	5
GNMA/FNMA/FHLMC	22,441,035	–	22,441,035	3.2
Government issues	29,903,713	931,460	30,835,173	8.5
Misc. receivable (auto/credit card)	4,974,214	–	4,974,214	1.6
Other asset backed securities	1,742,431	–	1,742,431	N/A
Bank loan	27,430,921	344,612	27,775,533	N/A
Commingled funds	67,178,974	–	67,178,974	N/A
TOTAL	$ 278,985,038	$ 24,711,538	$ 303,696,576	

FOREIGN CURRENCY RISK

International securities investment managers are expected to maintain diversified portfolios by sector and by issuer in accordance with the System's Investment Policy Statement.

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit. The System has an indirect exposure to foreign currency fluctuation as of June 30, 2022 and June 30, 2021 as follows:

		2022 FAIR VALUE		2021 FAIR VALUE
Australian dollar	$	5,904,825	$	11,200,924
Brazilian real		3,602,144		4,188,462
Canadian dollar		16,843,300		19,433,511
Chilean peso		3,962		–
Czech koruna		261,638		–
Danish krone		5,064,183		3,997,134
Euro currency		103,842,798		136,399,257
Hong Kong dollar		14,869,668		23,200,587
Hungarian forint		417,906		487,898
Indian rupee		–		178,677
Indonesian rupiah		2,115,396		1,714,580
Japanese yen		39,926,667		51,248,351
Mexican peso		1,227,727		1,451,775
New Israeli sheqel		59,841		84,731
New Taiwan dollar		5,597,444		9,358,831
Norwegian krone		1,344,406		1,783,876
Philippine peso		296,601		336,920
Polish zloty		108,984		696,028
Pound sterling		36,662,291		46,828,886
Singapore dollar		2,301,335		1,755,648
South African rand		843,158		5,076,223
South Korean won		4,784,718		8,109,319
Swedish krona		12,777,969		17,896,977
Swiss franc		14,283,034		16,506,526
Turkish lira		927,813		831,236
TOTAL	$	274,067,808	$	362,766,357

SECURITIES LENDING

The System is authorized under its Investment Policy Statement to participate in a securities lending program through its agent and custodian. Under this program, for an agreed upon fee, System-owned investments are loaned to a borrowing financial institution. During the years ended June 30, 2022 and 2021, the custodian lent the System's securities and received cash and securities issued or guaranteed by the United States government as collateral. The cash collateral received on each loan is invested together with the cash collateral of other lenders, in a collective investment pool comprised of a liquidity pool and a duration pool. As of June 30, 2022 and 2021, the liquidity pool had an average duration for United States dollar (USD) collateral of 7.74 and 20.28 days and an average weighted final maturity of 88.62 and 104.37 days, respectively. As of June 30, 2021, the duration pool for USD collateral had an average duration of 22.98 days and an average weighted final maturity of 1,017 days. Because the loans were terminable at will, their duration did not generally match the duration of the investments made with cash collateral.

Borrowers are required to deliver collateral for each loan equal to: (i) in the case of loaned securities denominated in USD or whose primary trading market was located in the United States or sovereign debt issued by foreign governments, 102% of the market value of the loaned securities; and (ii) in the case of loaned securities not denominated in USD or whose primary trading market was not located in the United States, 105% of the market value of the loaned securities. The custodian does not have the ability to pledge or sell securities delivered for collateral, absent a borrower's default. The Board and the borrowers maintained the right to terminate all securities lending transactions on demand. The System's securities lending program utilization level (on-loan balance as a percentage of lendable assets) is 33.5%.

In the event of a default by a borrower, at that time the custodian shall indemnify the System against the failure of the borrower to return the loaned securities by purchasing a number of replacement securities equal to the number of such unreturned loaned securities, to the extent that such replacement securities are available on the open market. To the extent that such proceeds are insufficient or the collateral is unavailable, the purchase of replacement securities shall be made at the custodian's expense. If replacement securities are unavailable, the custodian will credit to the System's account an amount equal to the market value of the unreturned loaned securities for which replacement securities are not purchased. The following tables show the fair value measurements of the securities lent, cash collateral received, and the reinvested cash collateral at June 30, 2022 and 2021.

	2022		
	FAIR VALUE OF UNDERLYING SECURITIES LENT	CASH COLLATERAL RECEIVED	COLLATERAL REINVESTMENT VALUE
Domestic bond and equities	$ 34,493,643	$ 35,385,863	$ 35,385,863
International equities	156,964	169,082	169,082
TOTAL	$ 34,650,607	$ 35,554,945	$ 35,554,945

	2021		
	FAIR VALUE OF UNDERLYING SECURITIES LENT	CASH COLLATERAL RECEIVED	COLLATERAL REINVESTMENT VALUE
Domestic bond and equities	$ 23,260,006	$ 23,924,480	$ 23,924,480
International equities	105,339	114,188	114,188
TOTAL	$ 23,365,345	$ 24,038,668	$ 24,038,668

The System also held securities collateral that cannot be pledged or sold absent a borrower's default totaling $1,015,336 and $4,686,622 as of June 30, 2022 and 2021, respectively. The securities collateral consists of US Treasury Bills and US Agency Bonds. The custodian does not have the ability to pledge or sell securities delivered for collateral, absent a borrower's default. The securities collateral received are not shown on the Statements of Net Position.

NOTE 6 – FAIR VALUE MEASUREMENT

GASB Statement No. 72, Fair Value Measurement and Application, specifies a hierarchy of valuation classifications based on whether the inputs to the valuation techniques used in each valuation classification are observable or unobservable. These classifications are summarized in three broad levels listed below:

> ***Level 1 –*** Inputs to the valuation methodology are unadjusted quoted prices for identical assets or liabilities in active markets that the System has the ability to access.
>
> ***Level 2 –*** The System uses the following to determine the fair value of level 2 investments: quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs and significant value-drivers are observable.
>
> ***Level 3 –*** Valuations derived from valuation techniques in which significant inputs or significant value-drivers are unobservable are disclosed as level 3 investments if they don't meet the definition of NAV practical expedient.

Inputs used to measure fair value might fall in different levels of the fair value hierarchy, in which case the System defaults to the lowest level input that is significant to the fair value measurement in its entirety. These levels are not necessarily an indication of the risk or liquidity associated with the investments.

The following table presents fair value measurements as of June 30, 2022:

	FAIR VALUE AT JUNE 30, 2022	QUOTED PRICES IN ACTIVE MARKETS (LEVEL 1)	SIGNIFICANT OTHER OBSERVABLE INPUTS (LEVEL 2)	SIGNIFICANT UNOBSERVABLE INPUTS (LEVEL 3)
Global equity and inflation linked				
Energy	$ 299,589,913	$ 299,589,913	$ –	$ --
Consumer spending	123,609,395	121,781,157	–	1,828,238
Information technology	100,815,279	100,815,279	–	–
Industrials	92,244,277	92,244,277	–	–
Health care	66,185,474	66,185,474	–	–
Financials	64,818,071	64,818,071	–	–
Materials and utilities	33,182,730	33,182,730	–	–
Real estate	4,513,257	4,513,257	–	–
Other	7,007,338	2,559,527	–	4,447,811
TOTAL GLOBAL EQUITY AND INFLATION LINKED	791,965,734	785,689,685	–	6,276,049
Fixed income				
Corporate bonds	88,477,138	–	88,298,826	178,312
U.S. Agencies	43,316,672	–	43,316,672	–
Asset backed securities	29,015,657	–	29,015,657	–
Bank loans	23,157,960	–	21,314,097	1,843,863
Other	5,856,686	–	4,972,436	884,250
TOTAL FIXED INCOME	189,824,113	–	186,917,688	2,906,425
Short-term investment funds	177,418,509	–	177,418,509	–
Securities lending collateral arrangements	35,554,945	35,554,945	–	–
TOTAL	$ 1,194,763,301	$ 821,244,630	$ 364,336,197	$ 9,182,474
Investments measured at NAV practical expedient				
Global equity collective trusts	518,765,118			
Inflation linked collective trusts	83,586,219			
Fixed income collective trusts	56,718,102			
Absolute return hedge funds	130,356,439			
Real estate collective trust	135,360,065			
Inflation linked limited partnerships	222,348,123			
Private equity limited partnerships	1,238,474,768			
Private credit limited partnerships	104,326,507			
Real estate limited partnerships	285,845,653			
TOTAL INVESTMENTS MEASURED AT NAV	2,775,780,994			
TOTAL INVESTMENTS, AT FAIR VALUE	$ 3,970,544,295			

The following table presents fair value measurements as of June 30, 2021:

	FAIR VALUE AT JUNE 30, 2021	QUOTED PRICES IN ACTIVE MARKETS (LEVEL 1)	SIGNIFICANT OTHER OBSERVABLE INPUTS (LEVEL 2)	SIGNIFICANT UNOBSERVABLE INPUTS (LEVEL 3)
Global equity and inflation linked				
Energy	$ 259,057,404	$ 259,057,404	$ –	$ --
Consumer spending	163,105,801	162,070,081	–	1,035,720
Information technology	146,175,014	146,175,014	–	–
Industrials	105,301,567	105,301,567	–	–
Health care	72,960,159	72,960,159	–	–
Financials	61,880,023	61,880,023	–	–
Materials and utilities	42,163,982	42,163,982	–	–
Real estate	4,445,779	4,445,779	–	–
Other	5,059,475	2,676,983	–	2,382,492
TOTAL GLOBAL EQUITY AND INFLATION LINKED	860,149,204	856,730,992	–	3,418,212
Fixed income				
Corporate bonds	112,093,095	–	111,665,829	427,266
U.S. Agencies	49,755,743	–	49,755,743	–
Asset backed securities	40,167,134	–	40,167,134	–
Bank loans	27,775,533	–	22,345,435	5,430,098
International	778,381		778,381	
Other	5,947,715	–	5,022,965	924,750
TOTAL FIXED INCOME	236,517,601	–	229,735,487	6,782,114
Short-term investment funds	125,347,138	–	125,347,138	–
Securities lending collateral arrangements	24,038,668	24,038,668	–	–
TOTAL	$ 1,246,052,611	$ 880,769,660	$ 355,082,625	$ 10,200,326
Investments measured at NAV practical expedient				
Global equity collective trusts	574,197,460			
Inflation linked collective trusts	79,638,805			
Fixed income collective trusts	67,178,974			
Absolute return hedge funds	144,475,395			
Real estate collective trust	88,318,261			
Inflation linked limited partnerships	172,633,347			
Private equity limited partnerships	1,110,219,835			
Private credit limited partnerships	97,343,729			
Real estate limited partnerships	295,305,120			
TOTAL INVESTMENTS MEASURED AT NAV	2,629,310,926			
TOTAL INVESTMENTS, AT FAIR VALUE	$ 3,875,363,537			

The following table presents investments measured at NAV practical expedient as of June 30, 2022:

	NAV	UNFUNDED COMMITMENTS	REDEMPTION FREQUENCY	REDEMPTION NOTICE PERIOD
Global equity collective trusts	$ 518,765,118	$ –	Typically daily	Less than 1 month
Inflation linked collective trusts	83,586,219	–	Typically daily	Less than 1 month
Fixed income collective trusts	56,718,102	–	Typically daily	Less than 1 month
Absolute return hedge funds	130,356,439	–	Monthly, Quarterly, Semiannually or Annually	30-90 days
Real estate collective trust	135,360,065	–	Typically daily	Less than 1 month
Inflation linked limited partnerships	222,348,123	129,042,000	Not applicable	Not applicable
Private equity limited partnerships	1,238,474,768	397,580,000	Not applicable	Not applicable
Private credit limited partnerships	104,326,507	167,687,000	Not applicable	Not applicable
Real estate limited partnerships	285,845,653	174,870,000	Not applicable	Not applicable
TOTAL	$ 2,775,780,994	$ 869,179,000		

The following table presents investments measured at NAV practical expedient as of June 30, 2021:

	NAV	UNFUNDED COMMITMENTS	REDEMPTION FREQUENCY	REDEMPTION NOTICE PERIOD
Global equity collective trusts	$ 574,197,460	$ –	Typically daily	Less than 1 month
Inflation linked collective trusts	79,638,805	–	Typically daily	Less than 1 month
Fixed income collective trusts	67,178,974	–	Typically daily	Less than 1 month
Absolute return hedge funds	144,475,395	–	Monthly, Quarterly, Semiannually or Annually	30-90 days
Real estate collective trust	88,318,261	–	Typically daily	Less than 1 month
Inflation linked limited partnerships	172,633,347	114,017,372	Not applicable	Not applicable
Private equity limited partnerships	1,110,219,835	332,542,628	Not applicable	Not applicable
Private credit limited partnerships	97,343,729	88,432,000	Not applicable	Not applicable
Real estate limited partnerships	295,305,120	282,277,000	Not applicable	Not applicable
TOTAL	$ 2,629,310,926	$ 817,269,000		

GLOBAL EQUITY COLLECTIVE TRUSTS

This category includes investments in collective trusts whose strategy is focused on emerging markets, international developed markets and domestic index funds. The administrators report the fair values of these trusts using the NAV provided by the administrator of the common collective trust. The System can redeem these funds on a daily basis with redemption frequency of usually one month.

INFLATION LINKED COLLECTIVE TRUSTS

The inflation linked collective trust manager focuses on natural resources. The fund reports its fair value based on NAV and the shares can be redeemed on a daily basis with notice period of less than one month.

FIXED INCOME COLLECTIVE TRUSTS

Fixed income collective trusts strategies focus on active or passive fixed income securities. The fair values of funds in this category are determined using the NAV. Redemption frequency is daily with notices of less than one month.

ABSOLUTE RETURN HEDGE FUNDS

This category consists of several different strategies: event driven, global macro, equity long and short, credit focused and multi-strategies. The event driven funds seek to add value by exploiting pricing inefficiencies that may occur before or after a corporate event such as a bankruptcy, merger, acquisition or spinoff. Global macro funds seek to add value by accurately anticipating overall macroeconomic trends in various countries. Equity long and short funds employ a strategy that involves taking long positions in stocks that are expected to increase in value and short positions in stocks that are expected to decrease in value. Credit focused hedge fund managers look for relative value between senior and junior securities of the same issuer. They will also trade securities of equivalent credit quality from different corporate issues, or different tranches in complex capital structures such as mortgage-backed securities or collateralized loan obligations. The fair values of these hedge fund investments have been determined using the NAV provided by the administrator of the hedge fund. The System's hedge fund managers have monthly, quarterly, semiannual, and annual redemption frequencies with notices varying from 30 to 90 days.

REAL ESTATE COLLECTIVE TRUST

This category includes investments in one collective trust with a real estate focus. The manager deploys active or passive strategies in real estate focused assets. The fair value of this category is determined using the NAV provided by the administrator and has unrestricted liquidity.

INFLATION LINKED LIMITED PARTNERSHIPS

Inflation linked limited partnerships consist of investments in limited partnerships that invest in private companies focused in energy and commodities. The fair values of these investments have been determined using the NAV of the System's interest in the partnership provided by the General Partner. These funds cannot be redeemed because they are private market investments and distributions are determined by the General Partner. Inflation linked limited partnerships typically have at least 10-year terms.

PRIVATE EQUITY LIMITED PARTNERSHIPS

This category includes investments in limited partnerships that own equity in privately held companies. Investments in private equity are diversified by industry sector, geographic location, and capital structure. The fair values of these investments have been determined using the NAV of the System's interest in the partnership provided by the General Partner. Private equity funds cannot be redeemed because they are private market investments. Distributions from private equities are determined by the General Partner. Private equity limited partnerships typically have at least 10-year terms.

PRIVATE CREDIT LIMITED PARTNERSHIPS

The System invests in private credit limited partnerships. These investments are diversified by industry sector and geographic location but focused on debt instruments made to privately held companies. Fair value is determined using the NAV of the System's interest in the partnership as provided by the General Partner. Distributions from private credit limited partnerships are determined by the General Partner. Similar to private equity limited partnerships, these funds have at least a 10-year term.

REAL ESTATE LIMITED PARTNERSHIPS

This category includes investments in limited partnerships that own direct real estate and real estate related debt instruments. Investments in Real Estate Limited Partnerships are diversified by property type, geographic location, and capital structure. The fair values of Real Estate Limited Partnership investments have been determined using the NAV of the System's interest in the partnership provided by the General Partner. Real Estate Limited Partnerships cannot be redeemed because they are private market investments. Distributions from Real Estate Limited Partnerships are determined by the General Partner. Real Estate Limited Partnerships typically have 10-year terms.

NOTE 7 – DERIVATIVE FINANCIAL INSTRUMENTS

The System uses derivative financial instruments primarily to manage portfolio risk. Forward contracts and rights are marked to market and reported at fair value. Forward agreements are subject to the creditworthiness of the counterparties, which are principally large financial institutions. The System did not hold any derivatives as of June 30, 2022 and 2021.

For the year ended June 30, 2022 and 2021, the System recognized a loss of $7,818 and a gain of $2,793,217 related to derivatives as follows:

Investment Derivatives	CHANGES IN FAIR VALUE Classification	2022	2021
FX forwards	Investment revenue	$ (7,495)	$ (6,798)
Rights	Investment revenue	(323)	(1,496)
Warrants	Investment revenue	–	2,801,511
TOTAL		$ (7,818)	$ 2,793,217

In addition to the above, the System has exposure to derivatives through its investments in hedge funds, reported in absolute return investments in the financial statements.

MORTGAGE-BACKED SECURITIES

A mortgage-backed security depends on the underlying pool of mortgage loans to provide the cash flow to make principal and interest payments on the security. A decline in interest rates can result in prepayments, called contraction risk. This risk occurs as mortgages are pre-paid or refinanced which reduces the expected return of the security. If interest rates rise, the likelihood of prepayments decreases, resulting in extension risk. Since loans in a pool underlying a security are being prepaid at a slower rate, investors are unable to capitalize on higher interest rates because their investments are locked in at a lower rate for a longer period of time. A collateralized mortgage obligation (CMO) is a type of mortgage-backed security that creates separate pools of pass-through rates for different classes of bondholders with varying maturities, called tranches. The repayments from the pool of pass-through securities are used to retire the bonds in the order specified by the bonds' prospectus.

The System may invest in mortgage-backed securities to enhance fixed-income returns. The mortgage- backed securities are subject to credit risk, in that the borrower may be unable to meet its obligations.

NOTE 8 – CAPITAL ASSETS

Capital asset balances and activity as of and for the year ended June 30, 2022 is as follows:

	June 30, 2021	Implementation of GASB No. 87	Additions	Deletions	June 30, 2022
Right-to-use office space	$ –	$ 2,432,651	$ –	$ –	$ 2,432,651
Computer equipment	1,148,438	–	–	(223,558)	924,880
Leasehold improvements	163,234	–	–	–	163,234
Office furniture and equipment	74,392	–	–	–	74,392
	1,386,064	2,432,651	–	(223,558)	3,595,157
Less: Accumulated depreciation and amortization	(1,074,557)	–	(504,378)	40,556	(1,538,379)
	$ 311,507	$ 2,432,651	$ (504,378)	$ (183,002)	$ 2,056,778

Depreciation and amortization expense for 2022 is $504,378.

The System is a lessee for a noncancellable lease of office space with lease terms through 2026. There are no residual value guarantees included in the measurement of the System's lease liability nor recognized as an expense for the year ended June 30, 2022. The System does not have any commitments that were incurred at the commencement of the leases. The System is not subject to variable equipment usage payments. No termination penalties were incurred during the fiscal year as the System didn't terminate any leases.

The future principal and interest lease payments for the office space as of June 30, 2022, were as follows:

YEAR ENDING JUNE 30,	PRINCIPAL	INTEREST	TOTAL
2023	$ 422,190	$ 73,482	$ 495,672
2024	448,977	56,107	505,084
2025	476,854	37,641	514,495
2026	505,869	18,038	523,907
2027	174,227	1,454	175,681
	$ 2,028,117	$ 186,722	$ 2,214,839

NOTE 9 – POST EMPLOYMENT BENEFITS OTHER THAN PENSIONS

GENERAL INFORMATION ABOUT THE POST-EMPLOYMENT BENEFITS OTHER THAN PENSIONS TRUST

The Post-Employment Benefits Other Than Pensions Trust (HMEPS OPEB Trust) is a single employer plan and is administered by the System. It was established in 2019. Sec. 3(f) of the Pension Statute authorizes the pension board to establish and amend employee benefit terms and financing requirements. HMEPS OPEB Trust assets are held separate from the Pension Plan.

The long-term expected rate of return on HMEPS OPEB Trust investments was determined using a building-block method in which best-estimate ranges of future real rates of return 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. The target 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 – large cap	26.50%	4.35%
Domestic equity – small/mid cap	12.50%	4.75%
Non–US equity – developed	6.00%	5.25%
Non–US equity – emerging	3.25%	5.50%
US corporate bonds – core	33.50%	2.65%
US corporate bonds – high yield	1.50%	4.60%
US corporate bonds – short term	10.00%	4.10%
Real estate	1.75%	4.10%
Cash	5.00%	1.40%
TOTAL	100.00%	

BENEFITS PROVIDED

Retired employees of the System are eligible to receive retiree health care benefits, which include medical, prescription, dental and life insurance. An eligible retired employee is a person who has at least five (5) years of full-time service with the System and meets at least one of the conditions:

- Has retired due to disability.
- Age 62 or greater.
- Years of full-time service plus age is greater than or equal to 70.
- Employee is eligible to begin receiving a retirement pension within five years after the employee's termination of employment.

Spouses of retired employees are eligible to receive retiree health care benefits. Surviving spouses of deceased retired members have the option to elect COBRA coverage for up to 36 months.

Eligible children of retired System employees may receive retiree health care benefits. Eligible children include a natural child, a stepchild, an adopted child, a foster child or a child recognized under a medical child support order. The child must be under age 26 (except in the case of a disabled child). For the Preferred Provider Organization plan (PPO), the eligible retiree pays 25% of the retiree health insurance premium and the System pays the remaining 75% of retiree health care coverage. For the High Deductible Health Plan (HDHP), the retiree pays the lesser of: (1) the HDHP premium minus the net cost to the System of the PPO premium (PPO premium – PPO retiree contribution); or (2) 12.5% of the HDHP premium. Medicare retirees can elect coverage through a Medicare Supplemental plan that is fully subsidized by HMEPS.

If an employee does not enter retirement directly after termination, the employee must be eligible to begin receiving a retirement pension within five (5) years of termination of System employment in order to be eligible for retiree health insurance. If the employee elects to continue coverage as a retiree within the 5-year window prior to receiving a retirement pension, the employee must pay 100% of the total premium owed until the earlier of the date the retiree reaches normal retirement eligibility or the date the retiree discontinues coverage.

Retired System employees and dependents are eligible for dental benefits.

Retired employees are insured for up to $5,000 of Life Insurance. All other insurance under the policy, including Dependent Life Insurance, if any, ends on the last day of active employment. Retirees can continue coverage under the System's Plan until covered by Medicare, when the System's Plan becomes secondary. The premium for coverage continues at the same level as pre-Medicare.

SUMMARY OF MEMBERSHIP INFORMATION

As of June 30, 2022 and 2021, there are 16 retirees and beneficiaries receiving OPEB benefits. Active plan members are 24 as of June 30, 2022 and 2021.

CONTRIBUTIONS

The employer contributions are established by the System. The System's current intention is to contribute the plan's normal cost plus, as recommended by the System's actuary, an amount necessary to amortize any unfunded actuarial accrued liability (UAAL) over a period of 10 years. Employees are not required to contribute to the plan.

NET OPEB ASSET

The System's net OPEB asset was measured as of June 30, 2022, and the total OPEB asset used to calculate the net OPEB asset was determined by an actuarial valuation as of June 30, 2021.

ACTUARIAL ASSUMPTIONS AND METHODS

Valuation Date	June 30, 2021
Methods and Assumptions Actuarial Cost Method	Individual Entry Age Normal
Discount Rate	5.50%
Inflation	2.25%
Salary Increases	3.25% to 5.25%, including inflation
Demographic Assumptions	Based on the 2021 HMEPS experience study conducted for the pension plan.
Mortality	For healthy retirees, the gender-distinct Pub-2010 Amount-Weighted, Below-Median Income, Generally, Healthy Retiree mortality tables with a 2-year set-forward are used. The rates are projected on a fully generational basis using the ultimate mortality improvement rates in the MP tables published through 2020 to account for future mortality improvements.
Health Care Trend Rates	Pre-65: Initial rate of 6.80% declining to an ultimate rate of 4.00% after 13 years; Post-65: Initial rate of 6.20% declining to an ultimate rate of 4.00% after 13 years.
Participation Rate	It was assumed that 100% of eligible retirees would choose to maintain their retiree health care benefits through HMEPS. Furthermore, 70% were assumed to elect two-person coverage.
Other Information	The discount rate changed from 6.00% as of June 30, 2021 to 5.50% as of June 30, 2022. Additionally, the demographic and salary increase assumptions were updated to reflect the 2021 HMEPS experience study.

DISCOUNT RATE

Projected benefit payments are required to be discounted to their actuarial present values using a discount rate that reflects (1) a long-term expected rate of return on HMEPS OPEB Trust investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits), and (2) a tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long- term expected rate of return are not met). For purposes of this valuation, the expected rate of return on OPEB Trust investments is 5.50%; the municipal bond rate is 3.69% (based on the daily rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting single discount rate is 5.50%.

The schedule of changes in the net OPEB asset for the year ended June 30, 2022 is as follows:

	Total OPEB Liability	HMEPS OPEB Trust Fiduciary Net Position	Net OPEB Liability (Asset)
Beginning balance	$ 4,540,965	$ 10,575,895	$ (6,034,930)
Changes for the year			
Service cost	127,908	–	127,908
Interest on the total OPEB liability	269,280	–	269,280
Difference between expected and actual experience	1,144	–	1,144
Changes of assumptions	153,588	–	153,588
Net investment income	–	(1,186,966)	1,186,966
Benefit payments	(233,825)	(233,825)	–
Administrative expense	–	(56,363)	56,363
Net changes	318,095	(1,477,154)	1,795,249
Ending balance	$ 4,859,060	$ 9,098,741	$ (4,239,681)

SENSITIVITY OF NET OPEB ASSET TO THE SINGLE DISCOUNT RATE ASSUMPTION

Regarding the sensitivity of the net OPEB asset to changes in the discount rate, the following presents the HMEPS OPEB Trust's net OPEB asset calculated using a discount rate of 5.50% in 2022 and 6.00% in 2021, as well as what the trust's net OPEB asset would be if it were calculated using a discount rate that is one percentage point lower or one percentage point higher:

YEAR ENDING JUNE 30,	1% DECREASE	CURRENT SINGLE RATE ASSUMPTION	1% INCREASE
2022	$ 3,635,572	$ 4,239,681	$ 4,743,803
2021	5,466,166	6,034,930	6,507,365

SENSITIVITY OF NET OPEB ASSET TO THE HEALTHCARE COST TREND RATE ASSUMPTION

Regarding the sensitivity of the net OPEB asset to changes in the healthcare cost trend rates, the following presents the trust's net OPEB asset, calculated using the assumed trend rates as well as what the trust's net OPEB asset would be if it were calculated using a trend rate that is one percentage point lower or one percentage point higher:

YEAR ENDING JUNE 30,	1% DECREASE	HEALTHCARE COST TREND RATE ASSUMPTION	1% INCREASE
2022	$ 4,839,733	$ 4,239,681	$ 3,504,428
2021	6,554,836	6,034,930	5,400,037

OPEB INCOME AND DEFERRED INFLOWS AND OUTFLOWS OF RESOURCES RELATED TO OPEB

For the year ended June 30, 2022, the System recognized OPEB income of $600,262. At June 30, 2022, the System reported deferred outflows of resources and deferred inflows of resources related to the HMEPS OPEB Trust from the following sources:

	DEFERRED OUTFLOWS	DEFERRED INFLOWS
Changes in assumptions	$ 123,616	$ 1,075,968
Differences between expected and actual experiences	642,891	276,809
TOTAL	$ 766,507	$ 1,352,777

At June 30, 2021, the System reported deferred outflows of resources and deferred inflows of resources related to the HMEPS OPEB Trust from the following sources:

	DEFERRED OUTFLOWS	DEFERRED INFLOWS
Changes in assumptions	$ –	$ 1,549,804
Differences between expected and actual experiences	59,431	1,491,408
TOTAL	$ 59,431	$ 3,041,212

Amounts reported as deferred outflows and inflows of resources related to the Trust will be recognized in OPEB income as follows:

2023	$ (427,964)
2024	(406,082)
2025	(131,287)
2026	375,306
2027	3,757
TOTAL	$ (586,270)

NOTE 10 – DEFERRED COMPENSATION PLAN

The System offers its employees a deferred compensation plan (DCP) created in accordance with Internal Revenue Code Section 457. The DCP, available to all full-time employees of the System, permits employees to defer a portion of their salary until future years. Distributions from the DCP are not available to employees until termination, retirement, death or unforeseeable emergency. The DCP has a third party administrator, Empower Retirement, and the cost of administration and funding is borne by the DCP participants. Amounts deferred are held in trust by Empower Retirement and, since the System has no fiduciary responsibility for the DCP, these amounts are not reflected in the accompanying financial statements in accordance with GASB Statement No. 97, Certain Component Unit Criteria, and Accounting and Financial Reporting for Internal Revenue Code Section 457 Deferred Compensation Plans—an amendment of GASB Statements No. 14 and No. 84, and a supersession of GASB Statement No. 32.

NOTE 11 – COMMITMENTS

As described in Note 1, certain participants of the System are eligible to receive, upon request, a refund of their accumulated contributions, without interest, upon termination of employment with the City or System prior to being eligible for pension benefits. As of June 30, 2022 and 2021, aggregate contributions for these eligible participants of the System were $370,005,820 and $224,538,025, respectively. In addition, terminated Group D members who have contributed to the Group D Cash Balance account are eligible to receive, upon request, their balance. The Cash Balance account distribution includes interest if the member has paid into the Cash Balance account for at least one year.

NOTE 12 – RISKS AND UNCERTAINTIES

The System invests in various investment securities. Investment securities are exposed to various risks such as interest rate, market, foreign currency, liquidity and credit risks. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in the value of investment securities will occur in the near term and that such change could materially affect the amounts in the System's financial statements.

The City's contribution rates are made and the actuarial information disclosed are based on certain assumptions pertaining to interest rates, inflation rates and participant demographics, all of which are subject to change. Due to uncertainties inherent in the estimations and assumptions process, it is at least reasonably possible that changes in these estimates and assumptions in the near term could be material to the basic financial statements.

Required Supplementary Information

SCHEDULE 1: SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS

	FISCAL YEARS ENDING JUNE 30,			
	2022	2021	2020	2019
TOTAL PENSION LIABILITY				
Service cost	$ 82,080,381	$ 78,564,476	$ 77,819,448	$ 77,175,080
Interest on the total pension liability	371,952,435	363,611,089	356,429,609	349,592,612
Benefit changes	–	–	–	–
Difference between expected and actual experience	26,472,897	(20,427,373)	(28,865,542)	(11,538,432)
Assumption changes	(29,515,658)	–	–	–
Benefit payments	(327,772,924)	(314,149,632)	(308,002,053)	(291,060,500)
Refunds	(1,132,782)	(402,017)	(649,551)	(1,393,772)
NET CHANGE IN TOTAL PENSION LIABILITY	122,084,349	107,196,543	96,731,911	122,774,988
TOTAL PENSION LIABILITY, beginning	5,440,061,635	5,332,865,092	5,236,133,181	5,113,358,193
TOTAL PENSION LIABILITY, ending (a)	$ 5,562,145,984	$ 5,440,061,635	$ 5,332,865,092	$ 5,236,133,181
PLAN FIDUCIARY NET POSITION				
Employer contributions	$ 197,340,533	$ 184,762,098	$ 176,430,316	$ 176,261,043
Employee contributions	32,654,590	33,324,738	32,581,955	32,536,529
Pension plan net investment income	189,389,667	1,084,387,848	(115,165,538)	200,444,575
Benefit payments	(327,772,924)	(314,149,632)	(308,002,053)	(291,060,500)
Refunds	(1,132,782)	(402,017)	(649,551)	(1,393,772)
Pension plan administrative expense	(5,680,931)	(3,110,719)	(4,891,025)	(5,362,929)
Other	465,948	486,833	484,351	709,841
NET CHANGE IN PLAN FIDUCIARY NET POSITION	85,264,101	985,299,149	(219,211,545)	112,134,787
PLAN FIDUCIARY NET POSITION, beginning	3,867,086,669	2,881,787,520	3,100,999,065	2,988,864,278
PLAN FIDUCIARY NET POSITION, ending (b)	$ 3,952,350,770	$ 3,867,086,669	$ 2,881,787,520	$ 3,100,999,065
CITY'S NET PENSION LIABILITY, ending (a) - (b)	$ 1,609,795,214	$ 1,572,974,966	$ 2,451,077,572	$ 2,135,134,116
PLAN FIDUCIARY NET POSITION AS A PERCENTAGE OF TOTAL PENSION LIABILITY	71.06%	71.09%	54.04%	59.22%
COVERED PAYROLL	$ 678,350,255	$ 642,917,152	$ 625,055,807	$ 614,451,273
CITY'S NET PENSION LIABILITY AS A PERCENTAGE OF COVERED PAYROLL	237.31%	244.66%	392.14%	347.49%

Schedule is intended to show 10 years. Additional years will be displayed as they become available.
2022 – The assumption changes consist of changes in the mortality tables used in the most recent actuarial valuation.

SCHEDULE 1: SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS (CONTINUED)

	FISCAL YEARS ENDING JUNE 30,				
	2018	2017	2016	2015	2014
TOTAL PENSION LIABILITY					
Service cost	$ 78,148,819	$ 75,960,564	$ 68,968,481	$ 59,465,512	$ 61,480,204
Interest on the total pension liability	341,276,247	331,166,519	379,781,300	363,639,884	348,418,895
Benefit changes	–	(724,683,000)	–	–	–
Difference between expected and actual experience	19,157,801	(38,387,084)	(16,194,133)	(22,057,834)	–
Assumption changes	–	562,237,000	324,938,905	–	–
Benefit payments	(283,928,131)	(280,455,603)	(253,178,363)	(234,954,625)	(221,925,083)
Refunds	(806,722)	(718,176)	(1,105,306)	(1,549,404)	(1,213,474)
NET CHANGE IN TOTAL PENSION LIABILITY	153,848,014	(74,879,780)	503,210,884	164,543,533	186,760,542
TOTAL PENSION LIABILITY, beginning	4,959,510,179	5,034,389,959	4,531,179,075	4,366,635,542	4,179,875,000
TOTAL PENSION LIABILITY, ending (a)	$ 5,113,358,193	$ 4,959,510,179	$ 5,034,389,959	$ 4,531,179,075	$ 4,366,635,542
PLAN FIDUCIARY NET POSITION					
Employer contributions	$ 421,561,725	$ 182,557,829	$ 159,958,607	$ 145,007,059	$ 128,274,419
Employee contributions	27,904,931	15,901,600	15,873,664	16,198,216	16,579,600
Pension plan net investment income	231,815,128	290,910,717	27,639,567	73,370,310	352,522,858
Benefit payments	(283,928,131)	(280,455,603)	(253,178,363)	(234,954,625)	(221,925,083)
Refunds	(806,722)	(718,176)	(1,105,306)	(1,549,404)	(1,213,474)
Pension plan administrative expense	(6,441,960)	(6,826,559)	(7,360,139)	(7,007,422)	(6,414,668)
Other	(3,905,411)	1,271,670	1,651,651	1,040,548	–
NET CHANGE IN PLAN FIDUCIARY NET POSITION	386,199,560	202,641,478	(56,520,319)	(7,895,318)	267,823,652
PLAN FIDUCIARY NET POSITION, beginning	2,602,664,718	2,400,023,240	2,456,543,559	2,464,438,877	2,196,615,225
PLAN FIDUCIARY NET POSITION, ending (b)	$ 2,988,864,278	$ 2,602,664,718	$ 2,400,023,240	$ 2,456,543,559	$ 2,464,438,877
CITY'S NET PENSION LIABILITY, ending (a) - (b)	$ 2,124,493,915	$ 2,356,845,461	$ 2,634,366,719	$ 2,074,635,516	$ 1,902,196,665
PLAN FIDUCIARY NET POSITION AS A PERCENTAGE OF TOTAL PENSION LIABILITY	58.45%	52.48%	47.67%	54.21%	56.44%
COVERED PAYROLL	$ 611,493,104	$ 604,895,264	$ 640,528,652	$ 624,205,549	$ 598,245,952
CITY'S NET PENSION LIABILITY AS A PERCENTAGE OF COVERED PAYROLL	347.43%	389.63%	411.28%	332.36%	317.96%

Schedule is intended to show 10 years. Additional years will be displayed as they become available.

SCHEDULE 2: SCHEDULE OF CONTRIBUTIONS – PENSION PLAN

Years Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2022	$ 195,296,129	$ 197,340,533	$ (2,044,404)	$ 678,350,255	29.09%
2021	188,294,708	184,762,098	3,532,610	642,917,152	28.74%
2020	182,950,467	176,430,316	6,520,151	625,055,807	28.23%
2019	178,256,312	176,261,043	1,995,269	614,451,273	28.69%
2018	423,989,344[1]	421,561,725[1]	2,427,619	611,493,104	68.94%
2017	184,732,840	182,557,829	2,175,011	604,895,264	30.18%
2016	162,229,984	159,958,607	2,271,377	640,528,652	24.97%
2015	155,299,296	145,007,059	10,292,237	224,205,549	23.23%
2014	144,953,327	128,274,419	16,678,908	598,245,952	21.44%
2013	124,317,102	111,858,885	12,458,217	549,971,000	20.34%

1 The Actuarially Determined Contribution and the Actual Contribution includes the Pension Obligation Bond proceeds of $250 million.

SCHEDULE 3: SCHEDULE OF INVESTMENT RETURNS – PENSION PLAN

Years Ending June 30,	Annual Return
2022	5.03%
2021	38.61%
2020	-3.72%
2019	6.20%
2018	8.72%
2017	12.18%
2016	0.90%
2015	3.47%
2014	16.42%

The annual money-weighted rate of return is presented net of investment expenses. The schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

NOTES TO PENSION PLAN: REQUIRED SUPPLEMENTARY INFORMATION YEAR ENDED JUNE 30, 2022

The required employer contributions and percent of those contributions actually made are presented in Schedule 2. Additional information as of the latest actuarial valuation is presented in the table below.

Valuation Date: July 1, 2021

NOTES: Actuarially determined contribution rates are calculated as of July 1, which is 12 months prior to the beginning of the fiscal year in which they are contributed. The assumptions shown below apply to the Actuarially Determined Employer Contribution for fiscal year 2022 which was determined by the July 1, 2020 actuarial valuation. These assumptions are not the same as those used to determine the Net Pension Liability as of June 30, 2022.

METHODS AND ASSUMPTIONS USED TO DETERMINE CONTRIBUTION RATES

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Open (see notes)
Remaining Amortization Period	26 Years
Asset Valuation Method	5 Year smoothed market, direct offset of deferred gains and losses
Inflation	2.25%
Salary Increases	3.00% to 5.25% including inflation
Investment Rate of Return	7.00%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2015 valuation pursuant to an experience study of the period 2009 – 2014.
Mortality	RP-2000 Mortality Table scaled by 125% for males and 112% for females. The rates are then projected on a fully generational basis by scale BB.
Other Information	The actuarially determined contribution includes the Legacy Liability payment as specified by the July 1, 2016 Risk Sharing Valuation Study and a calculated employer rate equal to the normal cost and the amortization of any new unfunded liabilities over a closed 30 year period from the valuation date the liability base was created.

SCHEDULE 4: SCHEDULE OF CHANGES IN NET OPEB (ASSET) LIABILITY AND RELATED RATIOS

	FISCAL YEARS ENDING JUNE 30,				
	2022	2021	2020	2019	2018
TOTAL OPEB LIABILITY					
Service cost	$ 127,908	$ 171,320	$ 169,765	$ 300,656	$ 358,166
Interest on the total OPEB liability	269,280	379,793	397,308	301,552	283,797
Changes of benefit terms	–	(1,696,364)	–	–	–
Difference between expected and actual experience	1,144	(444,806)	(4,597)	117,646	(14,484)
Changes of assumptions	153,588	–	(639,768)	(2,162,853)	(74,720)
Benefit payments	(233,825)	(226,418)	(204,375)	(195,451)	(135,914)
NET CHANGE IN TOTAL OPEB LIABILITY	318,095	(1,816,475)	(281,667)	(1,638,450)	416,845
TOTAL OPEB LIABILITY, beginning	4,540,965	6,357,440	6,639,107	8,277,557	7,860,712
TOTAL OPEB LIABILITY, ending (a)	$ 4,859,060	$ 4,540,965	$ 6,357,440	$ 6,639,107	$ 8,277,557
PLAN FIDUCIARY NET POSITION					
Employer contributions	$ –	$ 174,900	$ 169,765	$ 8,473,008	$ 135,914
OPEB plan net investment income	(1,186,966)	2,063,029	262,978	113,972	–
Benefit payments	(233,825)	(226,418)	(204,375)	(195,451)	(135,914)
OPEB plan administrative expense	(56,363)	(50,330)	–	–	–
Other	–	(89)	(5,094)	–	–
NET CHANGE IN PLAN FIDUCIARY NET POSITION	(1,477,154)	1,961,092	223,274	8,391,529	–
PLAN FIDUCIARY NET POSITION, beginning	10,575,895	8,614,803	8,391,529	–	–
PLAN FIDUCIARY NET POSITION, ending (b)	$ 9,098,741	$ 10,575,895	$ 8,614,803	$ 8,391,529	$ –
SYSTEM'S NET OPEB (ASSET) LIABILITY, ending (a) - (b)	$ (4,239,681)	$ (6,034,930)	$ (2,257,363)	$ (1,752,422)	$ 8,277,557
PLAN FIDUCIARY NET POSITION AS A PERCENTAGE OF TOTAL OPEB LIABILITY	187.25%	232.90%	135.51%	126.40%	N/A
COVERED EMPLOYEE PAYROLL	$ 2,324,574	$ 2,230,751	$ 2,195,389	$ 1,968,659	$ 2,104,735
SYSTEM'S NET OPEB (ASSET) LIABILITY AS A PERCENTAGE OF COVERED EMPLOYEE PAYROLL	-182.39%	-270.53%	-102.82%	-89.02%	393.28%

NOTES TO SCHEDULE:

2022 – Changes of assumptions reflect the discount rate change from 6.00% as of June 30, 2021 to 5.50% as of June 30, 2022. Additionally, the demographic and salary increase assumptions were updated to reflect the 2021 HMEPS experience study.

2021 - Changes of benefit terms reflect offering a fully-subsidized Medicare Supplemental plan to eligible retirees.

2020 - Changes of assumptions reflect the removal of the liability associated with the “Cadillac Tax”.

2019 - Changes of assumptions reflect the change in the discount rate from 3.62% to 6.00% and a slightly updated healthcare trend assumption.

Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

SCHEDULE 5: SCHEDULE OF CONTRIBUTIONS – HMEPS OPEB TRUST

Years Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Employee Payroll	Actual Contribution as a % of Covered Payroll
2022	N/A*	$ –	$ –	$ 2,324,574	0.00%
2021	–	174,900	(174,900)	2,230,751	7.84%
2020	–	169,765	(169,765)	2,195,389	7.73%
2019	N/A**	–	–	–	0.00%

Valuation Date: The actuarially determined contribution for fiscal year ending June 30, 2022 was developed in the June 30, 2019 valuation.

METHODS AND ASSUMPTIONS USED TO DETERMINE CONTRIBUTION RATES

Actuarial Cost Method	Individual Entry Age Normal
Amortization Method	Level Dollar
Amortization Period	Open, 10 year period
Amortization Value	Market Value
Investment Rate of Return	6.00%, net of investment expenses, including inflation of 2.25%
Salary Increases	3.00% to 5.25% including inflation
Demographic Assumptions	Based on the experience study covering the five year period ending June 30, 2014 as conducted for the pension plan.
Mortality	Gender-district RP-2000 Combined Healthy Mortality Tables with Blue Collar Adjustment. Male rates are multiplied by 125% and female rates are multiplied by 112%. The rates are projected on a fully generational basis by Scale BB to account for future mortality improvements.
Healthcare Cost Trend Rates	Initial rate of 7.20% declining to an ultimate rate of 4.00% after 15 years.
Participation Rates	It was assumed that 100% of eligible retirees would choose to maintain their retiree health care benefits through HMEPS. Furthermore, 70% were assumed to elect two-person coverage.

The actuarial assumptions which are specific to the OPEB valuation are reviewed during each valuation and adjusted when deemed necessary. There were no assumption changes for this valuation.

*Due to the size of the current asset surplus, the System's actuary recommended in the 2021 GASB 74/75 report that no employer contributions be made for fiscal year 2022.

**The OPEB trust was established in fiscal year ending June 30, 2019. No formal Actuarially Determined Contribution (ADC) was developed for 2019.

SCHEDULE 6: SCHEDULE OF INVESTMENT RETURNS – HMEPS OPEB TRUST

Years Ending June 30,	Annual Money-Weighted Rate of Return
2022	-11.22%
2021	23.96%
2020	3.62%
2019	N/A*

The annual money-weighted rate of return is presented net of investment fees.

*Because the initial trust deposit was made in June 2019, no annual rate of return was calculated. Annualizing the returns for a partial month would not provide a reasonable representation of the annual return associated with the investment policy.

Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

Supplementary Information

SCHEDULE 7: INVESTMENT SUMMARY

	JUNE 30,2022		
	COST	FAIR VALUE	UNREALIZED APPRECIATION (DEPRECIATION)
Absolute return	$ 84,728,706	$ 130,356,439	$ 45,627,733
Fixed income	277,996,500	246,542,215	(31,454,285)
Global equity	839,628,610	1,024,544,790	184,916,180
Inflation linked	451,899,185	592,120,405	140,221,220
Private credit	71,739,796	104,326,507	32,586,711
Private equity	483,753,814	1,238,474,767	754,720,953
Real estate	284,229,581	421,205,718	136,976,137
Securities lending collateral arrangements	35,554,945	35,554,945	–
Short-term investments	177,418,509	177,418,509	–
TOTAL INVESTMENTS	$ 2,706,949,646	$ 3,970,544,295	$ 1,263,594,649

	JUNE 30,2021		
	COST	FAIR VALUE	UNREALIZED APPRECIATION (DEPRECIATION)
Absolute return	$ 94,353,399	$ 144,475,395	$ 50,121,996
Fixed income	288,026,800	298,808,110	10,781,310
Global equity	770,018,867	1,185,060,244	415,041,377
Inflation linked	423,335,234	495,943,783	72,608,549
Private credit	73,533,399	97,343,729	23,810,330
Private equity	495,469,834	1,110,219,835	614,750,001
Real estate	267,035,101	383,623,381	116,588,280
Securities lending collateral arrangements	24,038,668	24,038,668	–
Short-term investments	125,347,138	125,347,138	–
TOTAL INVESTMENTS	$ 2,561,158,440	$ 3,864,860,283	$ 1,303,701,843

Space and cost restrictions make it impractical to print the entire investment portfolio in this report. A portfolio listing is available for review at the System's office by appointment, upon request.

SCHEDULE 8: INVESTMENT EXPENSES, PROFESSIONAL SERVICES, AND ADMINISTRATIVE EXPENSES

	Year ended June 30,			
		2022		2021
INVESTMENT EXPENSE				
Custodial services*	$	551,005	$	530,749
Investment management services*		6,587,556		5,737,834
Consulting services*		832,000		834,000
Legal services*		58,258		41,752
Other investment expenses		1,140,223		1,245,800
TOTAL INVESTMENT EXPENSES	$	9,169,042	$	8,390,135
PROFESSIONAL SERVICES				
Actuarial services*	$	99,266	$	134,674
Auditing*		50,520		50,520
Legal services*		193,443		115,039
Medical review*		–		500
Other professional services*		381,288		363,663
TOTAL PROFESSIONAL SERVICES	$	724,517	$	664,396
ADMINISTRATION EXPENSES				
Office costs	$	340,075	$	657,948
Insurance costs		282,065		225,482
Cost of staff and benefits		3,404,056		3,445,764
OPEB income		(602,162)		(2,604,285)
Consulting services		332,699		–
Cost of equipment and supplies		699,733		647,565
Depreciation and amortization		458,766		67,707
Costs of continuing education		41,183		6,142
TOTAL ADMINISTRATION EXPENSES	$	4,956,415	$	2,446,323

*See details on next page.

SCHEDULE 9: SUMMARY OF COSTS OF INVESTMENT AND PROFESSIONAL SERVICES

INVESTMENT EXPENSES	YEAR ENDED JUNE 30, 2022	2021
INVESTMENT MANAGER FEES		
Adams Street Partners, LLC	$ –	$ 5,720
Ariel Investments, LLC	–	37,794
Baillie Gifford International LLC	56,232	–
Baillie Gifford Overseas Ltd.	525,195	555,535
BlackRock	231,594	269,753
Cohen & Steers Capital Management, Inc.	270,312	112,661
DePrince, Race and Zollo, Inc.	457,187	336,270
Global Forest Partners, LP	24,007	51,912
Globeflex Capital, LP	314,795	281,269
Invesco	525,925	328,591
Loomis, Sayles and Company, LP	260,608	812,521
Neumeier Investment Counsel, LLC	936,681	510,286
Polen Capital Credit, LLC (formerly DDJ Capital)	405,478	462,172
Pugh Capital Management	201,959	212,876
Salient Capital Advisors, LLC	591,137	414,481
Schroder Investment Management	160,625	–
Smith Graham & Company	190,968	106,629
State Street Global Advisors	358,566	218,657
T. Rowe Price Associates, Inc.	518,091	517,773
Tortoise Capital Advisors	558,206	502,934
TOTAL	$ 6,587,566	$ 5,737,834
CUSTODIAL SERVICES		
State Street Bank and Trust Company	$ 551,005	$ 530,749
INVESTMENT CONSULTING FEES		
Wilshire Associates, Incorporated	$ 282,000	$ 284,000
Cliffwater LLC	550,000	550,000
TOTAL	$ 832,000	$ 834,000
LEGAL SERVICES (INVESTMENT)		
DLA Piper LLP	$ 12,873	$ –
Jackson Walker LLP	7,718	8,660
Locke Lord LLP	37,668	33,092
TOTAL	$ 58,259	$ 41,752

PROFESSIONAL SERVICES	YEAR ENDED JUNE 30, 2022	2021
ACTUARY		
Gabriel, Roeder, Smith & Co.	$ 99,266	$ 134,674
AUDITING		
Weaver and Tidwell LLP	$ 50,520	$ 50,520
LEGAL SERVICES		
Baker Botts, LLP	$ 119,529	$ 107,276
Ice Miller, LLP	59,754	–
Jackson Walker, LLP	14,160	3,938
Locke Lord, LLP	–	3,825
TOTAL	$ 193,443	$ 115,039
MEDICAL REVIEW		
Charles Schumacher, M.D.	$ –	$ 500
OTHER PROFESSIONAL SERVICES		
Hankinson, PLLC	$ 5,250	$ 3,563
Harris Law Firm	–	9,000
HillCo Partners, LLC	102,000	102,000
KLM Public Affairs, LLC	30,000	30,000
Locke Lord LLP	225,600	219,100
Pearl Meyer & Partners, LLC	18,438	–
TOTAL	$ 381,288	$ 363,663

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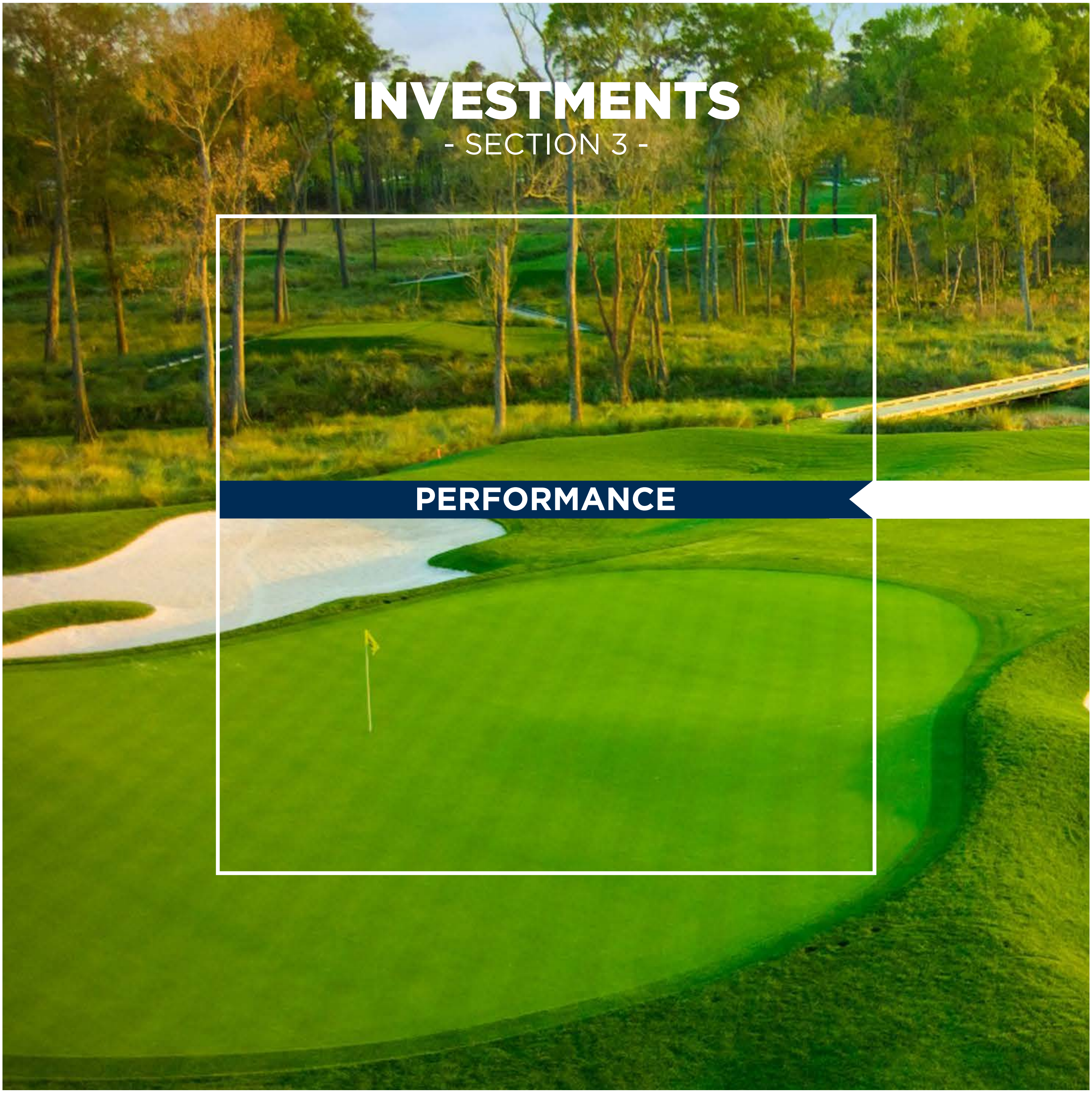


Renovated Memorial Park Golf Course has become one of the most iconic municipal golf facilities in the country

GREAT RESULTS EMERGE FROM FOCUS AND DEDICATION

HMEPS

HOUSTON MUNICIPAL EMPLOYEES PENSION SYSTEM

The Board of Trustees ("Board") of the Houston Municipal Employees Pension System ("System") has adopted an Investment Policy Statement ("IPS") as a framework for the investment of the System's assets. The authority to amend the IPS rests solely with the Board. The following provides an outline of the IPS.

PURPOSE

The IPS assists the Board in its role as fiduciary for the System's investments by: a) specifying the Board's expectations, objectives and guidelines for the System, b) clarifying the responsibilities of the Board, the staff, the consultants and vendors, c) setting forth an investment structure for managing the portfolio, d) encouraging effective communications, and e) establishing criteria to select, remove, monitor and evaluate performance of money managers and vendors on a regular basis.

INVESTMENT OBJECTIVES

The investment objective of the total portfolio is to produce an annualized investment return over the long term that exceeds the actuarial return rate assumption for the System. This will help the Board to achieve its overall objective of providing adequate retirement benefits to the members of the System.

The System's investment performance is compared to a policy portfolio comprised of market indices, which are consistent with the overall investment policy. The policy portfolio reflects a passive implementation of the target investment policy. Effective October 1, 2017, the Board approved an updated asset allocation for the System's investment portfolio, along with an updated policy portfolio.

The System's investment performance is also evaluated by comparing it to a group of its public fund peers. The public pension fund universe used for comparative purposes is the Wilshire TUCS Master Trusts – Public Universe.

ASSET ALLOCATION

The System's asset allocation provides an efficient mix of assets that is designed to provide a return profile that is consistent with the System's long-term portfolio risk and return objectives. The Board periodically undertakes strategic studies to address the appropriateness of asset classes to be considered for inclusion in the target asset allocation, and to define the targeted percentage to each asset class to achieve the desired level of diversification.

The System's current asset allocation, included in Table 1, became effective October 1, 2017.

DIVERSIFICATION

The System invests in seven major asset classes (Global Equities, Fixed Income, Real Estate, Private Credit, Private Equity, Inflation-Linked, and Absolute Return) as a method to maximize overall fund diversification. Further, the System engages the services of numerous professional investment managers (including in both public markets and private partnerships) with demonstrated skills and expertise in managing portfolios within each asset class. The managers retained are expected to utilize varied investment approaches that, when combined, will exhibit return characteristics that are similar to the asset class proxy utilized in the strategic asset allocation plan. As of June 30, 2022, the System utilized 82 investment managers, several of which manage multiple mandates. Cash inflows and outflows are directed within the targeted asset class to the various managers so that actual characteristics of the portfolio will be consistent with the strategic plan. Excluding passive strategies, no investment manager is permitted to manage more than 20% of the fair value of the System's assets.

REBALANCING

The IPS requires a periodic adjustment, or rebalancing, of assets be made to ensure conformance with policy target levels. Such rebalancing is necessary to reflect sizable cash flows and performance imbalances among the various asset classes that may occur over time. During fiscal year 2022, Staff directed the rebalancing of assets within the asset allocation targets in response to market dynamics and the System's liquidity needs.

INVESTMENT MANAGER GUIDELINES – PUBLIC MARKETS

Investment managers are subject to guidelines and objectives incorporated in the investment management agreements entered into by the Board and the respective investment managers. Investment managers are expected to perform their fiduciary duties as prudent people skilled in such matters and, further, are expected to comply with all applicable State and Federal statutes governing the investment of retirement funds. Within the context of the guidelines, investment managers have full discretion with respect to the purchase and sale of individual securities and portfolio weightings. Portfolios are to be managed in a manner similar to other portfolios within an organization with similar guidelines and performance objectives.

The Board requires that all investment managers seek best execution for all trades ordered on behalf of the System.

MANAGER EVALUATION

Managers of portfolios are evaluated quarterly against predetermined benchmarks such as an appropriate market index or a comparable peer group. All public market managers are required to provide written reports to HMEPS outlining actions taken within their respective portfolios and the portfolio's investment performance. In addition, System personnel and professional consultants engaged by the Board monitor managers' performance, material changes in the managers' organization and conformity with their guidelines and objectives.

Managers who do not meet expectations will be placed on probation (for public market managers) or watchlist (for private market managers). Staff and the consultant will increase monitoring of these managers, evaluating factors such as changes in the assets in the portfolio, changes in investment style, peer universe ranking and others.

INVESTMENT PERFORMANCE EVALUATION

The Board reviews System investment performance on a periodic basis to evaluate conformity to the goals and objectives established in the strategic plan. The Board recognizes that financial markets from time to time may not support attainment of those goals and objectives. During such times, progress toward conformity is evaluated by comparing the System's performance to the policy portfolio and to the Wilshire TUCS Master Trusts – Public Universe. Investment results are calculated using a time-weighted rate of return.

PROXY VOTING

The Board authorizes each investment manager to vote all proxies relating to securities held on behalf of the System. Each manager is expected to promptly vote all proxies and related actions in a manner consistent with the long-term best interests of the System and its participants and beneficiaries. Each investment manager is required to keep detailed records of all voting of proxies and related actions and to comply with all related regulatory obligations. The System's management staff periodically reviews each investment manager's policies and actions with respect to proxy voting.

INVESTMENT

LONG-TERM RESULTS

The 10-year period ended June 30, 2022 encompassed the Covid pandemic and recovery followed by geopolitical volatility in the wake of the Russian invasion of Ukraine. These catalysts have produced volatile returns for financial markets as a whole. The System performed well, generating double digit positive returns in four of the past ten fiscal years. Additionally, the System outperformed its peer group in eight of those ten years. Due to the diversification of assets, the System's 5-year annualized return is 11.1%. The 10-year return stands at 10.2%.

As shown in the investment results (Table 2), HMEPS' total fund performance compares very favorably to the median public fund, as represented by the Wilshire TUCS Master Trusts – Public Universe. Over the ten-year period, HMEPS is in the top 5% of funds in the Wilshire TUCS Master Trusts – Public Universe.

FISCAL YEAR 2022 RESULTS

For the fiscal year ended June 30, 2022, the System returned 5.2%. This rate of return exceeded both the System's policy benchmark return of -2.8% and the return of the median fund in the Wilshire TUCS Master Trusts – Public Universe of -9.0%.

The Investment Section was written by Chief Investment Officer Gregory Brunt, CFA.

TABLE 1: ASSET ALLOCATION SUMMARY

Period ending June 30, 2022

Asset Class	Assets ($ Millions)	Assets (%)	Performance 1 Yr.	Performance 3 Yrs.	Performance 5 Yrs.	Performance 10 Yrs.
Total Global Equity[1]	1,039.0	26.4	-15.3%	5.1%	6.2%	n/a
Global Equity Policy			-14.1%	5.3%	6.5%	n/a
Global Low Volatility Equity	260.5	6.6	-6.2%	3.3%	6.2%	n/a
MSCI ACWI Min Vol (Net)			-6.2%	3.2%	6.1%	n/a
Domestic Equity	452.1	11.5	-8.6%	9.6%	9.4%	11.9%
Wilshire 5000			-13.2%	10.2%	10.8%	12.7%
International Equity	326.4	8.3	-29.0%	0.5%	2.2%	4.9%
MSCI ACWI ex US (Net)			-19.4%	1.4%	2.5%	4.8%
Global Fixed Income	256.7	6.5	-11.9%	0.4%	1.9%	3.7%
Global Fixed Income Policy[2]			-11.5%	0.4%	1.5%	3.0%
Real Estate	419.8	10.7	13.4%	8.6%	8.7%	9.8%
NCREIF Property			21.5%	10.2%	8.9%	9.7%
Private Equity	1,235.5	31.4	22.4%	27.7%	22.7%	16.8%
S&P 500 + 3%			-7.6%	13.6%	14.3%	16.0%
Absolute Return	130.1	3.3	0.5%	6.5%	5.5%	4.7%
LIBOR 3 Month Yield + 4%			4.7%	4.8%	5.3%	4.9%
Inflation Linked	594.7	15.1	24.9%	11.1%	8.2%	6.0%
CPI + 4%			13.1%	9.0%	7.9%	6.6%
Private Credit	104.3	2.6	7.7%	11.3%	n/a	n/a
CSFB Leveraged Loan Index			-2.7%	2.0%	n/a	n/a
Cash / Liquidation	157.8	4.0	n/a	n/a	n/a	n/a
Total Fund	3,937.9	100.0	5.2%	13.1%	11.1	10.2
Policy Index			-2.8%	7.6%	7.9%	8.6%
TUCS Ranking (6/30/22)[3]			3 (98)	1 (89)	1 (78)	3 (76)

Please note that numbers may not add to 100% due to rounding

1 ***Global Equity Policy: 3Q13 - Present:*** *75% MSCI All Country World IMI (Net), 25% MSCI All Country World Minimum Volatility Index (Net).*

2 ***Global Fixed Income Policy:*** *50% Bloomberg Barclays US Aggregate Bond Index, 50% ICE/BofAML High Yield Master II Index.*

3 ***Wilshire TUCS:*** *Total returns of all public DB plans in the Master Trusts Public composite, as of date noted; ranking is based on a percentile within the universe. Number in parentheses is number of observations for period.*

SCHEDULE OF TOP INVESTMENTS AS OF JUNE 2022

Name of Investment		Base Market Value
BlackRock MSCI ACWI Minimum Volatility Index Fund	$	260,529,626.91
BlackRock S&P 500 Index Fund A		200,344,751.24
SSgA REIT Index Fund		135,360,065.05
SSgA Global Natural Resources Index		83,486,218.81
New Enterprise Associates 14, LP		55,298,684.92
Valor Equity Partners IV, LP		46,420,503.08
GTCR Fund XI/A, LP		41,952,347.97
Summit Partners Growth Equity Fund IX A, LP		40,043,157.17
Valor M33 III, LP		39,786,262.01
Hellman & Friedman Capital Partners VIII, LP		39,687,499.34

TABLE 2: COMPARISON OF INVESTMENT RETURNS YEARS ENDED JUNE 30

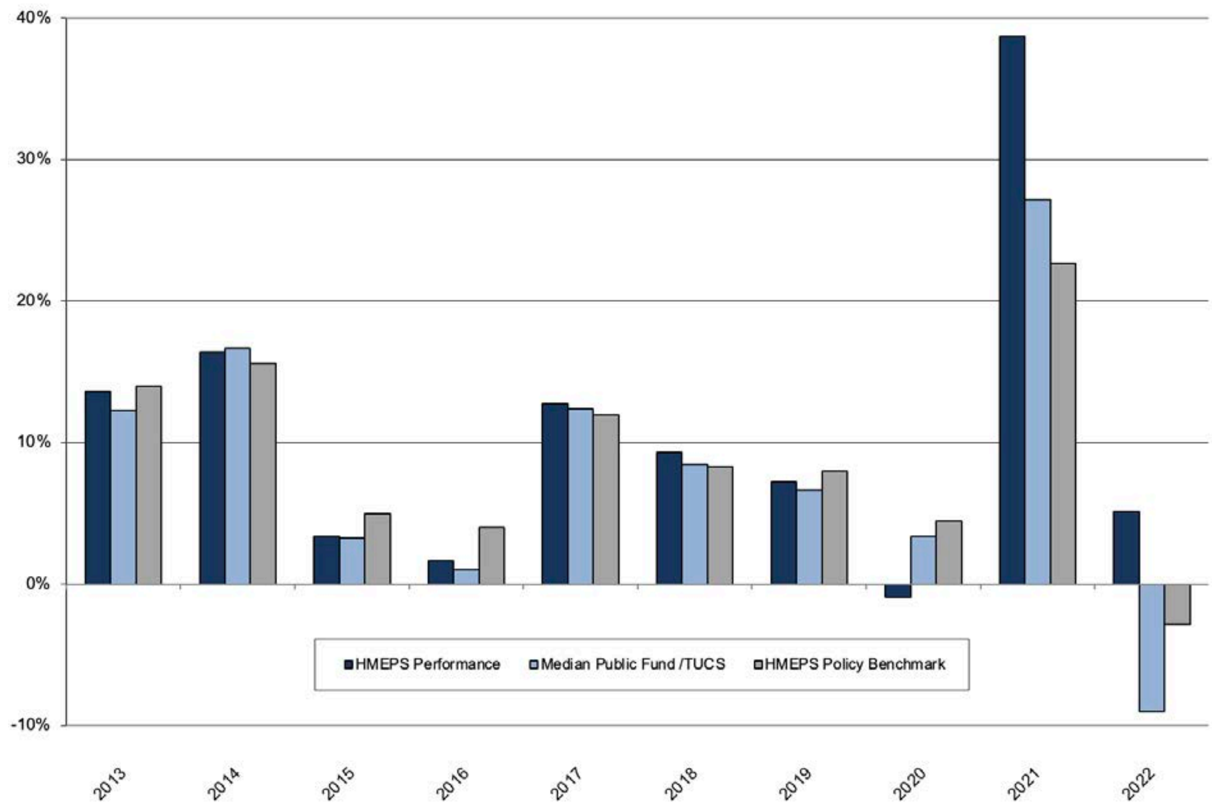
(Calculated based on a time weighted rate of return based on the market rate of return)

Period Ending 06-30	HMEPS Total Fund	HMEPS Policy Portfolio	Median of Wilshire Public Fund Universe/ TUCS	HMEPS Global Equity	MSCI ACWI IMI (Net)	MSCI ACWI Min Vol	HMEPS Fixed Income	Bloomberg U.S. Aggregate Bond Index
2013	13.58%	13.99%	12.27%	n/a	n/a	n/a	5.99%	-0.69%
2014	16.39%	15.61%	16.83%	21.92%	20.92%	13.84%	9.22%	4.37%
2015	3.38%	4.96%	3.38%	2.22%	0.81%	6.59%	1.13%	1.86%
2016	1.65%	4.02%	1.07%	-0.31%	-3.87%	11.55%	3.33%	6.00%
2017	12.73%	11.95%	12.41%	16.34%	19.01%	6.05%	7.80%	-0.31%
2018	9.33%	8.29%	8.45%	9.81%	11.14%	7.33%	1.50%	-0.40%
2019	7.22%	7.97%	6.62%	6.05%	4.56%	13.00%	6.77%	7.87%
2020	–0.93%	4.42%	2.95%	0.00%	1.17%	-2.50%	4.33%	8.74%
2021	38.71%	22.66%	27.14%	36.97%	40.94%	19.35%	10.20%	-0.34%
2022	5.16%	–2.84%	–9.04%	-15.32%	–16.52%	–6.40%	–11.87%	-10.29%
3 Yrs.	13.06%	7.58%	5.61%	5.07%	5.98%	2.89%	0.45%	–0.94%
5 Yrs.	11.12%	7.85%	6.48%	6.19%	6.70%	5.72%	1.89%	0.88%
10 Yrs.	10.25%	8.62%	8.01%	n/a	8.71%	7.95%	3.66%	1.54%

Period ending 06-30	ICE BofAML U.S. High Yield Master II Index	HMEPS Private Equity	S&P 500 Index	HMEPS Real Estate	NCREIF Property Index	HMEPS Inflation-Linked	Consumer Price Index	HMEPS Absolute Return	LIBOR
2013	9.57%	**7.85%**	20.59%	**12.80%**	10.73%	**14.52%**	1.75%	**10.87%**	0.31%
2014	11.80%	**14.31%**	24.61%	**9.11%**	11.21%	**22.33%**	2.07%	**7.28%**	0.24%
2015	-0.55%	**10.36%**	7.42%	**10.88%**	12.96%	**-9.14%**	0.12%	**2.65%**	0.25%
2016	1.71%	**7.05%**	3.99%	**12.95%**	10.64%	**-12.18%**	1.01%	**-6.92%**	0.51%
2017	12.75%	**16.02%**	17.90%	**9.15%**	6.98%	**8.24%**	1.63%	**7.13%**	1.02%
2018	2.49%	**17.22%**	14.38%	**9.87%**	7.20%	**5.78%**	2.87%	**4.65%**	1.36%
2019	7.60%	**14.05%**	10.42%	**7.68%**	6.50%	**2.05%**	1.65%	**3.27%**	2.55%
2020	-1.10%	**3.44%**	7.51%	**-4.03%**	2.69%	**-28.17%**	0.71%	**-1.42%**	1.50%
2021	15.62%	**64.56%**	40.79%	**17.83%**	7.37%	**52.77%**	5.32%	**22.06%**	0.20%
2022	-12.69%	**22.39%**	-10.62%	**13.45%**	21.45%	**24.92%**	9.06%	**0.46%**	0.66%
3 Yrs.	-0.05%	**22.72%**	10.60%	**8.65%**	10.22%	**11.09%**	4.98%	**6.52%**	0.79%
5 Yrs.	1.95%	**22.74%**	11.31%	**8.70%**	8.86%	**8.15%**	3.88%	**5.49%**	1.34%
10 Yrs.	4.40%	**16.75%**	12.96%	**9.67%**	9.67%	**6.00%**	2.59%	**4.75%**	0.90%

PERFORMANCE BY FISCAL YEAR

Last Ten Years



ASSET CLASS FEES AND COMMISSIONS

Asset Class	Investment Management Fees	Profit Share/Carried Interest	Brokerage Fees/ Commissions
Absolute Return	$ 1,162,694	$ 675,904	$ -
Cash	190,968	-	-
Fixed Income	1,128,237	-	-
Inflation-Linked	5,705,264	17,735,181	-
Private Credit	1,962,792	2,714,725	-
Private Equity	12,290,502	21,824,716	-
Public Equity	3,717,683	-	388,020
Real Estate	4,131,441	13,362,410	-
Total	$ 30,289,582	$ 56,312,937	$ 388,020

1 This data is not typically presented by fund managers in a standardized format. Due to variation in reporting methodologies, the data presented here is a compilation of information provided directly by fund managers and management's estimates based on information readily available as of the time of this report.

2 Profit share/carried interest as accrued (which differs from amounts actually paid) during the period.

LIST OF MANAGERS

ABSOLUTE RETURN
Anchorage Capital Group, L.L.C.
Angelo Gordon & Co., L.P.
Brigade Capital Management, L.P.
Davidson Kempner Capital Management, L.P.
Graham Capital Management, L.P.
MKP Capital Management, L.L.C.
Sculptor Capital Management, Inc.
Samlyn Capital, L.L.C.

FIXED INCOME
AllianceBernstein Holding, L.P.
BlackRock, Inc.
Polen Capital, formerly DDJ Capital Management, L.L.C.
GMO L.L.C.
Loomis, Sayles & Company, L.P.
Pugh Capital Management, Inc.

GLOBAL EQUITY
Baillie Gifford & Co.
BlackRock, Inc.
DePrince, Race & Zollo, Inc.
Globeflex Capital, L.P.
Invesco, Ltd.
Neumeier Poma Investment Counsel, L.L.C.
Schroders plc
T. Rowe Price Associates, Inc.

INFLATION-LINKED
BlackRock, Inc.
Carnelian Energy Capital Management, L.P.
Cohen & Steers Capital Management, Inc.
EIV Capital, L.L.C.
EnCap Investments, L.P.
Global Forest Partners, L.P.
NGP Energy Capital Management, L.L.C.
Oaktree Capital Management, L.P.
Quantum Energy Partners, L.P.
Riverstone Investment Group, L.L.C.
Salient Partners, L.P.
State Street Global Advisors, Inc.
Tailwater Capital, L.L.C.
Taurus Funds Management, Pty. Ltd.
Tillridge Global Agribusiness Partners
Tortoise Capital Advisors, L.L.C.

PRIVATE CREDIT
Angelo, Gordon & Co., L.P.
DRC Capital, L.L.P.
Orbimed Advisors, L.L.C.
Summit Capital Partners, L.L.C.

PRIVATE EQUITY
Adams Street Partners, L.L.C.
Anchorage Capital Group, L.L.C.
Carrick Capital Management, L.L.C.
Centerbridge Partners, L.P.
Clearlake Capital Group, L.P.
GTCR, L.L.C.
HarbourVest Partners, L.L.C.
Hellman & Friedman, L.L.C.
ICV Partners, L.L.C.
JMI Management, Inc.
Lexington Partners, Inc.
New Enterprise Associates, L.L.C.
New Mainstream Capital Management Holding, L.L.C.
Oaktree Capital Management, L.P.
Onex Corporation
Orbimed Advisors, L.L.C.
PacVen Walden Management Co., Ltd.
Pegasus Capital Advisors, L.P.
Pharos Capital Group, L.L.C.
Platinum Equity, L.L.C.
Siris Capital Group, L.L.C.
Summit Capital Partners, L.L.C.
Sun Capital Partners, Inc.
TCMI, Inc.
The Capstreet Group, L.L.C.
The Carlyle Group, Inc.
The Jordan Company, L.P.
TrueBridge Capital Partners, L.L.C.
Valor Management, L.L.C.
Vista Equity Partners Management, L.L.C.
Wayzata Investment Partners, L.L.C.

REAL ESTATE
Aermont Capital, L.L.P.
Aetos Capital Real Estate, L.P.
Angelo, Gordon & Co., L.P.
Artemis Real Estate Partners, L.L.C.
Berkeley Partners Management, L.L.C.
Crow Holdings Capital
FIG, L.L.C.
GEM Realty Capital, Inc.
Kildare Partners U.S., L.L.C.
Lone Star Global Acquisitions, L.L.C.
Long Wharf Capital, L.L.C.
Morgan Stanley & Co., L.L.C.
Oak Street Real Estate Capital, L.L.C.
Orion Capital Managers, L.L.P.
Pennybacker Capital Management, L.L.C.
The Prime Group, Inc.
Rockpoint Group, L.L.C.
Starwood Capital Group Global, L.P.
State Street Global Advisors, Inc.

SCHEDULE OF FEES AND COMMISSIONS PAID

In Fiscal Year 2022

Broker Name	Number of Shares	Commissions ($)	Cents/Share
B.RILEY & CO., LLC	169,607	$ 4,059.34	2.39
BARCLAYS CAPITAL	942,395	10,475.25	1.11
BNP PARIBAS SECURITIES SERVICES	779,328	4,022.27	0.52
CANACCORD GENUITY INC.	137,041	4,109.22	3.00
CANTOR FITZGERALD + CO.	133,416	2,361.08	1.77
CAPITAL INSTITUTIONAL SVCS INC EQUITIES	756,057	15,121.14	2.00
CITIGROUP GLOBAL MARKETS INC.	1,099,820	15,120.89	1.37
CLSA SINGAPORE PTE LTD.	259,011	7,121.89	2.75
COWEN AND COMPANY, LLC	338,286	5,860.22	1.73
CREDIT LYONNAIS SECURITIES (ASIA)	1,466,108	2,509.69	0.17
CREDIT SUISSE INTERNATIONAL	622,628	9,432.79	1.51
DAIWA SECURITIES SB CAPITAL MARKETS	93,700	2,036.61	2.17
DAVIDSON D.A. + COMPANY INC.	57,350	2,294.00	4.00
EVERCORE GROUP L.L.C.	320,302	3,605.40	1.13
GOLDMAN SACHS INTERNATIONAL	1,410,008	27,217.92	1.93
HSBC BANK PLC	1,639,147	5,744.50	0.35
INSTINET LLC	3,053,712	12,052.34	0.39
ITG INC.	292,363	2,898.23	0.99
J.P. MORGAN SECURITIES LLC	1,622,299	20,643.40	1.27
JEFFERIES LLC	2,338,378	19,288.62	0.82
JONESTRADING INSTITUTIONAL SERVICES, LLC	137,940	2,689.31	1.95
KEPLER CHEUVREUX	158,367	5,008.38	3.16
MAXIM GROUP	1,432,052	25,587.36	1.79
MERRILL LYNCH INTERNATIONAL	1,217,332	19,977.34	1.64
MORGAN STANLEY AND CO INTERNATIONAL	1,557,244	24,681.25	1.58
NATIONAL BANK OF CANADA	118,726	3,094.86	2.61
NATIONAL FINANCIAL SERVICES CORPORATION	466,192	4,177.77	0.90
NORTH SOUTH CAPITAL LLC	587,690	5,924.07	1.01
PAREL	130,973	4,136.72	3.16
PERSHING LLC	642,576	11,372.64	1.77
PIPER JAFFRAY & CO.	341,016	6,898.31	2.02
RAYMOND JAMES AND ASSOCIATES INC	112,455	2,167.18	1.93
RBC CAPITAL MARKETS, LLC	578,187	9,082.71	1.57
SANFORD C BERNSTEIN CO LLC	635,129	7,400.62	1.17
STIFEL NICOLAUS + CO INC	488,728	14,649.73	3.00
UBS SECURITIES LLC	3,229,030	22,071.52	0.68
VIRTU AMERICAS LLC	452,679	2,780.75	0.61
WELLS FARGO SECURITIES, LLC	587,091	9,791.38	1.67
Others	2,003,121	30,553.39	1.53
TOTAL	**32,407,484**	**$ 388,020.09**	**1.20**

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ACTUARIAL

- SECTION 4 -

IMPROVEMENT

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November 24, 2021

Board of Trustees
Houston Municipal Employees Pension System
1201 Louisiana
Suite 900
Houston, TX 77002

Subject: Actuarial Valuation as of July 1, 2021 with RSVS

Dear Members of the Board:

This actuarial valuation, which includes the Risk Sharing Valuation Study (RSVS, or sometimes referred to as the actuarial valuation or valuation in the report) describes the current actuarial condition of the Houston Municipal Employees Pension System (HMEPS), determines the City Contribution Rate, and analyzes changes in this calculated contribution rate. The results presented herein may not be applicable for other purposes. Valuations are prepared annually, as of July 1, the first day of the HMEPS plan year. This report was prepared at the request of the Board and is intended for use by the HMEPS staff and those designated or approved by the Board. This report may be provided to parties other than HMEPS staff only in its entirety and only with the permission of the Board, or as required by law.

FINANCING OBJECTIVES AND FUNDING POLICY

Based on the HMEPS statute, the employer contribution is comprised of two pieces. The first piece is the amortization of the Legacy Liability as of July 1, 2016 determined as part of the July 1, 2016 Initial Risk Sharing Valuation Study (Initial RSVS). The Legacy Liability is amortized over a 30-year period beginning on July 1, 2017. These amortization payments are fixed and grow at the assumed payroll growth rate of 2.75%. The second part of the contribution is the City Contribution Rate determined by the valuation. The City Contribution Rate becomes effective twelve months after the valuation date, i.e., the rate determined by this July 1, 2021 actuarial valuation will be used by the Board when establishing the City Contribution Rate for the year beginning July 1, 2022 and ending June 30, 2023.

The contribution rate for fiscal year 2021 was determined by the July 1, 2019 actuarial valuation. In addition to the Legacy Liability payment of $134,546,835, the City contributed 8.36% of payroll in fiscal year 2021. The contribution rate for fiscal year 2022 was determined by the July 1, 2020 actuarial valuation. The City will contribute a Legacy Liability payment of $138,246,872 and 8.41% of payroll in fiscal year 2022.

Based on the statute, the City contribution rate for FY 2023 is 8.44% of pay, which is estimated to be $57.3 million based on an estimated payroll of $678.8 million. The City contribution amount for FY 2023 for the Legacy Liability amortization payment as determined in the Initial RSVS is $142.0 million.

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Each future valuation will establish either a liability gain layer or a liability loss layer. These layers will represent unexpected increases/decreases in the unfunded actuarial accrued liability (after subtracting out any remaining Legacy Liability or any remaining prior years' liability layers). Liability loss bases will be amortized over a 30-year period beginning one year after the valuation date. Liability gain bases will be amortized over the same period as the largest liability loss base, or 30 years if there is no liability loss base. All bases are amortized using a level percentage of payroll amortization method. This year a liability gain layer of $170.1 million is being established. Since it is a gain layer it will be amortized over the same period as the Legacy Liability, a 25-year period beginning one year after the valuation date.

PROGRESS TOWARD REALIZATION OF FINANCING OBJECTIVES

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. In the absence of benefit improvements, it should increase over time, until it reaches 100%. The funded ratio as of July 1, 2021 is 62.8%. This is an increase from the 59.2% funded ratio from the prior year's valuation. However, the funded status alone is not appropriate for assessing the need for or the amount of future contributions and is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

The calculated City Contribution Rate for FY 2023 is 5.91%. However, because the System is less than 90% funded, the actual City Contribution Rate for FY 2023 will be the corridor midpoint of 8.44% of payroll as shown on page 80 of the Risk Sharing Valuation section of the valuation report. This rate is three basis points greater than the prior year rate as established in the Initial RSVS. Please see Table 6 for a detailed analysis of the change in the calculated employer contribution rate from the prior year to this year. This rate does not include the separate contribution for the Legacy Liability amortization payment discussed above.

PLAN EXPERIENCE

As part of each valuation, we examine the System's experience relative to the assumptions. The aggregate results of these analyses are disclosed in Tables 5 & 6. This past fiscal year the System had an experience liability gain on demographics of approximately $8.1 million, an experience loss of $18.3 million due to the COLA being higher than assumed, and an experience gain on the actuarial value of assets of approximately $136.1 million. The gain on the actuarial value of assets was due to the outstanding investment performance (relative to the return assumption) during the just concluded fiscal year.

BENEFIT PROVISIONS

The benefit provisions reflected in this valuation are those in effect following the passage and signing into law of SB 2190 in 2017. These changes were reflected in the 2016 valuation and there have been no changes to the benefit provisions since the prior valuation.

The benefit provisions are summarized in Appendix B.

ASSUMPTIONS AND METHODS

Except as noted below, the actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the plan's actuary and the current assumptions were adopted by the Board in 2021 following a regularly scheduled experience study. The rationale for the current assumptions is included in that report, dated August 11, 2021. The change in the actuarial assumptions decreased the liabilities of the System by $37.2 million.

As part of the legislation enacting the benefit changes (in 2017), the investment return assumption (7.0%) was set into the revised statute (Article 6243h, Vernon's Texas Civil Statutes). This assumption is now considered a prescribed assumption under the actuarial standards of practice. With the lowering of the investment return assumption from 8.0% to 7.0% it was appropriate to make changes to other economic assumptions that are correlated with the investment return assumption. In particular, the inflation assumption was decreased from 2.50% to 2.25% and corresponding decreases in the salary increase assumptions and payroll growth assumptions were also made. The just completed experience study confirmed that the investment assumption and the inflation assumption are reasonable and there have been no changes to these assumptions.

The actuarial assumptions represent estimates of future experience and are not market measures. The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results (and future measures) can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. The actuarial calculations are intended to provide information for rational decision making.

This report does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

All assumptions and methods are described in Appendix A.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

GASB 67

The System was required to begin complying with Governmental Accounting Standards Board Statement No. 67 with the fiscal year ending June 30, 2014. The GASB No. 67 information for the fiscal year ending June 30, 2021 was provided to HMEPS in a separate report dated November 2, 2021 and is not contained in this report.

DATA

Member data for retired, active and inactive members was supplied as of July 1, 2021 by the HMEPS staff.

We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data.

Asset information as of July 1, 2021 was provide by HMEPS Staff.

CERTIFICATION

We were asked to determine if an unanticipated actuarial cost occurred in the administration of the Deferred Retirement Option Plan (DROP). It is our opinion that the administration of the DROP had no material unanticipated actuarial costs during the prior fiscal year.

All of the tables contained in this actuarial valuation report were prepared by Gabriel, Roeder, Smith & Company. The trend data schedules shown in the Notes section of the HMEPS Financial Statements are based on our valuation reports, but were prepared by HMEPS staff. We certify that the information presented herein is accurate and fairly portrays the actuarial position of HMEPS as of July 1, 2021.

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

Sincerely,
Gabriel, Roeder, Smith & Company

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

Lewis Ward
Consultant

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Table of Contents

Section I

Risk Sharing Valuation Study

RSVS Discussion

The purpose of the Risk Sharing Valuation Study (RSVS) is to determine the City Contribution Rate for the fiscal year beginning one year after the valuation date.

The first exhibit in this section shows the RSVS Corridor which was created from the Initial RSVS. Column 3 shows the Corridor Midpoint for each fiscal year. Columns 2 and 4 show the Corridor Minimum and Corridor Maximum respectively. Column 5 shows the actual City Contribution Rate for the fiscal year. As shown on the table the actual City Contribution Rate for FY 2023 is 8.44% of pay.

The next exhibit shows the individual pieces and total calculated City Contribution Rate. As shown on the table the calculated City Contribution Rate from this valuation is 5.91% of pay. Because the System is less than 90% funded, the actual City Contribution Rate will be set equal to the Corridor Midpoint of 8.44% of pay.

The third exhibit shows the Liability Gain/Loss Layers established by each RSVS. Columns 2 and 3 show the original liability layer and any remaining liability layer respectively. Column 4 is the payment on that particular layer for the fiscal year beginning one year after the valuation date. The payment is determined using a level percentage of payroll and the remaining amortization period as shown in column 5. The payments reflect the one-year delay between the determination of the payment and the beginning of the fiscal year in which the payment is made. The dollar amounts of the payments are summed and then converted to a percentage of payroll based on the projected payroll for the fiscal year beginning one year after the valuation date. As shown on the table the current year's payment is negative which means it is a credit toward the contribution rate. The credit is determined to be 2.28% of projected payroll.

The next exhibit is the Legacy Liability schedule. This table shows the amortization schedule of the Legacy Liability for each of the 30 years over which it is scheduled to be paid. Column 2 shows the remaining Legacy Liability as of that measurement date while Column 3 shows the payment on the Legacy Liability for the fiscal year beginning one year after the valuation date.

The unfunded actuarial accrued liability is equal to the sum of the Remaining Layer column on the Liability Gain/Loss Layers exhibit and the Remaining Legacy Liability column as of the valuation date.

Risk Sharing Valuation - Corridor

Fiscal Year Ending	Corridor Minimum	Corridor Midpoint	Corridor Maximum	Actual City Contribution Rate
(1)	(2)	(3)	(4)	(5)
June 30, 2018	3.17%	8.17%	13.17%	8.17%
June 30, 2019	3.27%	8.27%	13.27%	8.27%
June 30, 2020	3.32%	8.32%	13.32%	8.32%
June 30, 2021	3.36%	8.36%	13.36%	8.36%
June 30, 2022	3.41%	8.41%	13.41%	8.41%
June 30, 2023	3.44%	8.44%	13.44%	8.44%
June 30, 2024	3.48%	8.48%	13.48%	
June 30, 2025	3.51%	8.51%	13.51%	
June 30, 2026	3.54%	8.54%	13.54%	
June 30, 2027	3.57%	8.57%	13.57%	
June 30, 2028	3.59%	8.59%	13.59%	
June 30, 2029	3.61%	8.61%	13.61%	
June 30, 2030	3.63%	8.63%	13.63%	
June 30, 2031	3.65%	8.65%	13.65%	
June 30, 2032	3.67%	8.67%	13.67%	
June 30, 2033	3.69%	8.69%	13.69%	
June 30, 2034	3.70%	8.70%	13.70%	
June 30, 2035	3.71%	8.71%	13.71%	
June 30, 2036	3.72%	8.72%	13.72%	
June 30, 2037	3.73%	8.73%	13.73%	
June 30, 2038	3.74%	8.74%	13.74%	
June 30, 2039	3.74%	8.74%	13.74%	
June 30, 2040	3.75%	8.75%	13.75%	
June 30, 2041	3.76%	8.76%	13.76%	
June 30, 2042	3.77%	8.77%	13.77%	
June 30, 2043	3.78%	8.78%	13.78%	
June 30, 2044	3.79%	8.79%	13.79%	
June 30, 2045	3.79%	8.79%	13.79%	
June 30, 2046	3.80%	8.80%	13.80%	
June 30, 2047	3.81%	8.81%	13.81%	

Risk Sharing Valuation – Calculated City Contribution Rate

Fiscal Year Ending	Employer Normal Cost	Amortization Payment	Calculated City Contribution Rate
(1)	(2)	(3)	(4)
June 30, 2018	8.17%	0.00%	8.17%
June 30, 2019	8.27%	0.00%	8.27%
June 30, 2020	8.32%	-0.37%	7.95%
June 30, 2021	8.40%	-0.90%	7.50%
June 30, 2022	8.44%	-0.55%	7.89%
June 30, 2023	8.19%	-2.28%	5.91%

Risk Sharing Valuation - Liability (Gain)/Loss Layers

Valuation Year Base Established	Original Layer	Remaining Layer	Year's Payment[1]	Remaining Payments
(1)	(2)	(3)	(4)	(5)
July 1, 2021	$ (170,127,717)	$ (170,127,717)	$ (11,741,996)	25
July 1, 2020	$ 38,069,638	$ 40,734,513	$ 2,444,231	29
July 1, 2019	(51,252,094)	(55,174,935)	(3,575,895)	25
July 1, 2018	(36,414,848)	(39,490,739)	(2,559,399)	25
July 1, 2017	(388,530)	(424,941)	(27,539)	25
Total		$ (224,483,818)	$ (15,460,598)	
Projected Payroll for Fiscal Year +1			$ 678,763,801	
Amortization Payments as % of Projected Pay			-2.28%	
Single Equivalent Amortization Period from the Valuation Date[2]			26.1	

1 This is the payment to be made for the fiscal year beginning one year after the valuation date.
2 The single equivalent amortization period includes all liability layers including the Legacy Liability.

Risk Sharing Valuation – Legacy Liability

Fiscal Year End	Remaining Legacy Liability	Current Year's Payment[1]
(1)	(2)	(3)
June 30, 2017	$ 2,123,880,499	$ 124,030,357
June 30, 2018	2,144,254,135	127,441,192
June 30, 2019	2,162,525,731	130,945,824
June 30, 2020	2,178,451,118	134,546,835
June 30, 2021	2,191,766,369	138,246,872
June 30, 2022	2,202,186,338	142,048,661
June 30, 2023	2,209,403,104	145,955,000
June 30, 2024	2,213,084,295	149,968,762
June 30, 2025	2,212,871,302	154,092,903
June 30, 2026	2,208,377,355	158,330,458
June 30, 2027	2,199,185,471	162,684,546
June 30, 2028	2,184,846,251	167,158,371
June 30, 2029	2,164,875,526	171,755,226
June 30, 2030	2,138,751,826	176,478,494
June 30, 2031	2,105,913,679	181,331,653
June 30, 2032	2,065,756,717	186,318,273
June 30, 2033	2,017,630,566	191,442,026
June 30, 2034	1,960,835,534	196,706,682
June 30, 2035	1,894,619,048	202,116,115
June 30, 2036	1,818,171,846	207,674,309
June 30, 2037	1,730,623,900	213,385,352
June 30, 2038	1,631,040,048	219,253,449
June 30, 2039	1,518,415,320	225,282,919
June 30, 2040	1,391,669,929	231,478,199
June 30, 2041	1,249,643,912	237,843,850
June 30, 2042	1,091,091,395	244,384,556
June 30, 2043	914,674,442	251,105,131
June 30, 2044	718,956,486	258,010,522
June 30, 2045	502,395,281	265,105,812
June 30, 2046	263,335,367	272,396,221
June 30, 2047	-	-

1 Contribution amount for fiscal year that begins one year after valuation date

Section II

Discussion

Executive Summary

Item	July 1, 2021	July 1, 2020
Membership		
• Number of:		
-Active members	11,579	11,594
-Retirees and beneficiaries	11,481	11,373
-Inactive members	7,626	7,059
-Total	30,686	30,026
• Covered payroll (annualized)	$ 669,217	$ 657,876
City Contribution rates	8.44%[1]	8.41%[1]
Assets		
• Market value	$ 3,867,087	$ 2,881,788
• Actuarial value	3,322,651	3,074,339
• Estimation of return on market value	38.3%	-3.8%
• Estimation of return on actuarial value	11.5%	5.4%
• Employer contribution	$ 184,762	$ 176,430
• Member contribution	$ 33,325	$ 32,582
• Ratio of actuarial value to market value	85.9%	106.7%
• External cash flow as % of market value assets	-2.6%	-3.6%
Actuarial Information		
• Unfunded actuarial accrued liability (UAAL)	$ 1,967,283	$ 2,122,008
• GASB funded ratio	62.8%	59.2%
• Employer normal cost %	8.19%	8.44%
• Amortization rate[2]	-2.28%	-0.55%
• Calculated City Contribution Rate	5.91%	7.89%
Estimated Total City Contribution for Fiscal Year	2023	2022
• Estimated City Contribution Rate Payment	$ 57,287,665	$ 55,498,143
• Legacy Liability Payment (City Contribution Amount)	$ 142,048,661	$ 138,246,872
• Total	$ 199,336,326	$ 193,745,015

Note: Dollar amounts in $000, unless otherwise noted

1 This rate is the City Contribution Rate determined in accordance with the State statute.
2 See Risk Sharing Valuation - Liability (Gain)/Loss Layers table for determination of rate.

Contribution Requirement

- The Executive Summary shows the estimated total City Contribution for fiscal year 2023
  - — Comprised of the known Legacy Liability payment (City Contribution Amount) of $142.0 million, and
  - — City Contribution Rate times estimated payroll of $678.8 million = $57.3 million
- The calculated City Contribution Rates shown on the Executive Summary are calculated rates for the twelve-month period beginning one year after the valuation date, based on statute
- Table 6 reconciles the calculated City Contribution Rates from the prior valuation to the current valuation
- Legacy Liability is $2,192 million as of July 1, 2021
  - — Schedule of Legacy Liability contribution amounts shown in RSVS section

Amortization of liability gain/loss layers are as follows

- — Liability loss layers are amortized over a 30-year funding period beginning one year after the valuation date using level percentage of payroll amortization based on 2.75% payroll growth rate
- — Liability gain layers are amortized over the remaining period of the largest liability loss layer (if no loss layer exists then over a 30-year funding period beginning one year after the valuation date) using level percentage of payroll amortization based on 2.75% payroll growth rate
- — Amortization payment for layers is the sum of all payments divided by the projected payroll for the fiscal year beginning one year after the valuation date
- — No future growth in the number of active members is taken into account

Calculation of Contribution Rates

The funds available to pay benefits come from two sources, contributions and investment income on those contributions (the majority of the funds available to pay benefits come from investment income). HMEPS receives contributions from two sources, employer contributions and member contributions. The employer contribution is comprised of two pieces. The first piece is a fixed dollar amount to amortize the Legacy Liability as of July 1, 2016 over a 30-year beginning on July 1, 2017. The second piece is the City Contribution Rate.

As shown in Table 1, the Calculated City Contribution Rate has two components:

- The employer normal cost percentage (NC%)
- The amortization percentage (Liability Layers%)

The NC% is the theoretical amount which would be required to pay the members' benefits, based on the plan provisions for new employees, if this amount had been contributed from each member's entry date and if the fund's experience exactly followed the actuarial assumptions. This is the amount it should cost to provide the benefits for an average new member. The employer NC% includes a provision for administrative expenses and is net of member contributions. The NC% is shown in Table 4.

The actuarial accrued liability (AAL) is the difference between (i) the actuarial present value of all future benefits for all current participants of the fund, including active, inactive and retired members, and (ii) the actuarial present value of future normal costs. Thus the AAL represents the liability associated with past years. The unfunded actuarial accrued liability (UAAL) is the difference between the AAL and the actuarial value of assets (AVA). It is the shortfall/excess between the liability associated with prior years (the AAL) and the assets actually accumulated (the AVA). This shortfall/excess can arise from several sources, including actuarial gains and losses which are caused by differences between actual experience and the plan's assumptions, changes to the plan's actuarial assumptions, and amendments to the benefit provisions.

As of July 1, 2016, the UAAL was partitioned off into the Legacy Liability which has its own amortization schedule. For all valuations after July 1, 2016, any unexpected gains or losses will be set up as new liability gain/loss layers. These layers will be amortized over 30 years (see previous discussion for liability gain layers) using level percentage of payroll amortization beginning on the July 1st one year after the valuation date the layer is determined. The sum of any such layers' payments will be aggregated and converted to a percentage of projected payroll for the fiscal year beginning one year after the valuation date. This percentage is the Liability Layers' %.

In addition to these two pieces, the City Contribution Rate also includes a provision for administrative expenses which is equal to 1.25% of payroll as of July 1, 2021. The maximum addition to the City Contribution Rate for administrative expenses is 1.25%, unless the City agrees to a higher rate.

Calculation of Contribution Rates (Continued)

If the addition to the City Contribution Rate for administrative expenses is capped at 1.25%, then administrative expenses in excess of 1.25% of payroll (if any) will become part of the next year's liability gain/loss layer.

The calculated City Contribution Rate necessary to meet the funding policy specified by statute for the twelve-month period beginning July 1, 2022 is 5.91%. Since the System is less than 90% funded and the calculated City Contribution rate is less than the Corridor Midpoint, the actual City Contribution Rate will be the Corridor Midpoint of 8.44% of projected payroll. Therefore, the FY 2023 City Contribution is estimated to be approximately $199.3 million. The contribution is comprised of the fixed Legacy Liability payment of $142.0 million and the estimated payment of $57.2 based on the City Contribution Rate of 8.44% and a projected FY 2023 payroll of $678.8 million.

Financial Data and Experience

As of July 1, 2021, HMEPS has a total market value of about $3.87 billion. Financial information was gathered from the audited financial statements as of June 30, 2021.

This report includes a number of exhibits related to plan assets. Table 8 shows how the total market value is distributed among the various classes of investments. Current investment policy allocates 49.5% of invested assets to equities, 15% of invested assets to fixed income (including private credit), and 35.5% of invested assets to alternative investments including real estate.

Table 9 shows a reconciliation of the market values between the beginning and end of FY2021.

As shown on Table 11, the dollar-weighted return net of investment expenses for FY2021 was 38.31%.

In determining the contribution rates and funded status of the System, an actuarial value of assets (AVA) is used, rather than the market value of assets. This "smoothing method" is intended to help reduce the volatility of the contribution rates from year to year. The method used to compute the AVA takes the difference between the actual market value of assets and the expected actuarial value of assets (based on the prior year's assumed investment return rate), and establishes a base each year which is equal to this difference less any unrecognized bases from prior years. If the current year's base is of opposite sign from the prior years' bases then it is offset dollar for dollar against the prior years' bases (oldest bases first) until either the prior years' bases or the current year's base is reduced to zero. Any remaining bases are then recognized over the remaining period for the base (5 less the number of years between the base year and the valuation year) in equal dollar amounts.

The development of the AVA is shown on Table 10. The AVA as of the valuation date is $3.32 billion. The AVA is 85.9% of the MVA, compared to 106.7% last year.

In addition to the market return, Table 11 also shows the return on the actuarial value of assets for HMEPS. For FY2021, this return was 11.50%. Because this is more than the assumed 7.0% investment return, an actuarial gain occurred decreasing the unfunded actuarial accrued liabilities of the plan. Table 12 shows a summary of market and actuarial return rates in recent years.

Member Data

Member data as of July 1, 2021 was supplied electronically by HMEPS staff. While we did not audit this data, we did perform various tests to ensure that it was internally consistent, consistent with the prior year's data, and was reasonable overall.

Tables 15 and 16 show the summaries of certain historical data, including membership statistics. Table 17 shows the number of members by category (active, inactive, retired, etc.). Table 18 shows the active member statistics.

The number of active members decreased from 11,594 to 11,579, a 0.1% decrease.

The total annualized salaries shown on Table 2 and on the statistical tables is the amount that was supplied by HMEPS, annualized or adjusted for number of hours reported if necessary. For the cost calculations, the pays were adjusted in accordance with the actuarial assumptions to reflect one year's salary increase. The annualized salaries for active members increased 1.7% over last year.

We also show the projected payroll in Item 2 of Table 2. This is the payroll used for determining the expected amortization payments (amortization percentage) on liability (gain)/loss layers. The projected pay is determined by summing all pensionable pay for the just ended fiscal year for anyone who received pensionable pay during the year (actives, terminated members, retirees, etc.) and increasing this sum by the payroll growth rate. We believe this provides a better expectation of the upcoming year's actual payroll than the annualized salaries described above.

The overall trend in payroll is less significant than in prior years due to the creation of the Legacy Liability. The payments to amortize the Legacy Liability were determined in a manner that is consistent with the payroll growth assumption, but those payment amounts are now fixed and will be contributed whether payroll grows slower or faster than assumed. The current and future liability gain/loss layers will be amortized using level percentage of payroll amortization. Because the methodology used in amortizing these layers assumes a growing payroll into the future, if the payroll grows at a rate lower than the assumed 2.75% a year on average, the amortization payments (as a percentage of pay) will need to increase in order to keep the contribution dollars that amortize the UAAL growing at 2.75%. However, these layers are expected to be much smaller in magnitude than the Legacy Liability and therefore, the impact of the payroll growing slower or faster than expected is anticipated to be much less for many years into the future.

Benefit Provisions

SB 2190 passed by the 2017 Legislature made a few but very significant changes to the benefit provisions of HMEPS. All of these changes were reflected in the July 1, 2016 valuation. However, the changes were significant enough that we have shown them again in this year's valuation as a reminder.

Prior to the legislation members hired prior to January 1, 2005 were eligible for a cost of living adjustment (COLA) each year equal to 3% of their base benefit. Members hired on or after January 1, 2005 and prior to January 1, 2008 were eligible for a COLA based on 2% of their base benefit. Group D members were not eligible for any COLA. Effective with the 2018 COLA, all current and future retirees and their eligible survivors (except as noted below) will be eligible for the same COLA. The COLA will be equal to 50% of the average five-year net investment return rate less five percentage points, with a minimum of 0% and a maximum of 2%. Group D members who are entitled to an annuity but who terminated employment prior to the effective date of the 2017 legislation will not be eligible for any COLA.

Active members in DROP will not be eligible for a COLA on their DROP account until they have attained the age of 62 as of January 1 of the year in which the increase is made.

The member contributions for all groups have changed. The Group A member contribution rate increased from 5.0% of pay to 8.0% of pay. The Group B member contribution rate increased from no contributions to 4% of pay. The Group D member contribution rate increased from no contributions to 3% of pay. One-third of the Group D member contribution rate is attributed to a notional cash balance account. The contribution increases for Groups A and B were phased-in over a two-year period.

The interest credit rate on DROP accounts and the notional cash balance accounts will be based on 50% of the five-year average of the net rate of return on the market value of assets, but not less than 2.5% or more than 7.5%.

Survivor benefits:

- Effective July 1, 2017, if an active Group A, Group B or Group D member with at least 5 years of credited service dies while still in service with the City (off-duty death), the spousal survivor benefit will be 80% of the normal accrued pension, payable immediately, provided that the spouse was married to the participant for at least one continuous year as of the date of death. If such spouse was married less than one continuous year as of the date of death, the survivor benefit is 50% of the normal accrued pension.

- Effective July 1, 2017, if a Group A or Group B retiree dies, the spousal survivor benefit will be 80% of the retirement benefit being received by the retiree at the time of death, payable immediately, provided that the spouse was married to the retiree at the time of death and for at least one continuous year as of the date of separation from service (the marriage requirement applies for separations from service on or after July 1, 2017). If such spouse was married less than one continuous year as of the date of separation from service (the marriage

Benefit Provisions (Continued)

requirement applies for separations from service on or after July 1, 2017), the spousal survivor benefit is 50% of the retirement benefit being received by the retiree at the time of death.

- Effective July 1, 2017, if a Group A or Group B deferred participant (not yet receiving a pension benefit) dies, the spousal survivor benefit is 50% of the normal accrued pension, payable at the participant's eligibility date. However, the surviving spouse can elect an earlier actuarially equivalent benefit.
- Effective July 1, 2017, if an active Group A, Group B or Group D member dies from a service-related (on-duty) death, the spousal survivor benefit is 80% of the participant's final average salary, payable immediately.

This valuation reflects all benefits offered to members.

There have been no changes to the benefit provisions since the prior valuation.

Appendix B of our Report includes a summary of the benefit provisions for HMEPS.

Actuarial Methods and Assumptions

Except as noted below, the actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the plan's actuary and the current assumptions were adopted by the Board in 2021 following a regularly scheduled experience study. The rationale for the current assumptions is included in that report, dated August 11, 2021. The change in the actuarial assumptions decreased the liabilities of the System by $37.2 million.

As part of the legislation enacting the benefit changes, the investment return assumption (7.0%) was set into statute (Article 6243h, Vernon's Texas Civil Statutes). In addition, the actuarial cost method was also set into statute. This assumption and method are now considered prescribed assumptions and methods under the actuarial standards of practice.

Liabilities are determined using the Entry Age Normal actuarial cost method. The assumed investment return rate is 7.00%.

With the lowering of the investment return assumption from 8.0% to 7.0% it was appropriate to make changes to other economic assumptions that are correlated with the investment return assumption. In particular, we recommended and the Board adopted a decrease in the inflation assumption from 2.50% to 2.25% and the corresponding decreases in the salary increase assumptions and payroll growth assumptions. These changes were reflected in the July 1, 2016 actuarial valuation.

There was an experience study performed between this and the previous valuations that made minor changes to some of the assumptions, most notable changing the projection scale used for the mortality assumption and increasing the rate of salary increases for active members.

Please see Appendix A of our Report for a complete description of these assumptions.

Funding Progress

As you are aware, the Governmental Accounting Standards Board Statements (GASB) that apply to the System have changed. In prior years, GASB Statement No. 25 applied to the System. Beginning with the 2014 fiscal year GASB Statement No. 67 applies to the System. The GASB No. 67 disclosure information has been provided in a separate report.

Although GASB No. 25 no longer applies to HMEPS, there are certain schedules from GASB No. 25 which we believe provide useful information and therefore we are continuing to include these in our report. In particular, we are continuing to show the Schedule of Funding Progress (Table 14).

Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions

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

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

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

1. **Investment risk –** actual investment returns may differ from the expected returns;

2. **Asset/Liability mismatch –** changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;

3. **Contribution risk –** actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;

4. **Salary and Payroll risk –** actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;

5. **Longevity risk –** members may live longer or shorter than expected and receive pensions for a period of time other than assumed;

6. **Other demographic risks –** members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (Continued)

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

The City Contribution Rate shown in the Executive Summary may be considered as a minimum contribution rate that complies with HMEPS' Statute. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Several generally accepted plan maturity measures are described below and are followed by a table showing a history of the measurements.

RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

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

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (Continued)

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

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

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

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

DURATION OF PRESENT VALUE OF BENEFITS

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

ADDITIONAL RISK ASSESSMENT

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

Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (Continued)

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Ratio of the market value of assets to total payroll	5.78	4.38	4.87	4.79	4.17	3.95	4.21	4.33	3.99	3.79
Ratio of actuarial accrued liability to payroll	7.90	7.90	8.00	7.98	7.80	7.79	8.16	7.54	7.51	7.42
Ratio of actives to retirees and beneficiaries	1.01	1.02	1.04	1.10	1.14	1.18	1.18	1.23	1.25	1.29
Ratio of net cash flow to market value of assets*	-2.6%	-3.6%	-2.9%	5.3%	-3.4%	-3.6%	-3.4%	-3.4%	-4.2%	-4.6%
Duration of the actuarial present value of benefits**	11.52	11.62	11.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*The 2018 net cash flow reflects receipt of $250 million in net Pension Obligation Bond proceeds

**Duration measure not available prior to 2019

Summary and Closing Comments

This year's valuation has been very positive. The investment performance during fiscal year 2021 created a significant gain on the actuarial value of assets which resulted in the unfunded actuarial accrued liability decreasing rather than increasing as expected. Furthermore, there are substantial deferred investment gains yet to be recognized. These deferred investment gains will be available to offset future investment shortfalls, or to further improve the funded status of the System as they are recognized in the future. In addition, the amortization piece of the City Contribution Rate is now a significant credit resulting in a total rate several percent of pay less than the corridor midpoint.

The System's funded status increased from 59.2% to 62.8%.

The calculated City Contribution Rate is less than the normal cost and less than the Corridor Midpoint. However, because the System is less than 90% funded the City Contribution Rate is set equal to the Corridor Midpoint determined by the Initial RSVS at 8.44% of pay.

There was a small actuarial liability experience loss mostly due to a higher than assumed cost of living adjustment (to be paid in 2022). However, there was a large actuarial gain on assets. Combined, these resulted in a liability gain layer being established for fiscal year end 2021. The liability gain layer from this year's valuation in combination with the prior liability gain/loss layers from the prior years' valuations, produce a net annual amortization credit of 2.28%.

Given the plan's contribution policy, if all actuarial assumptions are met (including the assumption of the plan earning 7.00% on the actuarial valuation of assets), it is expected that:

a. The employer normal cost as a percentage of pay will remain relatively level over time (upward drift will likely occur due to generational mortality),

b. The funded ratio will increase slowly,

c. The UAAL will grow in nominal dollars until the amortization period on the Legacy Liability is reduced to approximately 20 years, at which point the UAAL will begin to decrease and be expected to be fully amortized by the July 1, 2048 valuation, or 27 years from the current July 1, 2021 valuation date.

It should be noted that the investment gain from fiscal year 2021 has only partially been recognized. The gain completely offset the $193 million in deferred shortfalls from the 2020 valuation and we are still deferring $544 million in deferred investment gains. If these deferred gains are not offset with future shortfalls, then it is likely that in the near future new liability layers will be gain layers.

Section III

Supporting Exhibits

Table 1
Summary of Cost Items

	Valuation as of July 1, 2021		Valuation as of July 1, 2020	
	Cost Item	Cost as % of Pay	Cost Item	Cost as % of Pay
	(3)	(4)	(1)	(2)
1. Participants				
a. Actives	11,579		11,594	
b. Retirees	9,184		9,070	
c. Disabled retirees	251		280	
d. Beneficiaries	2,046		2,023	
e. Inactive, deferred vested	3,789		3,661	
f. Inactive, nonvested	3,837		3,398	
g. Total	30,686		30,026	
2. Covered payroll	$ 669,217		$ 657,876	
3. Averages for active members				
a. Average age	48.0		47.9	
b. Average years of service	11.4		11.3	
c. Average pay ($)	$ 57,796		$ 56,743	
4. Present value of future pay	$ 5,241,880		$ 4,765,456	
5. Employer normal cost rate	8.19%		8.44%	
6. Present value of future benefits	$ 5,869,344	877.0%	$ 5,742,083	872.8%
7. Present value of future normal costs	$ 579,411	86.6%	$ 545,736	83.0%
8. Actuarial accrued liability (6 - 7)	$ 5,289,933	90.5%	$ 5,196,347	789.9%
9. Present actuarial assets	$ 3,322,651	496.5%	$ 3,074,339	467.3%
10. Unfunded actuarial accrued liability (UAAL) (8 - 9)	$ 1,967,283	294.0%	$ 2,122,008	322.6%
11. Calculated City Contribution Rate				
a. Employer normal cost	8.19%		8.44%	
b. Amortization charge[1]	-2.28%		-0.55%	
c. Total	5.91%		7.89%	
12. City Contribution Rate[2]	8.44%		8.41%	
13. Average estimated return				
a. Based on market value	38.31%		-3.76%	
b. Based on actuarial value	11.50%		5.38%	
14. Funded ratio (9 ÷ 8)	62.8%		59.2%	
15. Legacy Liability payment for fiscal year beginning one year after valuation date	$ 142,049		$ 138,247	

Note: Dollar amounts in $000

1 This is the layered amortization payment excluding the Legacy Liability payment

2 This is the payment to be made for the fiscal year beginning one year after the valuation date.

Table 2
Calculation of Annual Required Contribution Rate

		July 1, 2021 (2)	July 1, 2020 (1)
1.	Annualized salaries on valuation date	$ 669,217	$ 657,876
2.	Projected payroll for upcoming fiscal year[1]	$ 660,597	$ 642,245
3.	Present value of future pay	$ 5,241,880	$ 4,765,456
4.	Employer normal cost rate	8.19%	8.44%
5.	Actuarial accrued liability for active members		
	a. Present value of future benefits for active members	$ 2,568,073	$ 2,520,961
	b. Less: present value of future normal costs	(498,056)	(461,396)
	c. Less: present value of additional employee contributions[2]	(81,355)	(84,340)
	d. Actuarial accrued liability	$ 1,988,662	$ 1,975,225
6.	Total actuarial accrued liability for:		
	a. Retirees and beneficiaries	$ 3,090,214	$ 3,035,094
	b. Inactive participants	211,057	$ 186,028
	c. Active members (Item 5d)	1,988,662	$ 1,975,225
	d. Total	$ 5,289,933	$ 5,196,347
7.	Actuarial value of assets	$ 3,322,651	$ 3,074,339
8.	Unfunded actuarial accrued liability (UAAL) (Item 6d - Item 7)	$ 1,967,283	$ 2,122,008

Note: Dollar amounts in $000

1 The projected payroll is the actual pay received for the just completed fiscal year (including pay for any member who received pay during the year: i.e. active, terminated, retired, etc.). This pay is then increased by the payroll growth rate.

2 Additional employee contributions in excess of the 3.00% employee rate used to determine the normal cost.

Table 3
Actuarial Present Value of Future Benefits

		July 1, 2021 (2)	July 1, 2020 (1)
1.	Active members		
	a. Retirement benefits	$ 2,378,253	$ 2,285,447
	b. Deferred termination benefits	118,265	128,827
	c. Refunds	9,867	14,917
	d. Death benefits	50,921	81,314
	e. Disability benefits	10,767	10,456
	f. Total	$ 2,568,073	$ 2,520,961
2.	Members in Pay Status		
	a. Service retirements	$ 2,754,778	$ 2,707,714
	b. Disability retirements	29,120	31,639
	c. Beneficiaries	306,316	295,741
	d. Total	$ 3,090,214	$ 3,035,094
3.	Inactive members		
	a. Vested terminations	$ 204,873	$ 181,228
	b. Nonvested terminations	6,184	4,800
	c. Total	$ 211,057	$ 186,028
4.	Total actuarial present value of future benefits	$ 5,869,344	$ 5,742,083

Note: Dollar amounts in $000

Table 4
Analysis of Normal Cost

		July 1, 2021	July 1, 2020
		(2)	(1)
1.	Gross normal cost rate		
	a. Retirement benefits	7.76%	7.65%
	b. Deferred termination benefits	1.28%	1.41%
	c. Refunds	0.48%	0.57%
	d. Disability benefits	0.12%	0.13%
	e. Death benefits	0.30%	0.43%
	f. Administrative expenses	1.25%	1.25%
	g. Total	11.19%	11.44%
2.	Employee Contribution rate[1]	3.00%	3.00%
3.	Employer Normal Cost (including Administrative Expenses)	8.19%	8.44%

1 Normal cost is determined using Ultimate Entry Age method. Therefore, Employee Contribution rate is the rate for a Group D new hire.

Table 5
Calculation of Total Actuarial Gain or Loss

1.	Unfunded actuarial accrued liability (UAAL) as of July 1, 2020	$	2,122,008
2.	Total normal cost and administrative expense for year	$	82,660
3.	Employer and Employee Contributions during year ending June 30, 2020	$	(218,087)
4.	Interest on UAAL for one year	$	148,541
5.	Interest on Item 2 and Item 3 for one-half year	$	(4,660)
6.	Expected UAAL as of July 1, 2021 (1+2+3+4+5)	$	2,130,462
7.	Actual UAAL as of July 1, 2010	$	1,967,283
8.	Actuarial gain/(loss) for the period (6 - 7)	$	163,179
	SOURCE OF GAINS/(LOSSES)		
9.	Asset gain/(loss) (See Table 10)	$	136,109
10.	Plan changes		0
11.	Assumption changes		37,201
12.	Method change		0
13.	Next Year's COLA different than assumed		(18,252)
14.	Liability experience gain/(loss) for the period		8,121
15.	Actuarial gain/(loss) for the period	$	163,179

Note: Dollar amounts in $000

Table 6
Change in Calculated Contribution Rate Since the Prior Valuation

1.	Calculated City Contribution Rate as of July 1, 2020		7.89%
2.	Change in Contribution Rate During Year		
a.	Change in Employer Normal Cost (excluding assumption change)	(0.01%)	
b.	Recognition of prior years' asset losses	0.49%	
c.	Actuarial gain from current year asset performance	(1.87%)	
d.	Actuarial loss from COLA	0.19%	
e.	Actuarial gain from liability sources	(0.22%)	
f.	Effect of projected payroll growing faster than expected	0.07%	
g.	Change in Actuarial Assumptions and Methods	(0.59%)	
h.	Impact of Contributing at Corridor Midpoint	(0.04%)	
i.	Total Change		(1.98%)
	Calculated City Contribution Rate as of July 1, 2021		5.91%

Table 7
Near Term Outlook

3,688,394	Unfunded Actuarial Accrued Liability (UAAL, in 000s)	Funded Ratio	Calculated City Contribution Rate[1]	Corridor Midpoint[1]	Actuarial Value of Fund (in 000s)	For Fiscal Year Ending June 30,	Estimated Payroll	Employer Contributions	Employee Contributions	Benefit Payments[2]	Net External Cash Flow
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
2021	$ 1,967,283	62.8%	5.91%	8.41%	$ 3,322,650	2022	$ 660,597	$ 193,819	$ 32,270	$ 338,817	$ (125,180)
2022	1,960,500	63.6%	5.74%	8.44%	3,425,749	2023	678,764	199,353	31,923	365,202	(145,487)
2023	1,949,058	64.3%	5.63%	8.48%	3,515,058	2024	697,430	200,697	31,650	390,169	(168,550)
2024	1,937,187	64.9%	5.52%	8.51%	3,586,763	2025	716,609	206,430	31,414	414,695	(186,767)
2025	1,920,398	65.5%	5.40%	8.54%	3,644,644	2026	736,316	212,401	31,221	438,834	(204,344)
2026	1,898,169	66.0%	5.27%	8.57%	3,688,394	2027	756,565	218,468	31,077	462,764	(221,599)
2027	1,870,075	66.5%	5.12%	8.59%	3,717,358	2028	777,370	224,709	30,981	486,355	(238,325)
2028	1,835,583	67.0%	4.97%	8.61%	3,731,048	2029	798,748	231,125	30,936	509,456	(254,368)
2029	1,794,117	67.5%	4.80%	8.63%	3,729,101	2030	820,713	237,643	30,947	447,134	(184,870)
2030	1,745,133	68.5%	4.61%	8.65%	3,798,907	2031	843,283	244,344	31,011	454,612	(184,969)
2031	1,687,965	69.6%	4.41%	8.67%	3,873,497	2032	866,473	251,234	31,128	459,582	(182,354)

These projections are based on the HMEPS statute as amended by SB 2190 of the 2017 Legislature..

1 Actual City Contribution Rate will be set to Corridor Midpoint if Fund is less than 90% funded. Contribution rate goes into effect 12 months after the valuation date

2 Includes refunds taken by terminating members and plan administrative expenses

Note: Dollar amounts in $000. Projections assume all actuarial assumptions are met, including actual investment returns are 7.0% annually projected from the smoothed (actuarial) value of assets.

Table 8
Statement of Plan Net Assets

	July 1, 2021 (1)	July 1, 2020 (2)
A. ASSETS		
1. Current Assets		
a. Cash and short term investments		
1) Cash on hand	$ 11,653	$ 4,746
b. Accounts Receivable		
1) Sale of investments	1,574	5,533
2) Other	18,104	18,883
c. Total Current Assets	$ 31,331	$ 29,162
2. Investments at Fair Value		
a. Short-term investment funds	$ 125,347	$ 34,311
b. Global Equity	1,185,060	889,970
c. Fixed Income	298,808	315,963
d. Absolute Return	144,475	132,552
e. Inflation Linked	495,944	322,383
f. Private Credit	97,344	79,673
g. Private Equity	1,110,220	762,431
h. Real Estate	383,623	322,866
i. Total Investments	$ 3,840,822	$ 2,860,150
3. Other Assets		
a. Collateral on securities lending	$ 24,039	$ 13,246
b. Net OPEB Asset	$ 6,035	$ 2,257
c. Furniture, fixtures and equipment, net	312	307
d. Total other assets	$ 30,385	$ 15,810
4. Total Assets	$ 3,902,538	$ 2,905,122
5. Deferred outflow of resources	$ 59	$ 227
B. LIABILITIES		
1. Current Liabilities		
a. Amounts due on asset purchases	$ 4,528	$ 5,105
b. Accrued liabilities	3,902	3,176
c. Collateral on securities lending	24,039	13,246
2. Total Liabilities	32,469	21,526
3. Deferred inflows of resources	3,041	2,035
Net Assets Held in Trust	$ 3,867,087	$ 2,881,788
C. TARGET ASSET ALLOCATION FOR CASH & LONG TERM INVESTMENTS		
1. Cash	0.0%	0.0%
2. Fixed Income	10.0%	15.0%
3. Private Credit	5.0%	0.0%
4. Real Estate	12.5%	12.5%
5. Private Equity	17.0%	17.0%
6. Global Equity	32.5%	32.5%
7. Inflation-Linked Asset Class	15.%	15.%
8. Absolute Return	8.0%	8.0%
9. Total	100.0%	100.0%

Note: Dollar amounts in $000

Columns may not add due to rounding

Table 9
Reconciliation of Plan Net Assets

			Year Ending	
			June 30, 2021	June 30, 2020
			(2)	(1)
1.	Market value of assets at beginning of year		$ 2,881,788	$ 3,100,999
	a.	Prior year adjustment	0	0
	b.	Restated Market value	$ 2,881,788	$ 3,100,999
2.	Revenue for the year			
	a.	Contributions		
		i. Member contributions	$ 33,325	$ 32,582
		ii. Employer contributions	184,762	176,430
		iii. Total	$ 218,087	$ 209,012
	b.	Net investment income		
		i. Interest	$ 13,104	$ 14,831
		ii. Dividends	23,417	26,416
		iii. Earnings from LP's and real estate trusts	27,941	238
		iv. Net appreciation (depreciation) on investments	1,028,222	(148,411)
		v. Net proceeds from lending securities	93	171
		vi. Less investment expenses	(8,390)	(8,410)
		vii. Other	487	484
	c.	Total revenue	$ 1,302,961	$ 94,331
3.	Expenditures for the year			
	a.	Refunds	$ 407	$ 650
	b.	Benefit payments	314,145	308,002
	c.	Administrative and miscellaneous expenses	3,110	4,890
	d.	Total expenditures	$ 317,662	$ 313,542
4.	Increase in net assets (Item 2c - Item 3d)		$ 985,299	$ (219,211)
5.	Market value of assets at end of year (Item 1 + Item 4)		$ 3,867,087	$ 2,881,788

Note: Dollar amounts in $000

Columns may not add due to rounding

Table 10
Development of Actuarial Value of Assets

		July 1, 2021
1.	Actuarial value of assets at beginning of year	$ 3,074,339
2.	Net new investments	
	a. Contributions [1]	$ 218,087
	b. Benefits and refunds paid	(314,552)
	c. Administrative Expenses	(3,110)
	d. Subtotal	(99,575)
3.	Assumed investment return rate for fiscal year	7.00%
4.	Assumed investment income for fiscal year	$ 211,778
5.	Expected actuarial value at end of year (1+ 2 + 4)	$ 3,186,542
6.	Market value of assets at end of year	$ 3,867,087
7.	Difference (6 - 5)	$ 680,545

8. Development of amounts to be recognized as of July 1, 2021:

Fiscal Year End	Remaining Deferrals of Excess (Shortfall) of Investment Income	Offsetting of Gains/(Losses)	Net Deferrals Remaining	Years Remaining	Recognized for this valuation	Remaining after this valuation
	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)
2017	$ 0	$ 0	$ 0	1	$ 0	$ 0
2018	0	0	0	3	0	0
2019	0	0	0	4	0	0
2020	(192,551)	192,551	0	5	0	0
2020	(873,096)	(192,551)	680,545	5	136,109	544,436
Total	$ 680,545)	$ 0	$ 680,545		$ 136,109	544,436

9.	Final actuarial value of plan net assets, end of year (Item 6 - Item 8 Column 6)	$ 3,322,651
10.	Asset gain (loss) for year (Item 9 - Item 5)	$ 136,109
11.	Asset gain (loss) as % of actual actuarial assets	4.10%
12.	Ratio of actuarial value to market value	85.9%

Notes: Remaining deferrals in Column (1) for prior years are from last year's report column (6) of Table 10. The number in the current year is the difference between the remaining deferrals for prior years and the total Excess/(Shortfall) return shown in Item 7. Column 2 is a direct offset of the current year's excess/(shortfall) return against prior years' excess/(shortfall) of the opposite type.

Table 11
Estimation of Investment Return Yield (Net of Expenses)

Item	July 1, 2021	July 1, 2020
(1)	(3)	(2)
A. Market value yield		
1. Beginning of year net market assets	$ 2,881,788	$ 3,100,999
2. Net Investment income (net of investment expenses)	1,084,874	(114,681)
3. End of year market assets	3,867,087	2,881,788
4. Estimated market value yield	38.31%	-3.76%
B. Actuarial value yield		
1. Beginning of year actuarial assets	$ 3,074,339	$ 3,019,255
2. Net Investment income (net of investment expenses)	347,887	159,614
3. End of year actuarial assets	3,322,651	3,074,339
4. Estimated actuarial value yield	11.50%	5.38%

Note: Dollar amounts in $000

Table 12
History of Investment Returns

For Fiscal Year Ending	Market Value	Actuarial Value
(1)	(2)	(3)
June 30, 2008	(0.25%)	8.97%
June 30, 2009	(20.14%)	2.60%
June 30, 2010	11.21%	3.54%
June 30, 2011	21.56%	6.27%
June 30, 2012	(0.89%)	4.46%
June 30, 2013	13.02%	5.39%
June 30, 2014	16.04%	7.95%
June 30, 2015	2.78%	6.82%
June 30, 2016	1.21%	(3.81%)
June 30, 2017	12.41%	8.08%
June 30, 2018	8.68%	8.30%
June 30, 2019	6.83%	8.26%
June 30, 2020	(3.76)%	5.38%
June 30, 2021	38.31%	11.50%
Average Compound Return - last 5 years	11.68%	8.29
Average Compound Return - last 10 years	8.91%	6.16%

Note: Investment returns are estimations made by the actuary. Prior to June 30, 2016 these are dollar-weighted returns net of administrative and investment expenses. Beginning with June 30, 2016 the returns are net of investment expenses only.

Table 13
Historical Solvency Test

	Aggregated Accrued Liabilities for				Portions of Accrued Liabilities Covered by Reported Assets		
Valuation Date	Active Members Contributions	Retirees Beneficiaries and Vested Terminations[1]	Members (City Financed Portion)	Actuarial Value of Assets	(5)/(2)	[(5)-(2)]/(3)	[(5)-(2)-(3)]/(4)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
July 1, 2002	$ 35,888	$ 893,568	$ 1,585,733	$ 1,519,717	100.0%	100.0%	37%
July 1, 2003	44,388	1,115,801	2,118,063	1,510,264	100.0%	100.0%	17%
July 1, 2004	62,062	1,355,157	1,216,599	1,501,235	100.0%	100.0%	7%
July 1, 2005	48,150	1,577,345	1,099,777	1,777,656	100.0%	100.0%	14%
July 1, 2006	58,043	1,729,863	1,106,389	1,867,293	100.0%	100.0%	7%
July 1, 2007	69,544	1,824,992	1,234,178	2,193,745	100.0%	100.0%	24%
July 1, 2008	81,182	1,904,333	1,310,855	2,310,384	100.0%	100.0%	25%
July 1, 2009	95,268	1,974,714	1,381,428	2,284,442	100.0%	100.0%	16%
July 1, 2010	107,421	2,058,813	1,466,236	2,273,142	100.0%	100.0%	7%
July 1, 2011	118,202	2,154,959	1,517,167	2,328,804	100.0%	100.0%	4%
July 1, 2012	124,848	2,312,548	1,529,468	2,344,128	100.0%	96.0%	0%
July 1, 2013	132,238	2,431,950	1,565,395	2,382,585	100.0%	92.5%	0%
July 1, 2014	139,203	2,538,225	1,611,151	2,490,521	100.0%	92.6%	0%
July 1, 2015	143,097	2,832,860	1,789,762	2,582,510	100.0%	86.1%	0%
July 1, 2016	146,407	2,894,489	1,694,103	2,625,896[2]	100.0%	85.7%	0%
July 1, 2017	149,190	2,993,101	1,723,740	2,742,539	100.0%	86.6%	0%
July 1, 2018	162,180	3,093,196	1,726,632	2,874,585	100.0%	87.7%	0%
July 1, 2019	176,988	3,159,103	1,755,054	3,019,255	100.0%	90.0%	0%
July 1, 2020	191,620	3,221,122	1,783,605	3,074,339	100.0%	89.5%	0%
July 1, 2021	203,932	3,301,271	1,784,730	3,322,651	100.0%	94.5%	0%

Note: Dollar amounts in $000

1 Column (3) included AAL for DROP participants until 2003, thereafter in Column (4)
2 Actuarial value of assets includes $250 million in future pension obligation bond proceeds as a receivable.

Table 14
Schedule of Funding Progress

Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)	Annualized Salaries	UAAL as % of Salaries (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
July 1, 2002	$ 1,519,717	$ 2,515,189	$ 995,472	60.4%	$ 399,794	249.0%
July 1, 2003	1,510,264	3,278,251	1,767,987	46.1%	390,314	453.0%
July 1, 2004	1,501,235	2,633,817	1,132,582	57.0%	366,190	309.3%
July 1, 2005	1,777,656	2,725,272	947,616	65.2%	404,565	234.2%
July 1, 2006	1,867,293	2,894,295	1,027,002	64.5%	422,496	243.1%
July 1, 2007	2,193,745	3,128,713	934,968	70.1%	448,925	208.3%
July 1, 2008	2,310,384	3,296,370	985,986	70.1%	483,815	203.8%
July 1, 2009	2,284,442	3,451,410	1,166,968	66.2%	539,023	216.5%
July 1, 2010	2,273,142	3,632,470	1,359,328	62.6%	550,709	246.8%
July 1, 2011	2,328,804	3,790,328	1,461,524	61.4%	544,665	268.3%
July 1, 2012	2,344,128	3,966,864	1,622,736	59.1%	534,394	303.7%
July 1, 2013	2,382,585	4,129,583	1,746,998	57.7%	549,971	317.7%
July 1, 2014	2,490,521	4,288,579	1,798,058	58.1%	568,992	316.0%
July 1, 2015	2,582,510	4,765,719	2,183,209	54.2%	584,025	373.8%
July 1, 2016	2,625,896	4,734,999	2,109,103	55.5%	608,210	346.8%
July 1, 2017	2,742,539	4,866,031	2,123,492	56.4%	623,577	340.5%
July 1, 2018	2,874,585	4,982,008	2,107,424	57.7%	624,266	337.6%
July 1, 2019	3,019,255	5,091,145	2,071,890	59.3%	636,463	325.5%
July 1, 2020	3,074,339	5,196,347	2,122,008	59.2%	657,876	322.6%
July 1, 2021	3,322,651	5,289,933	1,967,283	62.8%	669,217	294.0%

Note: Dollar amounts in $000

Table 15
Historical Active Participant Data

Valuation Date	Active Count	Average Age	Average Svc	Annualized Salaries	Average Salary	Percent Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1994	14,027	40.9	N/A	$366,561	$26,133	0.7%
1995	14,364	41.3	N/A	$378,511	$26,351	0.8%
1996	14,067	41.8	N/A	$367,610	$26,133	(0.8%)
1998[1]	13,764	42.8	9.8	$394,919	$28,692	9.8%
1999[1]	13,286	42.9	9.8	$396,617	$29,852	4.0%
2000[1]	13,126	43.7	10.3	$421,591	$32,119	7.6%
2001[1]	12,928	43.9	10.3	$413,021	$31,948	(0.5%)
2002	12,527	44.7	11	$399,794	$31,915	(0.1%)
2003	12,120	45.2	11.2	$390,314	$32,204	0.9%
2004	11,856	45.1	10.3	$366,190	$30,886	(4.1%)
2005[2]	11,974	44.8	9.6	$404,565	$33,787	9.4%
2006	12,145	44.84	9.3	$422,496	$34,788	3.0%
2007	12,376	45.2	9.3	$448,925	$36,274	4.3%
2008	12,653	45.2	9.3	$483,815	$38,237	5.4%
2009	13,333	45.1	9.2	$539,023	$40,428	5.7%
2010	12,913	45.8	10.0	$550,709	$42,648	5.5%
2011	12,345	46.5	10.6	$544,665	$44,120	3.5%
2012	11,670	46.8	11.1	$534,394	$45,792	3.8%
2013	11,781	46.9	11.1	$549,971	$46,683	1.9%
2014	11,949	46.9	11.1	$568,992	$47,618	2.0%
2015	11,827	47.1	11.2	$584,025	$49,381	3.7%
2016	12,103	47.1	11.1	$608,210	$50,253	1.8%
2017	12,066	47.3	11.1	$623,577	$51,681	2.8%
2018	11,880	47.5	11.3	$624,266	$52,548	1.7%
2019	11,507	47.9	11.5	$ 636,463	$ 55,311	5.3%
2020	11,594	47.9	11.3	$657,876	$56,743	2.6%
2021	11,579	48.0	11.4	$669,217	$56,796	1.9%

Note: Dollar amounts in $000

1 Excludes DROP participants

2 Beginning with the 2005 valuation, a change in methodology now annualizes payroll for new entrants. If the methodology had not been changed, the covered payroll for 2005 would have been $376,208,345 and the average payroll would have been $31,419.

Table 16
Retirees, Beneficiaries, and Disabled Participants Added to and Removed from Rolls

	Added to Rolls		Removed from Rolls		Rolls-End of Year			
Valuation July 1,	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	% Increase in Annual Allowances	Average Annual Allowances
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2002	777	$ 15,061	306	$ 2,476	5,928	$ 72,256	24.8%	$ 12,189
2003	598	11,497	311	1,873	6,215	84,519	17.0%	13,599
2004	942	25,189	279	2,624	6,878	107,084	26.7%	15,569
2005	861	18,054	216	1,926	7,523	123,212	15.1%	16,378
2006	654	14,722	397	2,246	7,780	135,688	10.1%	17,441
2007	440	10,280	249	3,007	7,971	142,961	5.4%	17,935
2008	464	11,052	280	3,420	8,155	150,592	5.3%	18,466
2009	474	11,430	289	3,667	8,340	158,356	5.2%	18,988
2010	476	12,040	290	3,938	8,526	166,458	5.1%	19,524
2011	502	13,202	311	4,451	8,717	175,210	5.3%	20,100
2012	654	16,299	293	3,993	9,078	187,515	7.0%	20,656
2013	695	15,566	346	5,051	9,427	198,030	5.6%	21,007
2014	619	15,370	361	5,717	9,685	207,683	4.9%	21,444
2015	771	17,334	433	5,534	10,023	219,484	5.7%	21,898
2016	590	17,295	324	5,842	10,289	230,937	5.2%	22,445
2017	659	19,402	347	6,285	10,601	244,054	5.7%	23,022
2018	607	19,691	374	9,929	10,834	253,816	4.0%	23,428
2019	634	15,297	358	6,815	11,110	262,297	3.3%	23,609
2020	579	13,011	337	6,455	11,352*	268,854	2.5%	23,683
2021	588	13,569	478	9,035	11,462	273,387	1.7%	23,852

Note: Dollar amounts in $000

* Count excludes deceased participants whose beneficiaries are still entitled to a DROP account payment.

Table 17
Membership Data

		July 1, 2021 (1)	July 1, 2020 (2)	July 1, 2019 (3)
1.	Active members			
a.	Number	11,594	11,594	11,507
b.	Number vested	7,700	7,605	7,590
c.	Annualized salaries	$ 669,217,000	$ 657,876,000	$ 636,463,000
d.	Average salary	56,796	56,743	55,311
e.	Average age	48.0	47.9	47.9
f.	Average service	11.4	11.3	11.5
2.	Inactive participants			
a.	Vested	3,789	3,661	3,609
b.	Total annual benefits (deferred)	$ 27,690,996	$ 24,431,701	$ 23,282,032
c.	Average annual benefit	7,308	6,674	6,451
d.	Nonvested	3,837	3,398	3,043
3.	Service retirees			
a.	Number	9,184	9,070	8,853
b.	Total annual benefits	$ 235,185,322	$ 231,668,750	$ 225,931,390
c.	Average annual benefit	25,608	25,542	25,520
d.	Average age	69.2	70.6	70.2
4.	Disabled retirees			
a.	Number	251	280	289
b.	Total annual benefits	$ 3,007,163	$ 3,259,056	$ 3,322,286
c.	Average annual benefit	11,981	11,639	11,496
d.	Average age	69.2	68.8	68.6
5.	Beneficiaries and spouses			
a.	Number	2,046	2,023	1,968
b.	Total annual benefits	$ 35,194,722	$ 33,925,711	$ 33,043,788
c.	Average annual benefit	17,363**	16,946**	16,791
d.	Average age	71.5	71.1	70.6

** Average benefits adjusted for beneficiaries only entitled to DROP balance.

Table 18
Distribution of All Active Members by Age and by Years of Service

Attained Age	0 No. & Avg. Comp.	1 No. & Avg. Comp.	2 No. & Avg. Comp.	3 No. & Avg. Comp.	4 No. & Avg. Comp.	5-9 No. & Avg. Comp.	10-14 No. & Avg. Comp.	15-19 No. & Avg. Comp.	20-24 No. & Avg. Comp.	25-29 No. & Avg. Comp.	30-34 No. & Avg. Comp.	35 & Over No. & Avg. Comp.	Total No. & Avg. Comp.
Under 25	84 $36,382	39 $35,586	28 $33,840	12 $37,267	4 $44,117	1							168 $36,148
25-29	188 $44,738	171 $44,138	98 $43,879	58 $45,092	57 $42,558	84 $43,209	2 *						658 $44,130
30-34	189 $48,970	147 $47,242	109 $50,204	100 $50,092	94 $47,537	353 $49,650	56 $49,638	5 $68,320					1,053 $49,191
35-39	143 $53,296	157 $54,025	110 $53,208	98 $54,532	84 $56,578	383 $55,231	225 $56,482	86 $53,209	1 *				1,287 $54,839
40-44	137 $57,347	118 $56,641	93 54,650	90 59,143	88 $54,102	320 $61,267	268 $62,557	208 $64,862	59 $60,655	2 *			1,383 $60,225
45-49	125 $54,786	94 $52,189	74 $59,483	51 $49,639	66 $62,775	308 $59,935	230 $62,968	206 $64,126	153 $57,964	67 $61,254	2 *		1,376 $59,681
50-54	101 $58,673	81 $53,331	83 $54,350	57 $56,536	74 $58,202	265 58,096	259 $61,757	267 $64,426	214 $59,168	206 $60,909	77 $61,580		1,684 $59,866
55-59	68 $56,805	59 53,331	65 $53,224	50 $56,224	56 $52,856	273 $58,434	275 $60,655	280 $62,221	230 $58,441	203 $64,098	165 $63,736	63 $60,192	1,787 $59,908
60-64	48 $64,130	42 $56,386	30 $54,327	46 $64,636	42 $63,678	246 $61,679	207 $60,539	206 $59,076	150 $59,968	173 $65,168	109 $66,831	78 $68,323	1,377 $62,078
65 & Over	14 $74,211	10 $48,117	8 $68,531	17 $62,136	22 $62,209	125 $60,255	150 $66,580	159 $67,672	86 $61,992	95 $63,317	72 $71,487	48 $77,119	806 $65,716
Total	1,097 $51,918	918 $50,384	698 $51,870	579 $54,117	587 $54,578	2,358 $57,034	1,672 $61,027	1,417 $62,930	893 $59,311	746 $63,133	425 $65,540	189 $67,847	11,579 57,796

Average:	Age:	47.97	Number of participants:	Fully vested: 7,700	Males:	6,360
	Service:	11.42		Not Vested: 3,989	Females:	5,219

* Detailed pay data is not shown if there are 3 or fewer members, but the pay is included in the Total column.

Appendix A

Summary of Actuarial Assumptions and Methods

APPENDIX A

Summary of Actuarial Assumptions and Methods

The following methods and assumptions were used in preparing the July 1, 2020, actuarial valuation.

1. Valuation Date

   The valuation date is July 1st of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

2. Actuarial Cost Method (Prescribed Method under Actuarial Standards of Practice)

   The actuarial valuation uses the Entry Age Normal actuarial cost method. Under this method, the employer contribution rate is the sum of (i) the employer normal cost rate, and (ii) a rate that will amortize the unfunded actuarial accrued liability.

   a. The valuation is prepared on the projected benefit basis, under which the present value, at the investment return rate assumed to be earned in the future (7.0 percent), of each participant's expected benefit payable at retirement or death is determined, based on his/her age, service, sex and compensation. The calculations take into account the probability of a participant's death or termination of employment prior to becoming eligible for a benefit, as well as the possibility of his/her terminating with a service, disability, or survivor's benefit. Future salary increases are also anticipated. The present value of the expected benefits payable on account of the active participants is added to the present value of the expected future payments to retired participants and beneficiaries to obtain the present value of all expected benefits payable from the Plan on account of the present group of participants and beneficiaries.

   b. The employer contributions required to support the benefits of the Plan are determined using a level funding approach, and consist of a normal cost contribution and an accrued liability contribution.

   c. The normal contribution is determined using the "entry age normal" method. Under this cost method, a calculation is made to determine the average uniform and constant percentage rate of employer contribution which, if applied to the compensation of each participant during the entire period of his/her anticipated covered service, would be required to meet the cost of all benefits payable on his behalf based on the benefits provisions for new employees hired on or after the valuation date.

   d. The actuarial accrued liability (AAL) for each member is the difference between their present value of future benefits (PVFB), based on the tier of benefits that apply to the member, and their present value of future normal costs determined using the normal cost rate described in item c above. For inactive and retired members their AAL is equal to their PVFB.

e. The Legacy Liability payments were established in the Initial RSVS valuation. Each subsequent valuation a liability (gain)/loss layer is established that is the difference between the sum of (i) the remaining Legacy Liability and (ii) the remaining liability (gain)/loss layers, and the unfunded accrued liability. The amortization payment for each liability (gain)/loss layer is determined by amortizing the layer over 30 years with the first payment made one year after the valuation in which the layer was established.

The contribution rate determined by this valuation will not be effective until one year later and the determination of the rate reflects this deferral. It is assumed that there will be no change in the employer normal cost rate due to the deferral, and it is assumed that payments are made uniformly throughout the year.

3. Actuarial Value of Assets

The actuarial value of assets is equal to the market value of assets less a five-year phase in of the excess (shortfall) between expected investment return and actual income. The actual calculation is based on the difference between actual market value and the expected actuarial value of assets each year, and recognizes the cumulative excess return (or shortfall) at a minimum rate of 20% per year. Each year a base is set up to reflect this difference. If the current year's base is of opposite sign to the deferred bases then it is offset dollar for dollar against the deferred bases. Any remaining bases are then recognized over the remaining period for the base (5 less the number of years between the base year and the valuation year). This is intended to ensure the smoothed value of assets will converge towards the market value in a reasonable amount of time.

Expected earnings are determined using the assumed investment return rate and the beginning of year actuarial value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of investment expenses.

The actuarial value of assets was marked to market value as of July 1, 2016 by recognizing all deferred investment shortfalls on that date. The method described above begin again with the 2017 valuation.

4. Economic Assumptions

a. Investment return: 7.00% per year, compounded annually, composed of an assumed 2.25% inflation rate and a 4.75% net real rate of return. This rate represents the assumed return, net of all investment expenses.

b. Salary increase rate: A 2.25% inflation component, plus a 0.75% general increase, plus a service-related component as follows:

Years of Service	Service-related Component	Total Annual Rate of Increase Including 2.25% Inflation Component and 0.75% General Increase Rate
(1)	(2)	(3)
1	2.25%	5.50%
2	2.25	5.50
3	2.75	6.00
4	2.25	5.50
5	1.75	4.75
6	1.50	4.50
7	1.25	4.25
8	1.00	4.00
9	0.75	3.75
10-24	0.50	3.50
25+	0.00	3.00

c. Payroll growth rate: In the amortization of the unfunded actuarial accrued liability, payroll is assumed to increase 2.75% per year. This increase rate is solely due to the effect of inflation on salaries, with no allowance for future membership growth.

The investment return assumption is established in statute at 7.0% and therefore is considered a prescribed assumption under the Actuarial Standards of Practice.

5. Demographic Assumptions

a. Retirement Rates

	Expected Retirements per 100 Lives		
	Group A & B Members	Group D Members	
Age	All	Service <20	Service <=20
(1)	(2)	(3)	(4)
45-51	5		
52	6		
53	7		
54	8		
55	9	1	1
56	10	2	2
57	11	3	3
58	12	4	4
59	13	5	5
60	14	6	6
61	15	7	7
62	16	16	26
63	17	17	17
64	18	18	18
65	19	19	19
66	20	20	20
67	21	21	21
68	22	22	22
69	23	23	23
70-74	24	24	24
75+	100	100	100

b. DROP Participation

100% of eligible members who reach eligibility for normal retirement prior to age 60 are assumed to enter DROP. 0% of eligible members who reach eligibility for normal retirement at or after age 60 are assumed to enter DROP.

c. DROP Entry Date

Those active members (not already in DROP) are assumed to enter DROP when first eligible. For members who have already entered DROP, the actual DROP entry date supplied in the data is used.

d. DROP Interest Credit

Interest is credited as 50% of the average five-year net investment return, with a minimum of 2.5% and a maximum of 7.5%. The credit rate is assumed to be 4.00% per year.

e. Mortality rate (active members)

Based on the Pub-2010, Amount-Weighted, Below-Median Income, General Employee Male and Female tables, with a 2-year set forward. The rate are projected on a fully generational basis by the long-term rates of scale MP 2020 to account for future mortality improvements. 90% of the rates are assumed to be for non-service related deaths and 10% for service related deaths

Mortality rates (retired members and beneficiaries):

Healthy Retirees and beneficiaries: Gender-distinct Pub-2010, Amount-Weighted, Below-Median Income, General, Healthy Retiree tables with a 2-year set forward. The rates are projected on a fully generational basis by the long-term rates of scale MP 2020 to account for future mortality improvements. Life Expectancies are shown in the table below:

Life Expectancy for an Age 65 Retiree in years

	2020	2025	2030	2035	2040
Male	18.4	18.8	19.3	19.7	20.1
Female	21.8	22.1	22.5	22.9	23.2

Disabled Retirees: Gender-distinct Pub-2010, Amount Weighted, Below-Median, Income, General, Healthy Retiree tables with a 7-year set forward. The rates are projected on a fully generational basis by the long-term rates of scale MP 2020 toa account for future mortality improvements. A minimum rate of 0.04 is applied to male and 0.03 to female.

f. Termination Rates and Disability Rates

Termination rates (for causes other than death, disability or retirement):

Termination rates are a function of the member’s age and service. Termination rates are not applied after a member becomes eligible for a retirement benefit. Rates at selected ages are shown below.

Probability of Decrement Due to Withdrawal - Male Members

Age	Years if Service										
	0	1	2	3	4	5	6	7	8	9	10
20	0.2528	0.2156	0.1864	0.1670	0.1513	0.1379	0.1160	0.0982	0.0828	0.0724	0.0675
30	0.2175	0.1642	0.1345	0.1204	0.1160	0.1141	0.1039	0.0859	0.0738	0.0675	0.0555
40	0.1925	0.1397	0.1080	0.0942	0.0911	0.0910	0.0823	0.0644	0.0511	0.0451	0.0375
50	0.1708	0.1270	0.0910	0.760	0.0716	0.0703	0.0622	0.0523	0.0426	0.0400	0.0253
60	0.1321	0.1140	0.0959	0.0821	0.0705	0.0619	0.0525	0.0394	0.0295	0.0269	0.0171

Probability of Decrement Due to Withdrawal - Female Members

Age	Years if Service										
	0	1	2	3	4	5	6	7	8	9	10
20	0.1903	0.2026	0.1911	0.1577	0.1170	0.0786	0.1036	0.1224	0.1373	0.1248	0.0441
30	0.1947	0.1743	0.1508	0.1252	0.1073	0.1030	0.1000	0.0885	0.0812	0.0857	0.0441
40	0.1892	0.1495	0.1260	0.1055	0.0928	0.0893	0.0810	0.0607	0.0459	0.0464	0.0318
50	0.1619	0.1297	0.1069	0.0874	0.0781	0.0704	0.0625	0.0473	0.0408	0.0288	0.0253
60	0.0960	0.0762	0.0603	0.0603	0.0645	0.0586	0.0479	0.0502	0.0446	0.0326	0.0223

Age	Rates of Decrement Due to Disability			
	Males	Females	Servic- related Male	Service-related Female
20	0.000004	0.000006	0.000000	0.000001
25	0.000009	0.000013	0.000001	0.000002
30	0.000073	0.000065	0.000005	0.000008
35	0.000318	0.000102	0.000022	0.000013
40	0.000650	0.000234	0.000045	0.000029
45	0.001259	0.000528	0.000087	0.000066
50	0.002195	0.001256	0.000151	0.000157
55	0.003171	0.002021	0.000219	0.000253
60	0.002436	0.002436	0.000289	0.000305

Rates of disability are reduced to zero once a member becomes eligible for retirement.

6. Other Assumptions

a. Projected payroll for contribution purposes: The aggregate projected payroll for the fiscal year following the valuation date is calculated by increasing the actual payroll paid during the previous fiscal year to all members (actives, terminated and retired) by the payroll growth rate.

b. Percent married: 70% of employees are assumed to be married. (No beneficiaries other than the spouse assumed). The 70% assumption is intended to provide sufficient margin to cover the costs of any surviving children benefits.

c. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.

d. Percent electing annuity on death (when eligible): All of the spouses of vested, married participants are assumed to elect an annuity.

e. Percent electing deferred termination benefit: Vested terminating members are assumed to elect a refund or a deferred benefit, whichever is more valuable at the time of termination.

f. There will be no recoveries once disabled.

g. No surviving spouse will remarry.

h. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt at the first age at which unreduced benefits are available.

i. Administrative expenses: The administrative expenses of the plan are added into the employer contribution rate as a percentage of payroll at a rate of 1.25%.

j. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.

k. Decrement timing: Decrements of all types are assumed to occur mid-year.

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

m. Decrement relativity: Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

n. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

o. Benefit Service: All members are assumed to accrue 1 year of service each year. Fractional service is used to determine the amount of benefit payable.

p. Retiree DROP Balances Payout Duration: It is assumed that retirees will receive their DROP balances in equal installments over the eight years following retirement.

q. COLA is assumed to be 1.00% per year for almost all members effective 7/1/2017. Group D members who terminated prior to the effective date of the 2017 legislation are not eligible for a COLA.

7. Participant Data

Participant data was supplied on electronic files. There were separate files for (i) active members, (ii) inactive members, and (iii) members and beneficiaries receiving benefits.

The data for active members included birth date, sex, most recent hire date, salary paid during last fiscal year, hours worked by the employee, and employee contribution amounts. For retired members and beneficiaries, the data included date of birth, sex, amount of monthly benefit, and date of retirement. Also included was the member's Group and for members participating in DROP, their account balances and monthly DROP income.

Most healthy and disabled retirees are assumed to have an 80% joint and survivor form of payment (a small group of retirees is only eligible for a 50% joint and survivor annuity), prorated by the 70% marriage assumption and reflecting the 3 year spousal age differential. All non-children beneficiaries are assumed to have life only benefits and all children beneficiaries' annuities are assumed to stop at age 21.

Salary for the prior fiscal year as well as an annualized rate of pay is provided in the data. The annualized rate increased by one-year's salary increase is the rate of pay the member is assumed to earn in the upcoming fiscal year.

Except as noted below, assumptions were made to correct for missing, or inconsistent data. These had no material impact on the results presented.

We received salary information on City of Houston employees employed by HFC, HFF, and CCSI. Where we had additional information because of prior HMEPS service, we added the salary information and treated the records as active employees. For the records where we had no additional information, we assumed these records were Group D members and we grossed up the Group D liabilities and payroll to reflect these additions.

8. Group Transfers

We assume no current Group B members will transfer to Group A.

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Appendix B

Summary of Plan Provisions

APPENDIX B

Summary of Plan Provisions

The provisions summarized in this section apply to persons who are members (active employees). Former members may have been covered under different plan provisions, depending on their dates of separation from service.

1. Covered Members

   Any person who is a participant of Group A, under the original act.

   Persons who became employees of the City of Houston after September 1, 1981 and prior to September 1, 1999, and elected officials of the City of Houston who assumed office after September 1, 1981 and prior to September 1, 1999, participate in Group B, but may make an irrevocable election to participate in Group A instead.

   Persons who become employees of the City and persons who are elected as City officials after September 1, 1999 and prior to January 1, 2008 become members of Group A. Certain persons who were or became a Director of a City Department, Chief Administrative Officer, or Executive Director of HMEPS on or after September 1, 1999 and prior to January 1, 2005 participate in Group C. Effective January 1, 2005, all Group C participation ceased and all Group C participants became Group A participants. Accruals earned by Group C participants prior to January 1, 2005 are retained, but all future accruals are based on the Group A formulas.

   All future references to Group C participants in this appendix are intended to reflect this change in the Group C status.

   Covered employees newly hired on or after January 1, 2008 are members of Group D.

   A former employee who is rehired on or after January 1, 2008 is a member of the group in which such employee participated at the time of his/her immediately preceding separation from service.

2. Monthly Final Average Salary (FAS)

   The sum of the seventy-eight highest biweekly salaries paid to a member during his period of credited service, divided by thirty-six. Salary includes base pay, longevity pay, and any shift differential pay. If there are fewer than seventy-eight biweekly salaries, the FAS is determined by multiplying the average of all biweekly salaries paid to the member during the period of credited service by 26 and dividing the product by 12.

3. Credited Service

   All services and work performed by an employee, including prior service. For members of Group A and former Group C, all services and work performed after September 1, 1943 must have been accompanied by corresponding contributions to HMEPS by the employee or legally authorized repayments must have been made. The contribution requirement applies to all Group B and Group D members effective with the first full pay period on or after July 1, 2017.

Credited service for former participants in Group C means the number of years of eligible service after the executive official's effective date of participation in Group C. A former Group C member receives two times the number of actual years of credited service in Group C solely for the purpose of fulfilling the eligibility requirements in Group C.

If former Group D and pre-1997 Group B members who forfeited their previous non-contributory credited service are rehired they will regain a year of forfeited non-contributory credited service for each year of service earned upon reemployment.

4. <u>Normal Retirement</u>

a. Eligibility — For participants in Group A or Group B, or, a former Group C member who became a Group A member as of January 1, 2005, the earliest of:

(i) age 62 and 5 years of Credited Service

(ii) 5 years of Credited Service, and age plus years of Credited Service equal 70 or more, provided that, prior to January 1, 2005, the participant had at least five years of credited service and the combination of age and years of credited service was equal to or greater than 68.

(iii) 5 years of Credited Service, and age plus years of Credited Service equal 75 or more with minimum age 50.

For participants in Group D
Age 62 and 5 years of Credited Service

b. Benefit — <u>Prior to January 1, 2005:</u>

Group A: 3.25% of FAS for each of the first 10 years of Credited Service plus 3.50% of FAS for Credited Service greater than 10 years but less than 20 years plus 4.25% of FAS for each year of Credited Service greater than 20 years (excludes period of DROP participation). Maximum benefit is 90% of FAS for all future retirees.

Group B: 1.75% of FAS for each of the first 10 years of Credited Service plus 2.00% of FAS for Credited Service greater than 10 years but less than 20 years, plus 2.75% of FAS for each year of Credited Service greater than 20 years (excludes period of DROP participation). Maximum benefit is 90% of FAS for all future retirees.

Group C: Double the rate for Group A

<u>All accruals after January 1, 2005:</u>

All accruals under the prior multipliers were frozen as of January 1, 2005 and the following benefit multipliers apply to service on or after that date:

Group A: 2.50% of FAS for each of the first 20 years of Credited Service plus 3.25% of FAS for each year of Credited Service greater than 20 years (excludes period of DROP participation). Maximum benefit is 90% of FAS for all future retirees.

Group B: 1.75% of FAS for each of the first 10 years of Credited Service plus 2.00% of FAS for Credited Service greater than 10 years but less than 20 years, plus 2.50% of FAS for each year of Credited Service greater than 20 years (excludes period of DROP participation). Maximum benefit is 90% of FAS for all future retirees.

Group D: 1.80% of FAS for each of the first 25 years of Credited Service, plus 1.00% of FAS for each year of Credited Service greater than 25 years. Maximum benefit is 90% of FAS for all future retirees.

5. Early Retirement (Group D only)

   a. Eligibility (i) at least ten years of Credited Service; or

   (ii) at least five years of Credited Service and a combination of age and service equals or is greater than 75.

   b. Benefit Accrued normal retirement benefit reduced by 0.25% for each month you are less than age 62.

6. Vested Pension

   a. Eligibility 5 years of Credited Service.

   b. Benefit Group A and Group C: Either the accrued normal retirement benefit with payments beginning at the normal retirement eligibility date or a refund of employee contributions, if any, without interest.

   Group B and Group D: Accrued normal retirement benefit payable at the normal retirement eligibility date.

   If the actuarial present value of a pension is less than $20,000, a terminated participant who is not eligible to begin receiving a pension may request an early lump sum distribution of the pension. Such early lump sum distribution is irrevocable. Credited Service associated therewith can be reinstated after reemployment and pursuant to the rules of the plan.

7. Withdrawal Benefit

   If a nonvested contributory member withdraws from service with less than 5 years, a refund of the member's contributions is made without interest, upon request.

8. Service-Connected Disability Retirement

   a. Eligibility Any age

   b. Benefit Group A: Accrued normal retirement benefit, but not less than 20% of final monthly salary at time of disability plus 1% of final monthly salary per year of Credited Service, to a maximum of 40% of final monthly salary.

   Group B and Group D: Accrued normal retirement benefit, but not less than 20% of final monthly salary at time of disability.

9. Non-service-Connected Disability Retirement

a.	Eligibility	5 years of Credited Service.
b.	Benefit	Accrued normal retirement benefit payable immediately

10. Pre-retirement Survivor Benefits

A. Service-connected

a.	Eligibility	Any age or Credited Service
b.	Benefit	If there is a surviving spouse, 80% of FAS payable to the spouse. 10% of FAS is payable to each qualifying dependent to a maximum of 20% for all dependents. Surviving spouse's benefit will be reduced by the amount of dependent benefits. If no surviving spouse, dependent benefits are 50% of the amount a surviving spouse would have received for each dependent to a maximum of 80% of FAS for all dependents in the aggregate.

B. Non service-connected

a.	Eligibility	5 years of Credited Service
b.	Benefit	If an active Group A, Group B or Group D member with at least 5 years of credited service dies while still in service with the City (off-duty death), the spousal survivor benefit will be 80% of the normal accrued pension, payable immediately, provided that the spouse was married to the participant for at least one continuous year as of the date of death. If such spouse was married less than one continuous year as of the date of death, the survivor benefit is 50% of the normal accrued pension. If a Group A or Group B deferred participant (not yet receiving a pension benefit) dies, the spousal survivor benefit is 50% of the normal accrued pension, payable at the participant's eligibility date. However, the surviving spouse can elect an earlier actuarially equivalent benefit.

11. Postretirement Survivor Benefits

All Groups except Option-Eligible Participants:

If there is a surviving spouse, 80% of the retirement benefit the deceased retiree was receiving at the time of death payable immediately, provided that the spouse was married to the retiree at the time of death and for at least one continuous year as of the date of separation from service (the marriage requirement applies for separations from service on or after July 1, 2017). If such spouse was married less than one continuous year as of the date of separation from service (the marriage requirement applies for separations from service on or after July 1, 2017), the spousal survivor benefit is 50% of the retirement benefit being received by the retiree at the time of death.

Option-Eligible Participants:

Life only to the retiree. Option-Eligible Participants may elect other options based on actuarial factors. Option-Eligible Participants are all Group D members, Group A & B members who terminate after June 30, 2011 eligible for a normal retirement benefit and who are not married at their termination of service, and Group B members who terminated prior to September 1, 1997 and who are eligible for a normal retirement benefit.

12. Benefit Adjustments

COLAs are calculated as half of the average five-year investment return less five percentage points, with a minimum of 0% and a maximum of 2%, not compounded. Group D retirees who terminated after the effective date of the 2017 Legislation will receive COLAs in the future. For employees who are participating in DROP, COLAs will be delayed until the earlier of their age at retirement or age 62 as of January 1 of the year in which the increase is made.

13. Contribution Rates (all rates occur as of the first full pay period on or after the applicable effective date)

a. Members — Effective July 1, 2017, 7% of salary for Group A members, 2% of salary for Group B members and 2% of salary for Group D members. For Group D, beginning January 1, 2018, in addition to the 2%, employees contribute 1% to a notional account that will be credited with the DROP Credit interest converted to a bi-weekly rate. Effective July 1, 2018, the total contribution increases to 8% of salary for Group A members and 4% of salary for Group B members.

b. City — Effective July 1, 2017, the City's contribution obligation is set by state statute as described in the RSVS Section.

14. Deferred Retirement Option

a. Eligibility — Participants (other than Group D) who are eligible to retire but who have not retired and who remain in service with the City may participate in the DROP.

b. Monthly DROP Credit

An amount equal to the accrued normal retirement benefit as of the effective date of DROP participation. The Monthly DROP Credit is credited to a notional account (DROP Account) on the last calendar day each month.

c. DROP Credit Interest

Interest is credited to the DROP Account at the beginning of each day based on the DROP Account balance at the end of the previous day and posted monthly on the last calendar day of each month. Effective July 1, 2017, the annual interest rate effective beginning January 1 each year is half of the average five-year investment return, not less than 2.5% and not greater than 7.5%. The assumed DROP Credit interest is 4.0%.

d. DROP Credits-COLA

COLAs will not be given if the DROP participant is younger than age 62. When the DROP participant attains at least age 62 as of January 1 of the year of the increase, COLAs are calculated as half of the average five-year investment return less five percentage points, with a minimum of 0% and a maximum of 2%, not compounded.

e. DROP Account Balance

The sum of a participant's Monthly DROP Credits, applicable COLAs, applicable interest, and, prior to January 1, 2005, the employee contributions as applicable.

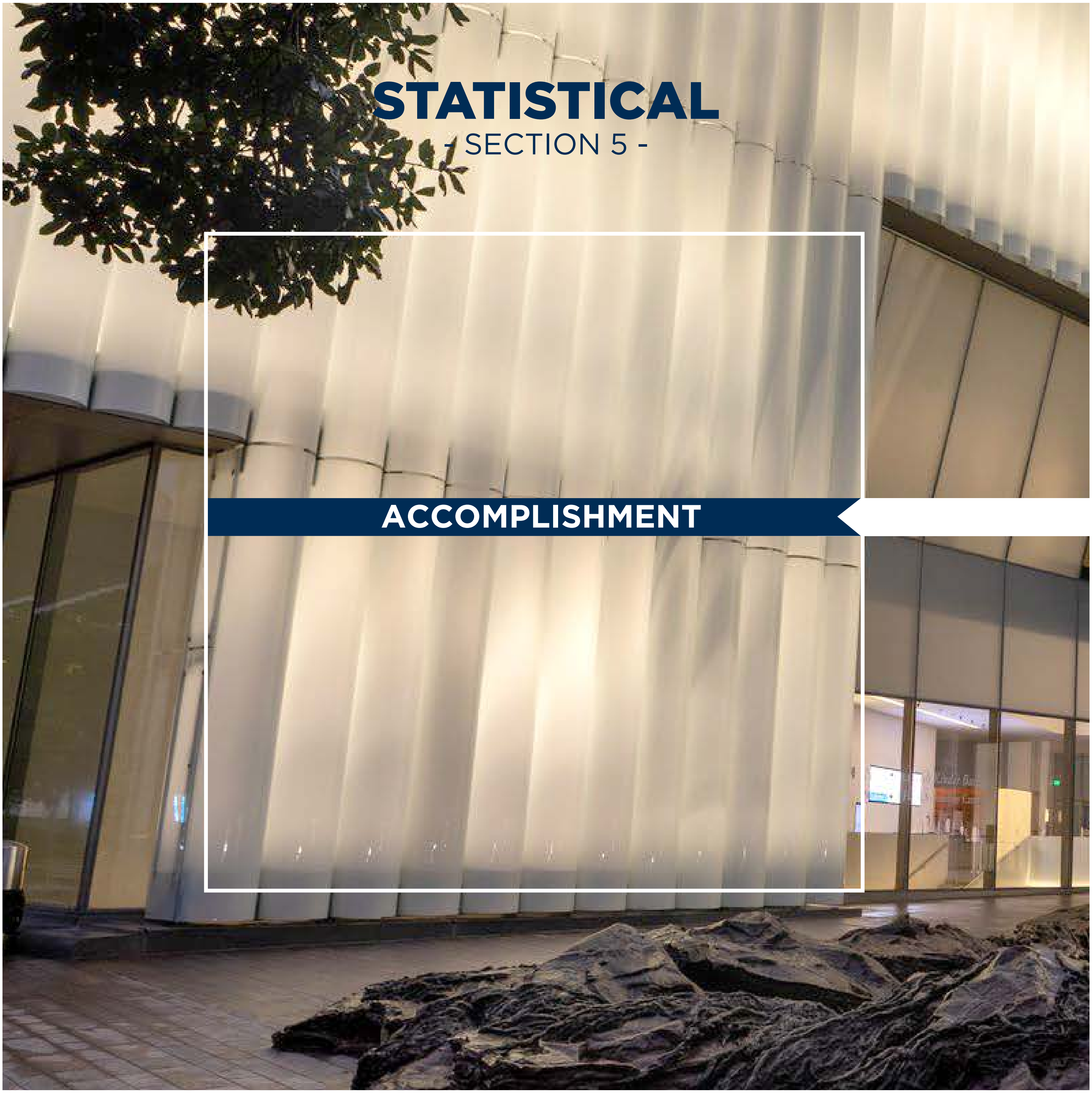
15. DROP Benefit Pay-out A terminated DROP participant may elect to:

a. Receive the entire DROP Account Balance in a lump sum.
b. Receive the DROP Account Balance in periodic payments as approved by the Pension Board.
c. Receive a portion of the DROP Account balance in a lump sum and the remainder in periodic payments as approved by the Pension Board.
d. Receive a partial payment of not less than $1,000, no more than once each ninety (90) days.
e. Defer election of a payout option until a future date.

16. Post DROP Retirement The Final Pension is the accrued normal retirement benefit as of the effective date of DROP participation, increased with COLAs since DROP entry.

Changes in Plan Provisions Since Prior Year

There have been no changes to the benefit provisions of the System since the prior valuation.



The Museum of Fine Arts, Houston expands with its new modern and contemporary art building, The Nancy and Rich Kinder Building

OUR CITY IS OUR MASTERPIECE, CONSTANTLY IMPROVING

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HOUSTON MUNICIPAL EMPLOYEES PENSION SYSTEM

INTRODUCTION

The Statistical section of the Annual Comprehensive Financial Report presents detailed information related to the System's financial statements. The schedules within the Statistical section are classified as Financial Trends and Participant Information. All information was derived from audited annual financials and/or our benefit administration system, and/or the annual actuarial valuations.

FINANCIAL TRENDS

The Changes in Fiduciary Net Position schedule shows the additions and deductions from the fiduciary net position and the resulting changes in fiduciary net position for the ten years ending June 30, 2022.

Additions to Fiduciary Net Position include city and member contributions to the System which are external sources of additions to plan net positions. Additions also include earnings from the System's investment activity and are the System's internal sources of, and typically the larger component of, additions to plan net positions.

Deductions from Fiduciary Net Position are primarily comprised of benefit payments and refunds paid to participants.

OPERATING INFORMATION

Participant data for the last twelve years ending June 30, 2022 can be found starting on page 141 and includes several schedules regarding benefit payments to participants and participant demographics.

SCHEDULE OF BENEFIT RECIPIENTS BY TYPE AND AGE

Year Ended June 30, 2022

Age on June 30	*Service*	*Disability*	*Survivors and Beneficiaries*	*Total*
Under 40	0	0	79	79
40 - 44	0	0	11	11
45 - 49	0	5	24	29
50 - 54	90	6	49	145
55 - 59	448	21	116	585
60 - 64	1,580	35	226	1,841
65 - 69	2,392	54	323	2,769
70 - 74	2,203	53	306	2,562
75 - 79	1,495	27	312	1,834
80 - 84	752	25	259	1,036
85 & Over	524	9	335	868
Total	9,484	235	2,040	11,759

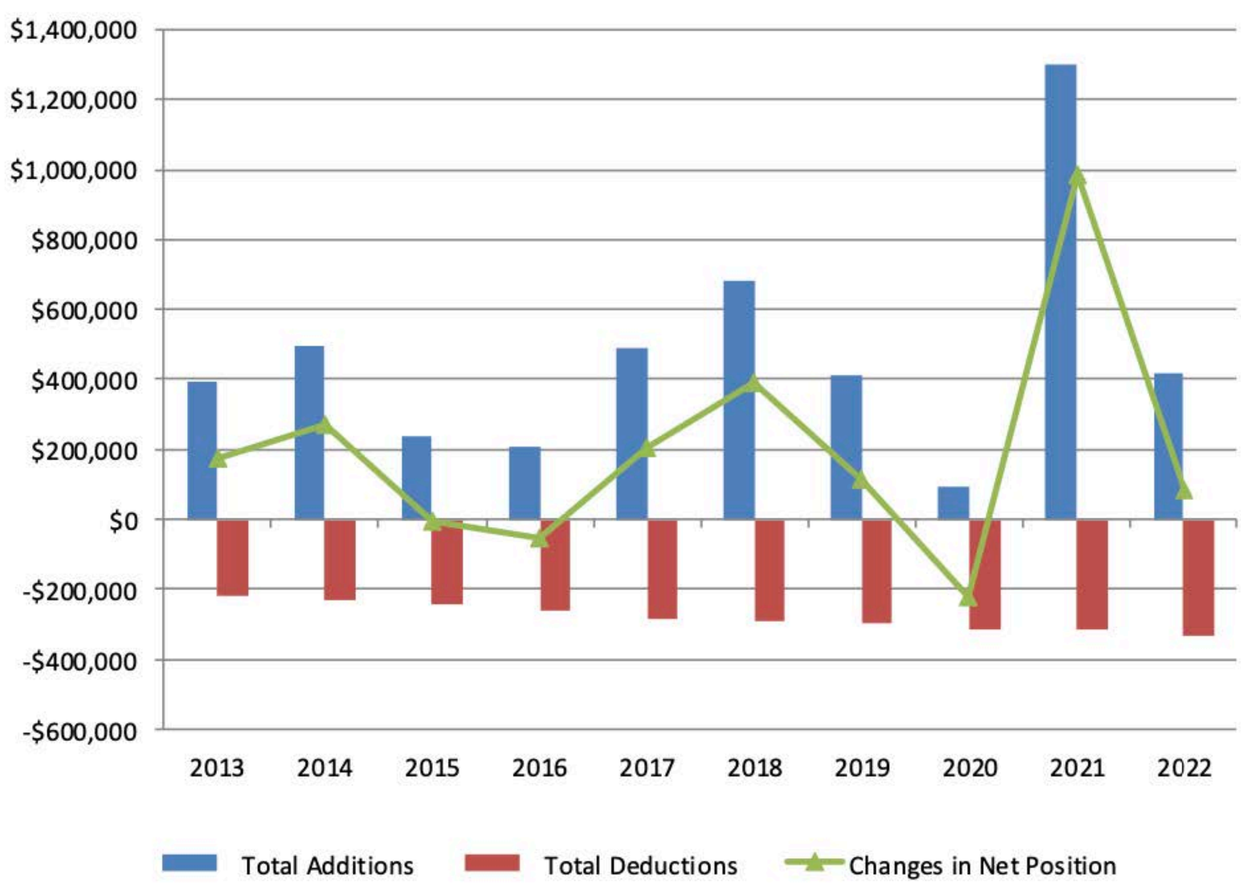
SCHEDULE OF CHANGES IN FIDUCIARY NET POSITION (IN $000)

Financial Trends

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Additions (Reductions)										
Employer contributions	$ 111,859	$ 128,274	$ 145,007	$ 159,958	$ 182,558	$ 421,562	$ 176,261	$ 176,430	$ 184,762	$ 197,340
Member contributions	17,041	16,580	16,198	15,874	15,901	27,905	32,536	32,582	33,325	32,655
Investment income (loss)	263,891	351,792	73,854	27,988	290,911	231,815	200,445	(115,166)	1,084,387	189,390
Other income	1,246	730	557	1,303	1,272	701	710	484	487	466
Total additions (reductions) to net position	394,037	497,376	235,616	205,123	490,642	681,983	409,952	94,330	1,302,961	419,851
Deductions										
Benefit payments	213,178	221,925	234,955	253,179	280,456	283,928	291,060	308,002	314,150	327,773
Refund of contributions	1,266	1,213	1,549	1,105	718	807	1,394	649	402	1,133
Professional services fees	871	597	822	1,021	805	656	664	636	664	725
Cost of administration	6,341	5,818	6,185	6,339	6,021	5,786	4,699	4,255	2,446	4,956
Total deductions to net position	221,656	229,553	243,511	261,644	288,000	291,177	297,817	313,542	317,662	334,587
Changes in fiduciary net position	$ 172,381	$ 267,823	$ (7,895)	$ (56,521)	$ 202,642	$ 390,806	$ 112,135	$ (219,212)	$ 985,299	$ 85,264

CHART OF CHANGES IN FIDUCIARY NET POSITION (IN $000)

Years Ended June 30



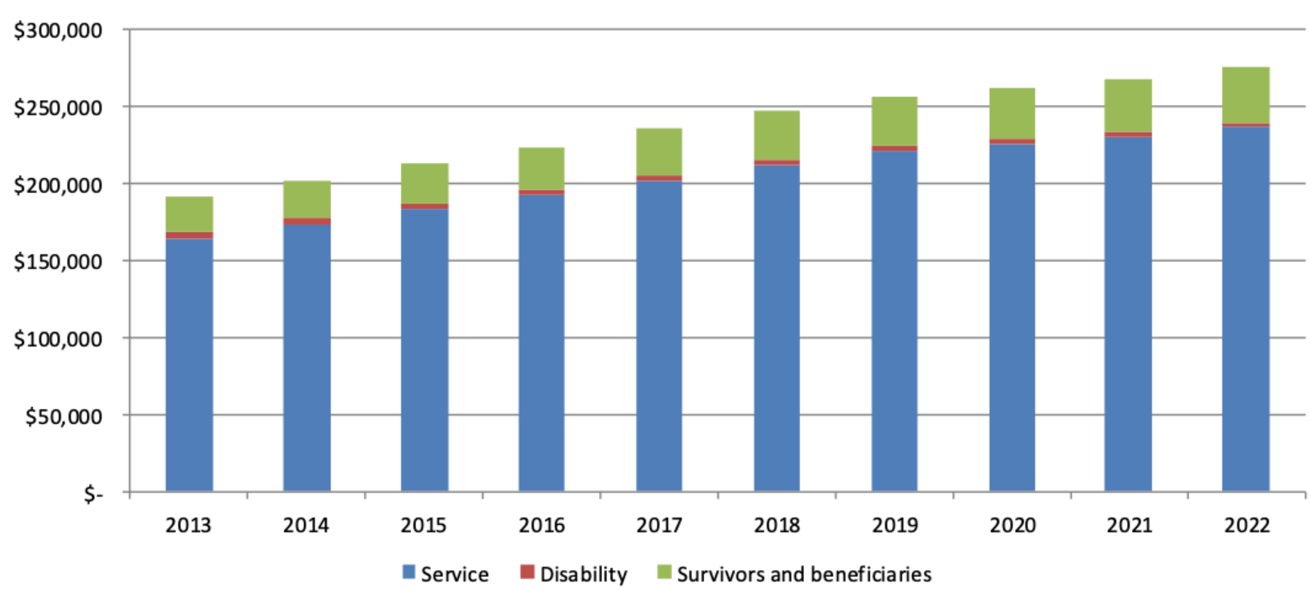
SCHEDULE OF BENEFIT PARTICIPANTS AND ANNUITIES BY TYPE

Ten Years Ended June 30 (in $000) | Operating Information

Participants by Benefit Type	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Service	7,258	7,522	7,821	8,084	8,376	8,616	8,855	9,070	9,189	9,484
Disability	387	373	350	336	323	298	289	280	252	235
Survivors and beneficiaries	1,782	1,827	1,854	1,893	1,902	1,918	1,955	1,997	2,022	2,040
Total Annuity Count	9,427	9,722	10,025	10,313	10,601	10,832	11,099	11,347	11,463	11,759
Inactive Eligible Participants	3,298	3,305	3,202	3,432	3,409	3,457	3,597	3,622	3,700	3,886
Total Eligible for Benefits	12,725	13,027	13,227	13,745	14,010	14,289	14,696	14,969	15,163	15,645
Benefit Payments by Type										
Service	$ 164,924	$ 173,749	$ 183,613	$ 192,759	$ 201,890	$ 212,243	$ 220,871	$ 225,352	$ 230,531	$ 236,947
Disability	3,864	3,808	3,722	3,626	3,613	3,462	3,350	3,322	3,128	2,916
Survivors and beneficiaries	22,383	24,262	25,777	27,346	30,329	31,521	32,705	33,616	34,779	35,960
Total Annuity Payments	$ 191,171	$ 201,819	$ 213,112	$ 223,731	$ 235,832	$ 247,226	$ 256,926	$ 262,290	$ 268,438	$ 275,823
Lump Sum Payments	$ 200	$ 177	$ 201	$ 252	$ 351	$ 224	$ 402	$ 384	$ 205	$ 135
Hybrid-Cash Balance	-	-	-	-	-	-	44	120	198	19,848
DROP Payments	21,807	19,929	21,641	29,195	44,274	36,478	33,687	45,206	45,306	31,967
Total Other Benefit Payments	22,007	20,106	21,842	29,447	44,625	36,702	34,133	45,710	45,709	51,950
Total Benefit Payments	$ 213,178	$ 221,925	$ 234,954	$ 253,178	$ 280,457	$ 283,928	$ 291,059	$ 308,000	$ 314,147	$ 327,773
Refunds of Contribution	$ 1,266	$ 1,213	$ 1,549	$ 1,105	$ 718	$ 807	$ 1,394	$ 649	$ 402	$ 1,133
Average Benefit Payments by Type										
Service	$ 22,723	$ 23,099	$ 23,477	$ 23,845	$ 24,103	$ 24,634	$ 24,943	$ 24,846	$ 25,088	$ 24,984
Disability	9,984	10,209	10,634	10,792	11,186	11,617	11,592	11,864	12,414	12,409
Survivors and beneficiaries	12,561	13,280	13,903	14,446	15,946	16,434	16,729	16,833	17,200	17,627

CHART OF BENEFIT PARTICIPANTS AND ANNUITIES BY TYPE (IN $000)

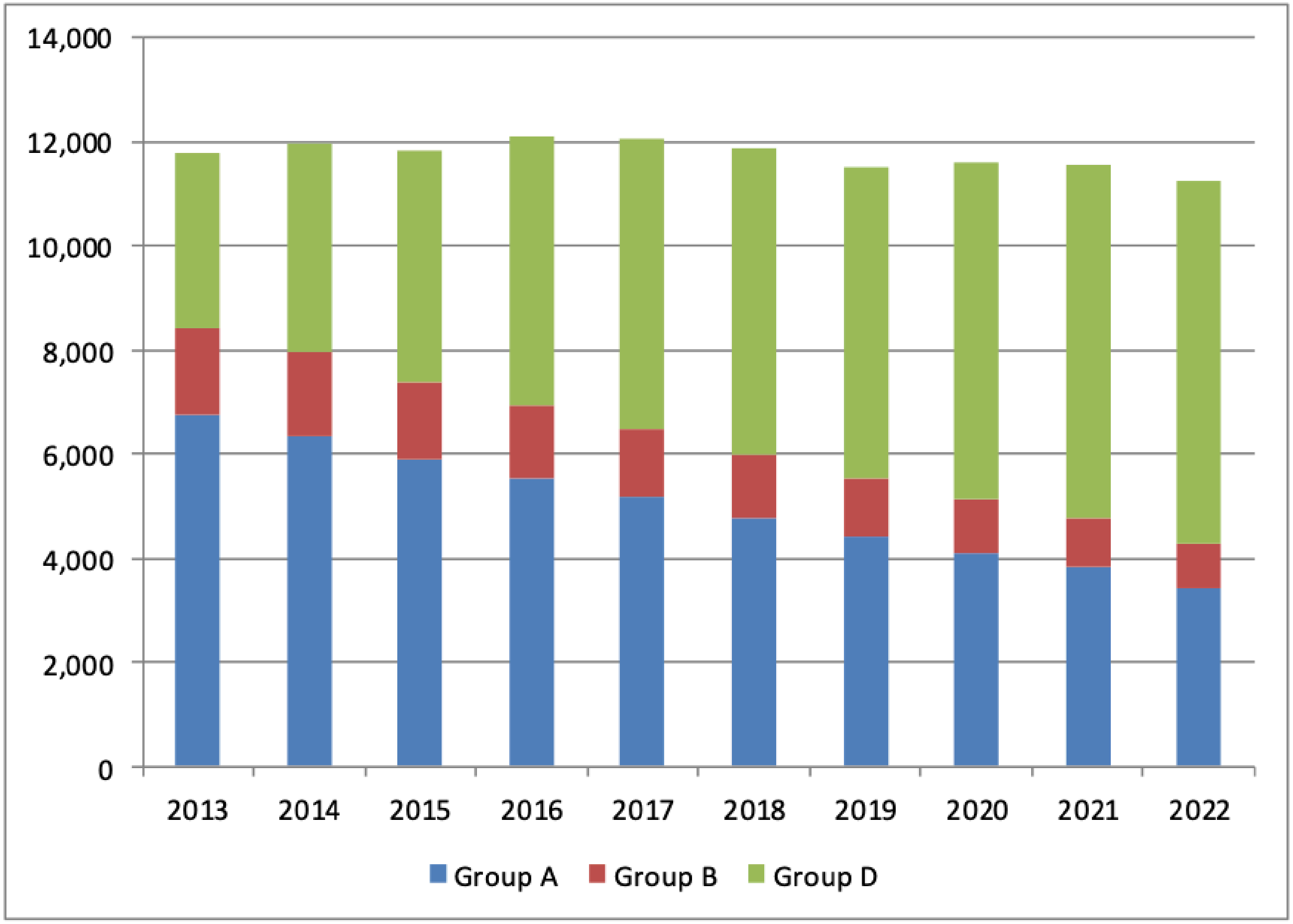
Years Ended June 30



HISTORICAL ACTIVE PARTICIPANT DATA

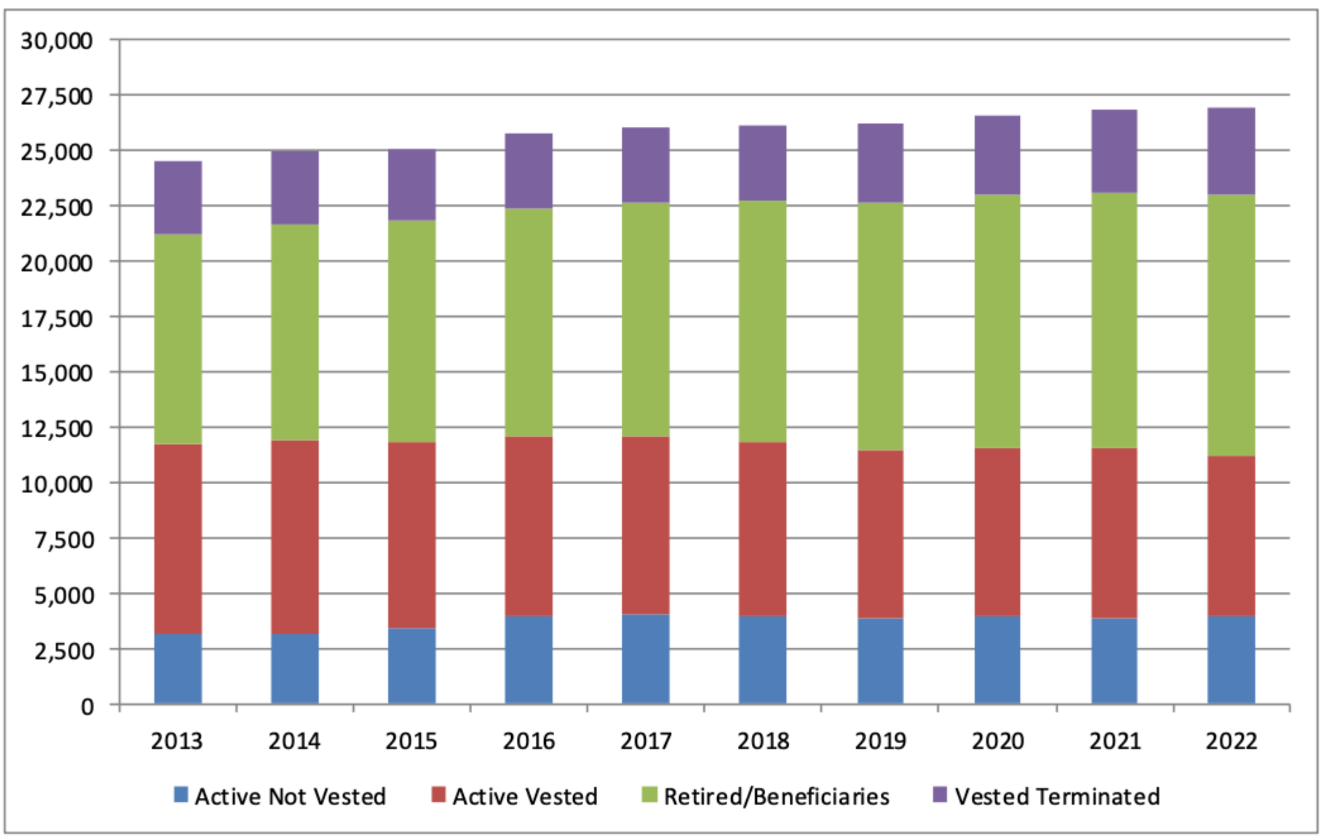
Fiscal Year	Group A	Group B	Group D	Number of Participants	Annual Payroll ($000)	Average Salary ($)	% Salary Increase
2011	7,857	1,932	2,556	12,345	544,665	44,120	3.5
2012	7,167	1,759	2,744	11,670	534,394	45,792	3.8
2013	6,777	1,666	3,338	11,781	549,971	46,683	1.9
2014	6,366	1,590	3,993	11,949	568,992	47,618	2.0
2015	5,911	1,489	4,427	11,827	584,025	49,381	3.7
2016	5,537	1,417	5,149	12,103	608,210	50,253	1.8
2017	5,165	1,312	5,589	12,066	623,577	51,681	2.8
2018	4,788	1,198	5,894	11,880	624,266	52,548	1.7
2019	4,427	1,107	5,973	11,507	636,463	55,311	5.3
2020	4,116	1,019	6,459	11,594	657,876	56,743	2.6
2021	3,827	936	6,816	11,579	669,217	57,796	1.9
2022	3,457	840	6,958	11,255	696,890	61,120	5.8

CHART OF ACTIVE PARTICIPANTS



HISTORICAL TOTAL MEMBERSHIP DATA AND BAR CHART

Fiscal Year	Active Nonvested	Active Vested	Retired/ Beneficiaries	Vested Terminated	Totals
2011	4,237	8,108	8,717	3,178	24,240
2012	3,512	8,158	9,078	3,237	23,985
2013	3,154	8,627	9,427	3,298	24,506
2014	3,131	8,818	9,685	3,313	24,947
2015	3,475	8,352	10,023	3,202	25,052
2016	3,967	8,136	10,289	3,432	25,824
2017	4,105	7,961	10,601	3,409	26,076
2018	3,965	7,915	10,834	3,457	26,171
2019	3,917	7,590	11,110	3,609	26,226
2020	3,989	7,605	11,373	3,661	26,628
2021	3,879	7,700	11,481	3,789	26,849
2022	3,998	7,257	11,759	3,886	26,900



AVERAGE BENEFIT PAYMENTS BY YEARS OF CREDITED SERVICE

Members Retiring During Fiscal Years		Years of Credited Service 5-10	11-15	16-20	21-25	26-30	30+	All Members
2013	Average monthly benefit	$ 577	$ 1,083	$ 1,524	$ 2,406	$ 2,492	$ 2,936	$ 1,450
	Average monthly salary	$ 3,660	$ 3,565	$ 3,503	$ 3,877	$ 3,573	$ 4,000	$ 3,648
	Average DROP balance	$ 33,482	$ 96,989	$ 163,551	$ 196,720	$ 70,570	$ 37,305	$ 137,474
	Number of DROP retirees	17	44	59	52	13	2	187
	Number of retirees	110	114	113	84	31	12	461
2014	Average monthly benefit	$ 582	$ 1,082	$ 1,523	$ 2,283	$ 2,695	$ 3,424	$ 1,395
	Average monthly salary	$ 3,229	$ 3,238	$ 3,505	$ 3,741	$ 3,625	$ 4,402	$ 3,423
	Average DROP balance	$ 92,531	$ 118,155	$ 119,035	$ 276,187	$ 131,517	$ 104,467	$ 153,977
	Number of DROP retirees	23	46	72	51	27	1	220
	Number of retirees	126	116	123	78	35	4	482
2015	Average monthly benefit	$ 625	$ 1,158	$ 1,871	$ 2,412	$ 2,950	$ 2,762	$ 1,636
	Average monthly salary	$ 3,365	$ 3,586	$ 3,756	$ 3,791	$ 3,847	$ 3,330	$ 3,639
	Average DROP balance	$ 55,711	$ 112,360	$ 172,535	$ 186,044	$ 136,625	$ 97,841	$ 153,083
	Number of DROP retirees	19	47	93	78	24	4	265
	Number of retirees	109	107	131	109	29	7	492
2016	Average monthly benefit	$ 674	$ 1,039	$ 1,972	$ 2,802	$ 3,627	$ 2,915	$ 1,807
	Average monthly salary	$ 3,973	$ 3,278	$ 3,983	$ 3,957	$ 4,477	$ 3,466	$ 3,846
	Average DROP balance	$ 52,494	$ 72,536	$ 158,655	$ 318,208	$ 253,977	$ 165,445	$ 194,300
	Number of DROP retirees	22	36	91	78	22	8	257
	Number of retirees	100	96	124	101	29	12	462
2017	Average monthly benefit	$ 727	$ 1,176	$ 1,753	$ 2,696	$ 2,989	$ 4,408	$ 1,867
	Average monthly salary	$ 4,131	$ 3,481	$ 3,673	$ 4,110	$ 3,947	$ 4,999	$ 3,883
	Average DROP balance	$ 73,002	$ 75,610	$ 126,681	$ 231,788	$ 238,546	$ 268,657	$ 172,994
	Number of DROP retirees	17	44	89	116	37	9	312
	Number of retirees	95	118	121	145	47	12	538
2018	Average monthly benefit	$ 630	$ 1,223	$ 1,909	$ 3,070	$ 3,149	$ 3,788	$ 1,860
	Average monthly salary	$ 3,832	$ 3,880	$ 3,960	$ 4,633	$ 4,121	$ 4,167	$ 4,070
	Average DROP balance	$ 66,220	$ 82,362	$ 166,913	$ 257,733	$ 229,513	$ 194,307	$ 178,656
	Number of DROP retirees	30	39	76	81	29	9	264
	Number of retirees	95	120	116	98	37	11	477
2019	Average monthly benefit	$ 650	$ 1,133	$ 1,894	$ 2,428	$ 2,863	$ 3,135	$ 1,714
	Average monthly salary	$ 3,953	$ 3,631	$ 3,947	$ 4,035	$ 4,217	$ 3,958	$ 3,910
	Average DROP balance	$ 61,302	$ 122,503	$ 168,807	$ 189,182	$ 178,161	$ 150,946	$ 163,574
	Number of DROP retirees	13	43	92	90	29	9	276
	Number of retirees	85	121	132	110	36	12	496
2020	Average monthly benefit	$ 705	$ 1,186	$ 2,014	$ 2,514	$ 3,009	$ 3,832	$ 1,742
	Average monthly salary	$ 4,788	$ 4,006	$ 4,330	$ 4,269	$ 4,041	$ 4,327	$ 4,299
	Average DROP balance	$ 128,190	$ 93,487	$ 186,706	$ 229,407	$ 335,312	$ 318,903	$ 202,087
	Number of DROP retirees	11	44	71	69	29	8	232
	Number of retirees	95	128	108	94	37	10	472
2021	Average monthly benefit	$ 652	$ 1,317	$ 1,864	$ 2,960	$ 2,972	$ 3,740	$ 1,896
	Average monthly salary	$ 4,498	$ 4,428	$ 4,176	$ 4,688	$ 4,348	$ 4,808	$ 4,435
	Average DROP balance	$ 97,640	$ 94,848	$ 189,769	$ 283,310	$ 236,576	$ 218,130	$ 209,128
	Number of DROP retirees	7	43	71	81	36	8	246
	Number of retirees	79	106	111	93	39	12	440
2022	Average monthly benefit	$ 607	$ 1,223	$ 1,850	$ 2,485	$ 3,397	$ 3,549	$ 1,823
	Average monthly salary	$ 4,125	$ 4,218	$ 4,068	$ 4,219	$ 4,657	$ 4,572	$ 4,225
	Average DROP balance	$ 95,082	$ 90,493	$ 158,242	$ 259,550	$ 327,535	$ 252,376	$ 203,775
	Number of DROP retirees	12	64	88	113	49	4	330
	Number of retirees	103	148	124	138	65	10	588
10 Years Ended 6/30/2022	Average monthly benefit	$ 643	$ 1,162	$ 1,817	$ 2,606	$ 3,014	$ 3,449	$ 1,719
	Average monthly salary	$ 3,955	$ 3,731	$ 3,890	$ 4,132	$ 4,085	$ 4,203	$ 3,938
	Average DROP balance	$ 75,565	$ 95,934	$ 161,089	$ 242,813	$ 213,833	$ 180,838	$ 176,905
	Avg Number of DROP retirees	17	45	80	81	30	6	259
	Average Number of retirees	100	117	120	105	39	10	491
	Total Number of retirees	997	1,174	1203	1,050	385	102	4,908

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