HPOPS

FOR TODAY & TOMORROW

Houston Police Officers' Pension System

A Component Unit of
The City of Houston, Texas
Annual Comprehensive Financial Report
for the years ended June 30, 2021 and June 30, 2020

The mission of the Houston Police Officers' Pension System is to responsibly manage the System in the best interests of the members and beneficiaries so that they may have peace of mind knowing their pension benefits are secure.

HOUSTON POLICE OFFICERS' PENSION SYSTEM
Patrick S. Franey, Executive Director
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Houston, TX 77007
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Report prepared by the staff of the Houston Police Officers' Pension System

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HOUSTON POLICE OFFICERS' PENSION SYSTEM

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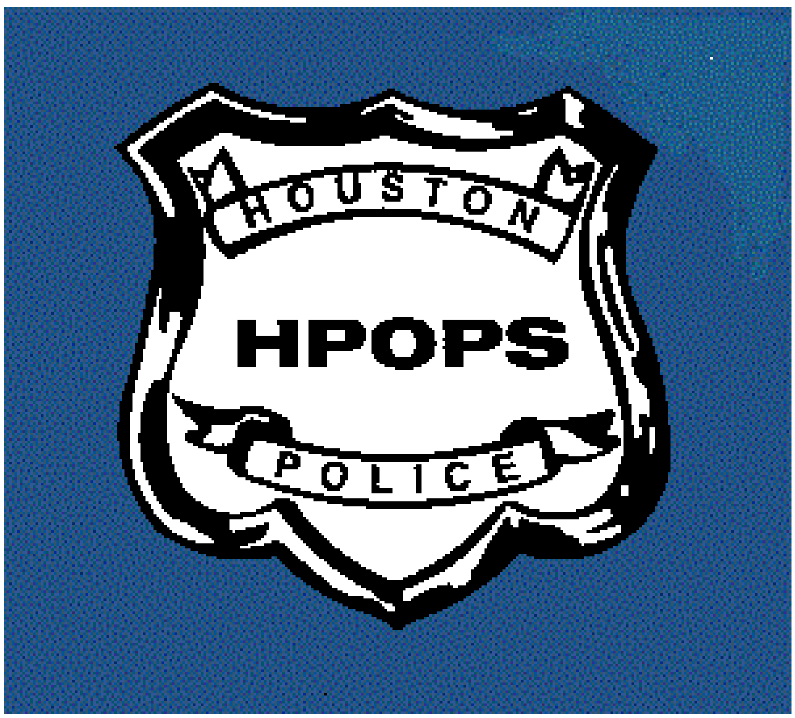
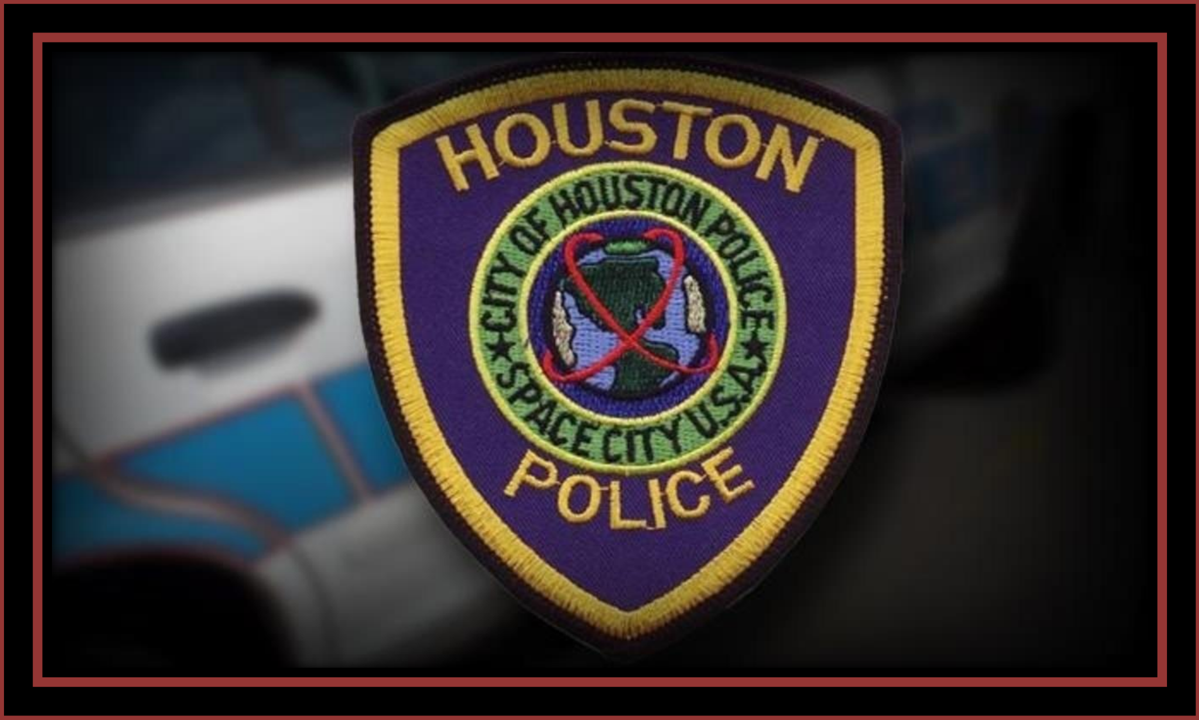


INTRODUCTORY SECTION



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December 16, 2021

Houston Police Officers' Pension System
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The Membership
Houston Police Officers' Pension System
Houston, Texas

The Annual Comprehensive Financial Report (ACFR) of the Houston Police Officers' Pension System (the System) for the fiscal year ended June 30, 2021 is submitted herewith. Responsibility for both the accuracy of the data, and the completeness and fairness of the presentation, rests with the management of the System. We trust that you will find this ACFR helpful in understanding your retirement system, a system that strives to provide responsible stewardship of assets contributed by the members and the City of Houston (the City). This ACFR is divided into five sections:

- Introductory Section – This section contains the administrative organization, the letter of transmittal and Chairman's report.
- Financial Section – This section contains the report of the Independent Auditor, Management's Discussion and Analysis, the financial statements of the System and certain required supplementary information.
- Investment Section – This section contains a report on investment activity, investment policies, investment results, and various investment schedules.
- Actuarial Section – This section contains the Actuary's Certification Letter and summary results of the annual actuarial valuation.
- Statistical Section – This section includes historical financial and benefits related data pertaining to the System.

The financial statements and related information included in the *Financial Section* of this report are the responsibility of the Board of Trustees and management of the System. 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 auditor, BDO, conducted an independent audit of the basic financial statements in accordance with U.S. generally accepted auditing standards. This audit is described in the *Independent Auditors' Report* found in the *Financial Section*. Management has provided the external auditors with full and unrestricted access to the System's staff to discuss their audit and related findings to facilitate independent validation of the integrity of the System's financial reporting.

The *Financial Section* also contains *Management's Discussion and Analysis*, which serves as an introduction to and an overview of the financial statements. The System is considered a component unit of the City of Houston for financial reporting purposes and, as such, the financial statements in this report are also included in the *City of Houston's Annual Comprehensive Financial Report*.

In developing and evaluating the System's accounting system, the adequacy of internal accounting controls is a primary concern. The System's controls are designed to provide reasonable assurance regarding the safekeeping of assets and the reliability of financial records. These controls include strategic design of the System's business and accounting systems, the appropriate segregation of duties and responsibilities, sound practices in the performance of those duties, capable personnel, and the structure of the organization. There are limits to internal control, such as the cost to mitigate some risks may outweigh the risk itself, internal controls may be overridden, or collusion may thwart control design. We believe the System's internal controls are adequate and are working as designed.

The System was established in 1947, funded by a $100,000 Treasury note, and offered retiring members a pension of $75 per month. Today, the System has investments of $7.1 billion and offers a variety of pension benefits to members and their beneficiaries. Members have the option to defer their benefits or retire under a regular service retirement. Members also may access a disability retirement, either duty or non-duty connected.

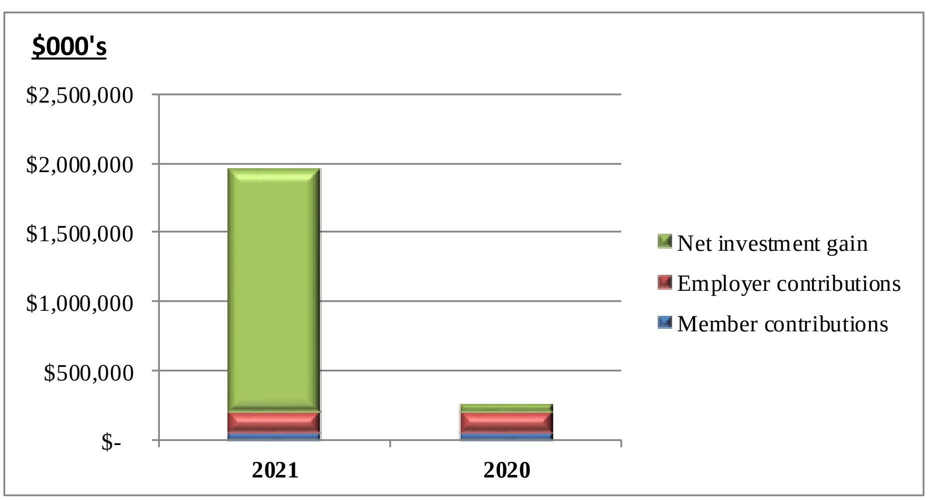
Additions to Plan Net Position

The System relies on the contributions of members and the City of Houston, as well as income generated from investments, to provide funds needed to finance retirement and disability benefits. Pursuant to the Governing Statute, all members are required to contribute 10.50% of pensionable pay. Contributions are made on a pre-tax basis. Under the Governing Statute, the employer contribution rate is determined actuarially, based on a Risk Sharing Valuation Study (RSVS). The Governing Statute required a Final Risk Sharing Valuation Study (RSVS) as of June 30, 2016, which was completed September 25, 2017. For fiscal year 2020, the City's contribution rate equaled 31.82% of compensation, and for fiscal year 2021 the City's contribution rate is 31.84% of compensation. The City's contribution rate for the coming fiscal year 2022 is 31.92%.

The number of active members increased in fiscal year 2021 compared to 2020 as the number of new hires to the Houston Police Department (HPD) outpaced retirements. Contributions from members increased in fiscal year 2021 over fiscal year 2020 mainly due to compensation increases. The System experienced a positive time-weighted investment return of 32.2% in 2021, following a positive return of 1.1% in 2020. The investment returns for fiscal 2021 and 2020 can be explained by the impact of the coronavirus pandemic, the accompanying shut downs and the subsequent recovery as these conditions eased, along with substantial fiscal stimulus.

Active members:	2021	2020	Increase (Decrease)
Fully vested	1,590	1,710	(120)
Nonvested:			
Hired or rehired before October 9, 2004	290	379	(89)
Hired or rehired after October 9, 2004	3,364	3,231	133
	5,244	5,320	(76)

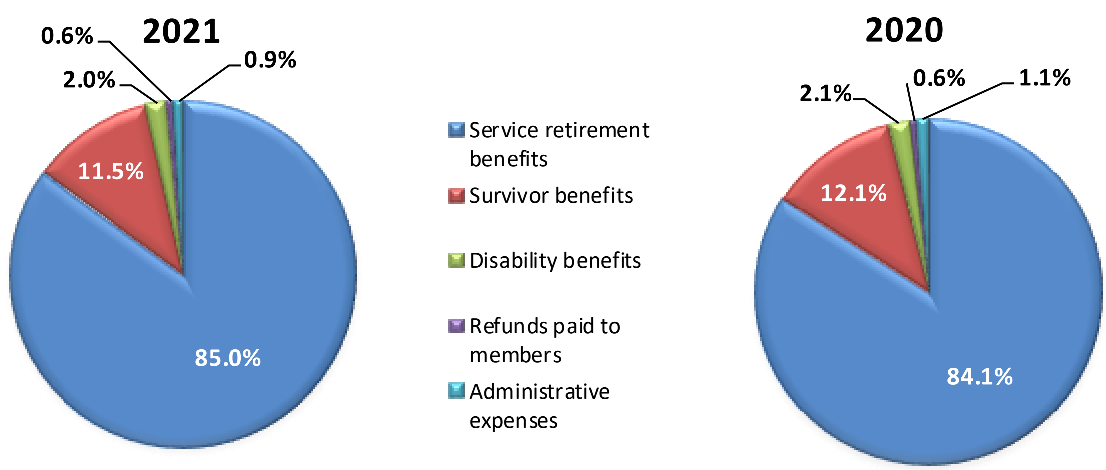
	$000's		Increase (Decrease)	Increase (Decrease)
	2021	2020	Amount	Percentage
Member contributions	$ 49,749	$ 49,062	$ 687	1.4%
Employer contributions	151,094	149,078	2,016	1.4%
Net investment gain	1,764,927	61,193	1,703,734	2784.2%
Total	$ 1,965,770	$ 259,333	$ 1,706,437	658.0%



Deductions from Plan Net Position

The System was created to provide retirement benefits to retired Houston police officers and their dependents. Although this is still the primary purpose of the System, over the course of 74 years the System has also added survivor and disability benefits. The cost of these programs includes benefit payments and refunds of contributions to terminated employees. The cost of administering the System is also paid from System assets.

	$000's		Increase (Decrease) Amount	Increase (Decrease) Percentage
	2021	2020		
Service retirement benefits	$ 340,887	$ 303,990	$ 36,897	12.1%
Survivor benefits	46,121	43,792	2,329	5.3%
Disability benefits	7,885	7,591	294	3.9%
Refunds paid to members	2,433	2,209	224	10.1%
Administrative expenses	3,669	3,922	(253)	(6.5%)
Total	$ 400,995	$ 361,504	$ 39,491	10.9%



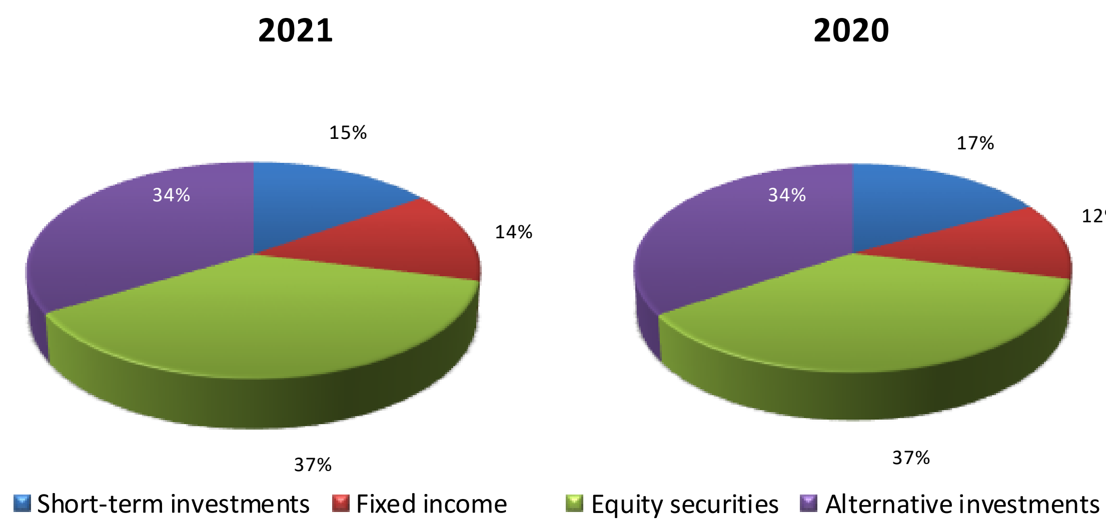
Total benefits paid, which include lump sum payments, increased in 2021as compared to 2020 due mainly to an increase in lump sum benefits, cost of living increases and an increase in the number of retirees. Administrative expenses decreased mainly due to one-time expenses relating to a Fraud Risk Assessment of the System and investment in technology that occurred in 2020 while other expenses, especially relating to travel, were diminshed due to the impact of COVID-19. For further information regarding the System's financial condition, refer to Management's Discussion and Analysis in the Financial Section of this report.

Investments

The System invests funds entrusted to it exclusively for the benefit of its members. It avows an investment rule commonly known as the "prudent expert" rule, whereby from a procedural as well as substantive standpoint, it acts with the care, skill, prudence and diligence that a "prudent expert" acting in a similar capacity would act under similar circumstances.

The Board of Trustees believes that the System's assets should be managed in a way that reflects the uniqueness of the System, and that the System's assets should be diversified over a spectrum of investment vehicles. The determination of the appropriate asset mix is based on capital market assumptions that incorporate both historical and projected returns, volatility, liquidity and correlations of various asset classes.

	$000's		Increase (Decrease) Amount	Increase (Decrease) Percentage
	2021	2020		
Short-term investments	$ 1,078,809	$ 938,097	$ 140,712	15.0%
Fixed income	977,050	666,192	310,858	46.7%
Equity securities	2,667,020	2,034,415	632,605	31.1%
Alternative investments	2,394,957	1,908,257	486,700	25.5%
Total	$ 7,117,836	$ 5,546,961	$ 1,570,875	28.3%



Fiscal year 2021 began with markets continuing strong growth due to ongoing stimulus and optimism regarding a vaccine outweighing COVID-19 concerns, rising tensions in China and signs of a stalling economic recovery. Approval of the $1.9 trillion American Rescue Plan Act in March followed by a relatively positive macroeconomic backdrop, progress with the vaccine roll-out, stronger-than-expected corporate earnings and ongoing stimulus tailwinds bolstered market sentiment. As more of the world economies gradually reopened markets responded positively. Along with the continuation of the global economic rebound, markets saw pressure on supply chains increase as the spread of COVID-19 disrupted transport and manufacturing, leading to inflationary pressures and indicating that the recovery is still far from having run its course.

The System returned 32.2% during 2021, outperforming its benchmark rate of return by 0.5%, primarily due to its overweight allocation to the public equity portfolio. The System's domestic equity allocation returned 46.4%, outperforming its benchmark by 2.2% while the System's international equity allocation returned 40.7%, outperforming its benchmark rate of return by 5.0%. The System's fixed income allocation returned 1.3%, outperforming its benchmark by 1.6%. The System's alternative investments in private equity returned 46.5%, underperforming its benchmark by 6.7% while the System's real estate allocation returned 17.5%, outperforming its benchmark by 14.9%.

The Board firmly believes that by maintaining a disciplined investment approach and with reasonable diversification, the System will enhance the likelihood of meeting its long-term investment goals. Further details regarding the System's investments are included in the Investment Section of this report.

Funding

It is the System's objective to have enough funds in reserve to provide members with promised benefits upon their retirement. The System's actuary conducts a periodic valuation to determine the adequacy of the current employer contribution rates, to describe the current financial condition of the System, and to analyze changes in the System's condition. An actuarial accrued liability is the liability for service already rendered by former and present employees. An actuarial accrued surplus is the excess of the System's actuarial value of assets over the actuarial accrued liability. Any liability or surplus is amortized over 30 years from the valuation date.

The most recent actuarial valuation shows the funded position of the System increased from 82.4% at July 1, 2020 to 85.4% at July 1, 2021. The actuarial accrued liability increased $285.3 million and the actuarial value of assets increased $450.8 million. As a result, the System's Unfunded Actuarial Accrued Liability decreased $165.5 million to $1,038.6 million as of July 1, 2021. The decrease in the Unfunded Actuarial Accrued Liability is due to a combination of factors including investment returns greater than target, City contributions in excess of the required amount and COLA and DROP rates being less than assumed. Further details regarding the System's actuarial liability are included in the Actuarial Section of this report.

Major Initiatives

The System continues to provide a high level of service to our members. The Financial Planning and Estate Planning services allow members to meet one on one with System professional staff to discuss financial issues and work to prepare different legal documents in order to protect the member's estate. These services are free of charge and continue to be highly valued by System members.

The Member Website continues to grow and provide members and survivors more information on their benefits and provide them a self-service for standard processes. The System continues to receive positive feedback and increased participation through the Member Website. Our investment in technology paid off during these trying times of the COVID-19 pandemic as members have seamlessly moved substantially all their transactions with HPOPS to our website. This allowed us to continue business as usual while reducing contact points with our members and thus providing protection for our members and staff.

Professional Services

The Board of Trustees engages professional consultants to perform services that are considered essential for the operation of the System. The independent auditor's report, issued by BDO USA, LLP, is included on page 17 of this report. The Actuary's Certification Letter and summary results of the annual actuarial valuation, certified by Gabriel Roeder Smith & Company, is included on page 74. Professional service providers who provided services to the System during the year are listed below.

Actuarial	Gabriel Roeder Smith & Company	**Legal Service**	IceMiller LLP
Auditing	BDO USA, LLP Election Services Company	**Legal Service/ Lobbyists**	HillCo Partners, LLC Locke Lord LLP
Consulting	Franklin Park Associates, LLC Mercer Investment Consulting Inc.	**Money Management**	See Schedule of Investment Managers on page 67 in the Investment Section
Custodian	The Northern Trust Company		

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 Police Officers' Pension System for its annual comprehensive financial report for the fiscal year ended June 30, 2020. This was the 27th 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 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 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.

Acknowledgements

The compilation of this report reflects the combined effort of the System's staff under the guidance of the Board of Trustees. Its goal is to provide complete and reliable information as a basis for management decisions and compliance with legal provisions as well as responsible stewardship of funds contributed by its members and the City of Houston.

We would like to take this opportunity to express our gratitude to the staff, System advisors, and to the many other people who have contributed to the successful operation of the System.

Sincerely,

Board of Trustees

Board of Trustees

HPOPS®

FOR TODAY & TOMORROW

December 16, 2021

To the Members
Houston Police Officers' Pension System
Houston, Texas

The Houston Police Officers' Pension System (HPOPS) is pleased to bring you the fiscal year 2021 Annual Comprehensive Financial Report (ACFR). The ACFR provides a comprehensive picture of HPOPS' finances for the fiscal year ending June 30, 2021, an overview of the year's highlights, and a substantial amount of historical information.

This past year saw recovery from the volatility brought on due to the impact of the coronavirus pandemic and the accompanying lock-downs with HPOPS achieving a positive return of 32.2%. The financial markets saw strong growth based on optimism regarding the success of COVID-19 vaccines and ongoing government stimulus, which helped overcome concerns about trade tensions with China and COVID-19 variants. Gradually, more of the world economies reopened and markets saw stronger than expected corporate earnings, leading to more positive outlooks and continued growth. However, along with this global economic rebound supply chain constraints have developed due to lingering effects of the pandemic which led to inflationary pressures suggesting that the recovery is not yet complete.

HPOPS works diligently throughout the year monitoring market developments with a focus on attaining long-term goals and will continue to maintain perspective with an ever vigilant eye on opportunities and risks in the coming year. The lessons learned over the past few years and the Trustee's stewardship allow us to fulfill our mission to responsibly manage the System in the best interests of the members and beneficiaries so that they may have peace of mind knowing their pension benefits are secure. I wish to express appreciation to the Board of Trustees, office staff, and professional consultants who work so effectively to ensure the continued successful operation of HPOPS.

We at HPOPS continue to plan for the future of all of our current members as well as those members to come. We encourage you to read on to learn more about HPOPS.

Sincerely,

Terry A. Bratton
Chairman

Houston
Police Officers'
Pension System
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BOARD OF TRUSTEES AND ADMINISTRATIVE STAFF

TRUSTEES ELECTED BY ACTIVE, INACTIVE AND RETIRED POLICE OFFICERS

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Chairman

Vacant
Vice-Chairman

DAVID TREY COLEMAN
Secretary

GEORGE GUERRERO
Trustee

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Trustee

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City Treasurer

DON A. SANDERS
Mayor's Representative

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PATRICK S. FRANEY
Executive Director

TIFFANY WILLIAMSON
Administrative Assistant

MICHELLE HARTSFIELD
Receptionist

CLARK OLINGER
Benefits Director

SHERYL BAINES
Benefits Specialist

REGINA WARD
Benefits Specialist

JUDY G. BAKER
Benefits Manager

BEVERLY LOCKETT
Benefits Specialist

RICHARD GABLE
Financial Planner

STACEY GALO
Chief Investment Officer

NEAL WALLACH
Investment Analyst/Strategist

ANDREW RISKEN
Investment Analyst

KEVIN T. O'TOOLE
Accounting Director

LAJUANA WINTERS
Accountant

ROXANNA OLIVER
Investments Accountant & Administrator

GREG SIMEON
IT Director

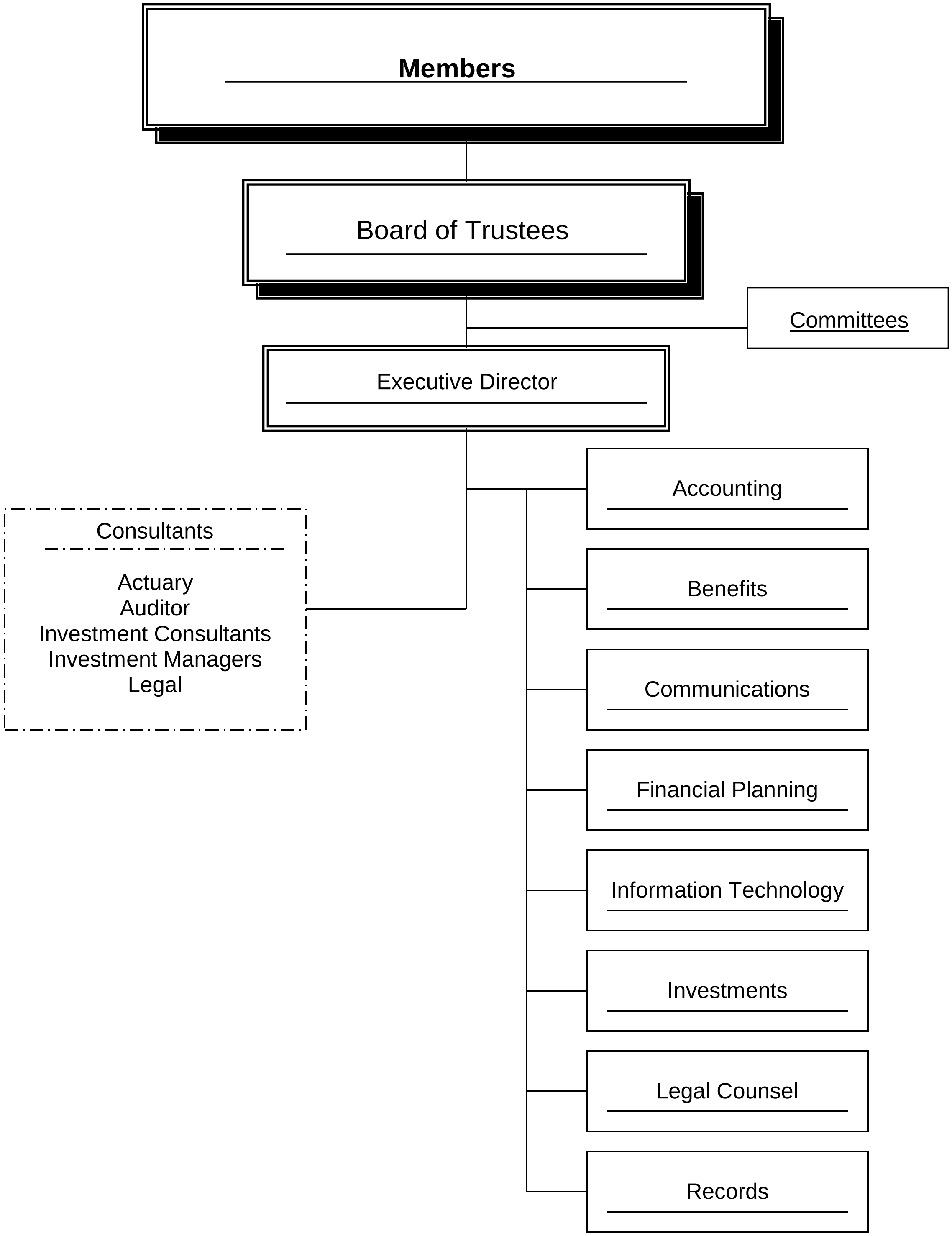
CHRISTOPHER SAUCEDA
IT Systems Administrator

STEPHANIE SEGURA
Records Manager

NICK DANG
General Counsel

CHRISTOPHER FLORES
Attorney

ORGANIZATION CHART



For a list of Consultants, see the Summary of Investment and Professional Services on page 54 of the financial section and the Schedule of Investment Managers on page 67 of the investment section.

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Houston Police Officers' Pension System
Texas

For its Comprehensive Annual
Financial Report
For the Fiscal Year Ended

June 30, 2020

Christopher P. Morrill

Executive Director/CEO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POLICE

SECTION TWO

FINANCIAL SECTION


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TIMEX

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Independent Auditor's Report

The Board of Trustees
Houston Police Officers' Pension System
Houston, Texas

Opinion

We have audited the accompanying financial statements of Houston Police Officers' Pension System (the "System"), a component unit of the city of Houston, Texas, which comprise the statements of fiduciary net position as of June 30, 2021 and 2020, and the related statements of changes in fiduciary net position for the years then ended, 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 financial statements referred to above present fairly, in all material respects, the financial position of the System as of June 30, 2021 and 2020, and the changes in its financial position for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America ("GAAS"). 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 audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

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 within one year after the date that the financial statements are issued or available to be issued.

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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 opinion. 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 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, 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.

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Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that "Management's Discussion and Analysis" and the "Required Supplementary Information" listed on the table of contents 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.

Other Supplementary Information

Our audit was conducted for the purpose of forming opinions on financial statements that collectively comprise the System's basic financial statements. The accompanying supplemental schedule of "Investment, Professional and Administrative Expenses" and "Summary of Investments and Professional Services", which collectively comprise the other supplementary information, are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The other supplementary 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. Such 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 other supplementary information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

BDO USA, LLP

October 12, 2021

Management's Discussion and Analysis (Unaudited)
Fiscal Year Ended June 30, 2021

The discussion and analysis of the financial performance of the Houston Police Officers' Pension System (the System), provides an overall review of the System's financial activities for the fiscal years ended June 30, 2021, 2020 and 2019. The intent of this discussion and analysis is to look at the System's financial performance as a whole; readers should review the financial statements, notes to the financial statements, required supplementary information and other schedules, in order to enhance their understanding of the System's financial performance.

Financial Statements

These financial statements consist of the Statements of Fiduciary Net Position, Statements of Changes in Fiduciary Net Position, Notes to Financial Statements, Schedules, and other unaudited required supplementary information. The System is a single employer contributory defined benefit pension plan. The System is a component unit of the City of Houston, Texas (the City) only to the extent the System receives contributions equal to a fixed amount or percentage of the pensionable pay of active members in accordance with Article 6243g-4, Vernon's Texas Civil Statutes (the Governing Statute), or contracts pursuant to Section 27 thereof, and as such, its reports are included in the Fiduciary Funds of the City as restricted assets.

Financial Highlights

The System presents its financial statements solely on the accounts of the System. The accrual basis of accounting is used by the System, whereby revenues are recognized when they are earned and collection is reasonably assured, and expenses are recognized when the liability has been incurred. Investments are reported at fair value.

A summary of the Statements of Fiduciary Net Position for the System is as follows ($000's):

As of June 30:	**2021**	2020	2019
Assets			
Investments at fair value	**$ 7,117,836**	$ 5,546,961	$ 5,661,981
Invested securities lending collateral	**125,217**	34,741	64,316
Receivables	**23,292**	33,252	20,835
Cash	**24**	482	239
Land	**5,322**	-	-
Building	**60**	-	-
Total Assets	**7,271,751**	5,615,436	5,747,371
Liabilities			
Due for purchase of investments	**7,943**	6,809	7,090
Securities lending collateral	**125,217**	34,741	64,316
Accrued investment and professional fees	**1,008**	1,148	1,092
Other liabilities	**332**	262	226
Total Liabilities	**134,500**	42,960	72,724
Net position restricted for pensions	**$ 7,137,251**	$ 5,572,476	$ 5,674,647

The System's year over year net position increased by approximately $1,564,775 thousand in fiscal year 2021 after a decrease of approximately $(102,171) thousand in fiscal year 2020 over 2019. Fiscal year 2021 began with markets continuing strong growth due to ongoing stimulus and optimism regarding a vaccine outweighing COVID-19 concerns, rising tensions in China and signs of a stalling economic recovery. Prior to the U.S. presidential election, markets declined due to lack of progress on further fiscal stimulus and rising COVID -19 cases in many countries. However, news in November that several vaccines were proving effective against COVID-19 sparked investor optimism and strong market growth. January and February brought concerns about COVID-19 variants and fears that the amount of fiscal and monetary stimulus needed may prove unsustainable, which led to slower growth. Approval of the $1.9 trillion American Rescue Plan Act in March followed by a relatively positive macroeconomic backdrop, progress with the vaccine roll-out, stronger-than-expected corporate earnings and ongoing stimulus tailwinds which bolstered market sentiment. More of the world economies gradually reopened during the final two months, and markets responded positively. However, along with the continuation of the global economic rebound, we saw supply chain constraints and inflationary pressures. Forward looking activity indicators suggest that the recovery is still far from having run its course. Pressure on supply chains increased as the spread of COVID -19 disrupted transport and manufacturing, especially in countries where the vaccination roll-out is lagging behind.

Fiscal year 2020 began sluggishly as global financial markets dealt with an escalating trade war between the U.S. and China. Global equities rallied as central banks in the U.S. and Europe eased monetary policy to offset concerns around an economic slowdown, and a reprieve in trade tensions bolstered investor confidence. Broad-based economic growth and a clearer timeline of the UK's exit from the European Union helped fuel several months of strong growth seeing many equity indices hitting new highs. Calendar year 2020 brought about concerns over the coronavirus, which led to the shutdown of significant portions of the global economy. Markets rebounded strongly in April as governments and central banks introduced significant stimulus measures to reduce the damage caused by the economic shutdown. Global markets continued a slower climb through the end of the year despite increasing domestic coronavirus cases and rising tensions between the U.S. and China. Improving labor market statistics, signs of a manufacturing expansion, and a resurgence in consumer activities helped propel stock markets upward as the year came to a close.

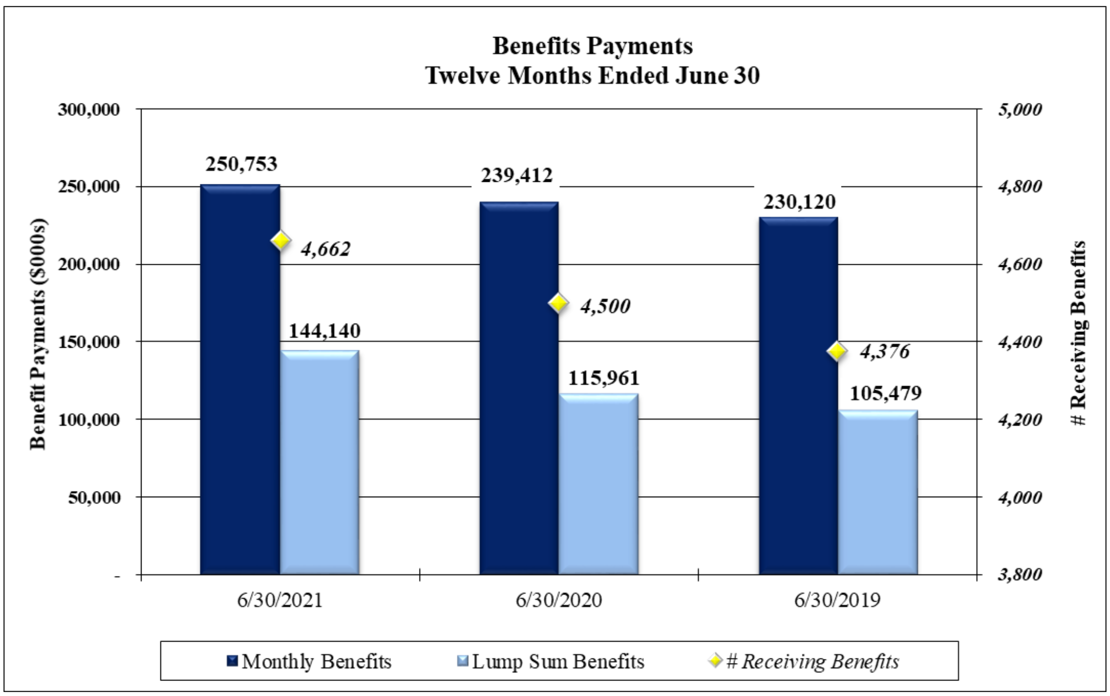
The System experienced a positive time-weighted investment return of 32.2% in 2021, following positive returns of 1.1% in 2020 and 6.4% in 2019. These rates of return calculations were prepared using a time-weighted rate of return in accordance with The CFA Institute's Global Investment Performance Standards and, as such, cannot be recalculated from the information provided herein.

A summary of the Statements of Changes in Fiduciary Net Position for the System is as follows ($000's):

Years ended June 30:	**2021**	2020	2019
Additions:			
Contributions:			
City	**$ 151,094**	$ 149,078	$ 142,429
Members	**49,749**	49,062	46,896
Total contributions	**200,843**	198,140	189,325
Net income from investing activities	**1,764,781**	61,007	339,870
Net income from securities lending activities	**146**	186	296
Total additions	**1,965,770**	259,333	529,491
Deductions:			
Benefits paid to members	**394,893**	355,373	335,600
Refunds to members	**2,433**	2,209	2,278
Professional and administrative expenses	**3,669**	3,922	3,580
Total deductions	**400,995**	361,504	341,458
Net increase (decrease)	**1,564,775**	(102,171)	188,033
Net position restricted for pensions			
Beginning of period	**5,572,476**	5,674,647	5,486,614
End of period	**$ 7,137,251**	$ 5,572,476	$ 5,674,647

The Governing Statue as amended on July 1, 2017, required contribution payments for fiscal year 2021 equal to 31.84% of payroll, resulting in contributions of $151,094 thousand and required contribution payments for fiscal year 2020 equal to 31.82% of payroll, resulting in contributions of $149,078 thousand, which accounts for the increase in City contributions for the year ended June 30, 2021. For fiscal year 2019, required contribution payments were equal to 31.85% of payroll, resulting in contributions of $142,429 thousand. As discussed in Note 2 to the financial statements, the contributions were paid in their entirety from the City budget in fiscal years 2021, 2020, and 2019.

"Benefits paid to members" consist of both lump sum payments and monthly payments of retirement, disability, and survivor benefits. The System's benefit payment structure provides that members and survivors have the option to receive distributions from their lump sum accounts either on or after the date they begin receiving monthly benefit payments. Due to this ad hoc nature of lump sum distributions the summary results in the accompanying Statements of Changes in Fiduciary Net Position will not show any distinct trends in the "Benefits paid to members" category. The chart below compares the components of benefits paid to members for the years ended June 30, 2021, 2020, and 2019.



For each year, the annual cost of living adjustment (COLA) along with the increase in the number of benefit recipients accounts for the majority of the increase in benefit payments. Total benefits paid in 2021 increased from 2020 by approximately $39,520 thousand or 11.1% compared to an increase of approximately $19,773 thousand or 5.9% between 2019 and 2020. The increase in 2021 is due to a $28,179 thousand increase in lump sum benefits and an $11,341 thousand increase in monthly benefits compared to a $10,482 thousand increase in lump sum benefits and a $9,291 thousand increase in monthly benefits in 2020. Average monthly benefit payments were $20,896 thousand and $19,951 thousand per month for 2021 and 2020 respectively. The increase of $945 thousand or 4.7% in 2021 was slightly greater than the increase of $774 thousand or 4.0% in 2020 while the number of members and survivors who are receiving benefits increased by 162 in 2021 and 124 in 2020.

There was a decrease of $253 thousand in professional and administrative expenses during 2021 as compared to 2020. This decrease is mainly due to one-time expenses relating to a Fraud Risk Assessment of the System and investment in technology that occurred in 2020 while other expenses, especially relating to travel, were less due to the impact of

COVID-19. There was an increase of $342 thousand in professional and administrative expenses during 2020 as compared to 2019. This increase is mainly due to one-time expenses relating to a Fraud Risk Assessment of the System and investment in technology, and increasing insurance and personnel costs.

System Highlights

The System's funded ratio pursuant to its most recent actuarial valuation dated July 1, 2021 was 85.4% representing an unfunded actuarial accrued liability of $1,038,643 thousand. The System's funded ratio as of July 1, 2020 was 82.4% representing an unfunded actuarial accrued liability of $1,204,149 thousand.

Contacting the System's Management

This financial report is designed to provide members and other users with a general overview of the System's finances and to show the System's accountability for the funding it receives. If you have questions about this report, you may contact the System's Executive Director at 602 Sawyer, Suite 300, Houston, TX 77007 or by phone at 713-869-8734.

Houston Police Officers' Pension System

Statements of Fiduciary Net Position ($000's)

June 30,	**2021**	2020
Assets		
Investments, at fair value (Note 3 and Note 4)		
Short term investments	**$ 1,078,809**	$ 938,097
Fixed income investments	**977,050**	666,192
Equity investments	**2,667,020**	2,034,415
Alternative investments	**2,394,957**	1,908,257
Total Investments	**7,117,836**	5,546,961
Invested securities lending collateral (Note 4)	**125,217**	34,741
Receivables		
City (Note 2)	**7,797**	7,372
Members	**2,564**	2,428
Investments	**7,629**	15,425
Due from sale of investments	**5,226**	8,024
Other receivables	**76**	3
Total Receivables	**23,292**	33,252
Cash	**24**	482
Land	**5,322**	-
Building	**60**	-
Total Assets	**$ 7,271,751**	$ 5,615,436
Liabilities		
Payables		
Due for purchase of investments	**7,943**	6,809
Securities lending collateral (Note 4)	**125,217**	34,741
Accrued investment and professional fees	**1,008**	1,148
Other liabilities	**332**	262
Total Liabilities	**134,500**	42,960
Net position restricted for pensions	**$ 7,137,251**	$ 5,572,476

See accompanying notes to financial statements.

Houston Police Officers' Pension System

Statements of Changes in Fiduciary Net Position ($000's)

Years ended June 30,	**2021**	2020
Additions		
Contributions (Note 2 and Note 6)		
City	**$ 151,094**	$ 149,078
Members	**49,749**	49,062
Total contributions	**200,843**	198,140
Investment income		
Net appreciation in fair value of investments	**1,712,466**	3,478
Interest:		
Short-term investments	**1,725**	13,077
Fixed income investments	**22,952**	27,142
Total interest income	**24,677**	40,219
Dividends	**34,722**	25,197
Other income	**26**	23
Total investment income	**1,771,891**	68,917
Less: investment expense	**(7,110)**	(7,910)
Net income from investing activities	**1,764,781**	61,007
Securities lending activities (Note 4)		
Securities lending income	**195**	248
Securities lending expense	**(49)**	(62)
Net income from securities lending activities	**146**	186
Total additions	**1,965,770**	259,333
Deductions		
Benefits paid to members	**394,893**	355,373
Refunds to members (Note 1)	**2,433**	2,209
Professional and administrative expenses	**3,669**	3,922
Total deductions	**400,995**	361,504
Net increase (decrease) in net position	**1,564,775**	(102,171)
Net position restricted for pensions		
Beginning of period	**5,572,476**	5,674,647
End of period	**$ 7,137,251**	$ 5,572,476

See accompanying notes to financial statements.

1. Plan Description and Contribution Information

General – The Houston Police Officers' Pension System (the System) was created in 1947 by an act of the Fiftieth Legislature of the State of Texas, and is governed by Article 6243g-4, Vernon's Texas Civil Statutes (the Governing Statute) and contracts pursuant to Section 27 thereof. The System is a single employer contributory defined benefit pension plan covering police officers employed full time by the City of Houston (the City or the Employer) that provides for service, disability and death benefits for eligible members and their beneficiaries. The System is a local governmental plan and, therefore, is not subject to the Employee Retirement Income Security Act of 1974 (ERISA). The System is a component unit of the City only to the extent the System receives contributions equal to an amount or percentage of pay of active members in accordance with the Governing Statute.

The System's Board of Trustees in accordance with the Governing Statute is responsible for the general administration, management, and operation of the System, including the direction of investment and oversight of the System's assets. The System's Board of Trustees is composed of seven members as follows: (1) the administrative head of the City or the administrative head's authorized representative; (2) three employees of the police department having membership in the pension system, elected by the active, inactive, and retired members of the System; (3) two retired members who are receiving pensions from the System and are not officers or employees of the City, elected by the active, inactive, and retired members of the System; and (4) the treasurer of the City or the person discharging the duties of the City treasurer.

At June 30, the System's membership consisted of the following:

June 30,	2021	2020
Retirees and beneficiaries:		
Currently receiving benefits	4,662	4,500
Not yet receiving benefits	40	40
Active members:		
Fully vested	1,590	1,710
Nonvested:		
Hired or rehired before October 9, 2004	290	379
Hired or rehired after October 9, 2004	3,364	3,231
Total members	9,946	9,860

The following sections describe the benefit structure in effect for the plan year ending June 30, 2021. On September 29, 2004, the System and the City entered into an agreement (the October 9, 2004 Agreement) that altered the benefit structure of the System. On June 30, 2011, the System and the City entered into an agreement (the June 30, 2011 Agreement) that altered the City payment schedule and made further changes to the System's benefits structure. Additional changes to the benefit structure and City payment schedule became effective July 1, 2017 due to passage of Senate Bill 2190 by the 85th Legislature of Texas, Regular Session. The benefits described below include those for members hired or rehired on or before October 9, 2004 as well as benefits for members hired or rehired subsequent to October 9, 2004.

Eligibility – Members become eligible to receive a service pension upon retirement with 20 years of service. Members also have the option to select a Delayed Retirement, which allows for vesting after 10 years of service with a pension benefit payable at age 60. Members hired or rehired subsequent to October 9, 2004 are eligible to receive a service pension upon satisfying the Rule of 70 (age plus service equals 70). If a member separates with more than 10 years of service but has yet to satisfy the Rule of 70, the member may apply for a Delayed Retirement payable when age and service total 70.

Benefits – Retirement benefits are equal to 2.75% of the member's pensionable pay for each of the member's first 20 years of service plus 2.00% of pensionable pay for each year in excess of 20 years with no maximum percentage. Members hired or rehired subsequent to October 9, 2004 accrue benefits equal to 2.25% of the member's pensionable pay for each of the member's first 20 years of service plus 2.00% of the member's pensionable pay for each year in excess of 20 years subject to a maximum of 80%. Retired members and surviving spouses are entitled to receive an additional $150 per month in order to defray group medical insurance costs.

Pensionable Pay - Eligible members of the System will have their retirement or DROP benefit (see below) calculated on pensionable pay, which is referred to as Final Average Pay, and is defined as the average of all pay types received by a member over the three years prior to retirement or entrance into DROP exclusive of all categories of overtime. Clothing allowance, motorcycle allowance and mentor pay earned after June 30, 2017 is also excluded.

Deferred Retirement Option Plan – The Deferred Retirement Option Plan (DROP) provides for an optional method of accruing pension benefits. Generally, members with at least 20 years of service are eligible to participate in the DROP. Members hired or rehired subsequent to October 9, 2004 are not eligible to participate in DROP. Upon termination of employment participating members receive their pension benefit in the form of an annuity and a lump sum benefit. The annuity is the member's pension benefit at the time of enrollment in the DROP plus any subsequent cost of living adjustments received prior to July 1, 2017. The lump sum benefit is the accumulated balance in the member's notional DROP account which is equal to an amount calculated as if the member's annuity, employee contributions and an interest component had been deposited in a separate account in the member's name during the member's participation in DROP. Prior to October 9, 2004, 100% of a member's contributions were credited to his or her notional DROP account. Subsequent to that date, an eligible member contributed 9.00% of pensionable pay with 8.75% of pensionable pay credited to his or her notional DROP account and the additional 0.25% credited to the System's general fund. Effective July 1, 2017, member contributions are no longer credited to the DROP account.

Cost of Living Adjustments (COLA) – Pension benefits for eligible members and survivors are adjusted each year at a rate equal to the most recent five fiscal years' smoothed return minus 500 basis points, subject to minimum and maximum increases of 0.0% and 4.0%, respectively. For years 2018, 2019, and 2020, only members and eligible survivors who were 70 years of age or older will receive a COLA. For COLAs beginning with year 2021, eligible members are retired members and eligible survivors age 55 and older as of April 1 of the applicable year, a member or survivor who received benefits before June 8, 1995, or a survivor of an active member who died in the line of duty.

Disability Benefits – Duty connected disability benefits are equal to the greater of 55% of pensionable pay or the accrued service pension. Members hired or rehired subsequent to October 9, 2004 are eligible for a duty connected disability benefit equal to the greater of 45% of the member's pensionable pay or the accrued service pension. Disabled members who qualify for a Catastrophic Disability, as defined, receive a disability benefit equal to 100% of pensionable pay.

Members determined to be eligible for a non-duty connected disability benefit are entitled to a benefit equal to the greater of 27.5% of pensionable pay or the accrued service pension. Members hired or rehired subsequent to October 9, 2004 are eligible for a non-duty connected disability benefit equal to the greater of 22.5% of the member's pensionable pay or the accrued service pension.

Death Benefits – Death benefits are available to a surviving spouse, dependent children or a dependent parent in the event of the death of a member either after disability or service retirement, or prior to retirement.

Refunds of Member Contributions – A member with less than 20 years of credited pension service may elect to obtain a refund of member contributions upon termination of service with the Houston Police Department (HPD). This refund does not include interest. Members who terminate with at least 10 years of credited pension service but have not met the requirements for an immediate service retirement, have the option for a Delayed Retirement benefit in lieu of a refund.

Delayed Retirement – A member with at least 10 but less than 20 years of credited pension service at termination of employment with the HPD has the option of either a refund of member contributions, without interest, or a Delayed Retirement benefit. The Delayed Retirement benefit is payable at age 60 and is calculated at 2.75% of pensionable pay for each year of credited pension service. Members hired or rehired subsequent to October 9, 2004 with more than 10 years of service are eligible for a Delayed Retirement benefit payable when the sum of his or her age and service total 70 (Rule of 70) calculated at 2.25% of pensionable pay for each year of credited pension service.

Supplemental Monthly Benefit (13^{th} check) – In years in which certain investment performance and actuarial funding requirements are met, the System issues a supplemental monthly benefit payment to retired members and a supplemental credit to DROP participants' accounts in an amount equal to their normal monthly benefit. This benefit is not available for any year in which the System's funded ratio is less than 120%. Members hired or rehired subsequent to October 9, 2004 are not eligible for this benefit.

Lump Sum Benefit – Members retiring with a service or disability benefit receive a one-time $5,000 lump sum benefit. Members hired or rehired subsequent to October 9, 2004 are not eligible for this benefit.

Post Retirement Option Plan – The Post Retirement Option Plan (PROP) allows retired members and survivors to have all or a portion of their DROP lump sum credited to a notional account maintained by the System which accumulates interest and can be disbursed under certain options as designated by the System. Members hired or rehired subsequent to October 9, 2004 are not eligible for this benefit.

Partial Lump Sum Option Plan – The Partial Lump Sum Option Plan (PLOP) provides for an optional lump sum payment of a portion of a member's retirement benefit. A lump sum payment of not more than 20% of the actuarial value of the member's accrued pension at retirement shall be made available to persons who become active members of the System subsequent to October 9, 2004. The benefit shall be actuarially neutral. Thus, the value of the pension the member receives shall be reduced actuarially to reflect the lump sum payment.

2. Contributions and Reserves

Contributions –All members are required to contribute 10.50% of pensionable pay. Contributions are made on a pre-tax basis pursuant to Governing Statutes.

Under the Governing Statute, the employer contribution rate is determined actuarially, based on a Risk Sharing Valuation Study (RSVS). The Governing Statute required a Final Risk Sharing Valuation Study (RSVS) as of June 30, 2016, which was completed September 25, 2017. This initial RSVS established a corridor midpoint for the employer contribution rate. While inside the RSVS Corridor, the actual employer contribution rate will be the greater of the estimated employer contribution rate and the corridor midpoint. For fiscal year 2021, the estimated employer contribution rate was 29.61%, which is less than the corridor midpoint of 31.84%, thus the employer contribution rate was 31.84%. For fiscal year 2020, the estimated employer contribution rate was 31.58%, which is less than the corridor midpoint of 31.82%, thus the employer contribution rate was 31.82%. For all subsequent fiscal years, the actual employer contribution rate will be the greater of the estimated employer contribution rate and the corridor midpoint.

City contributions in the Statements of Changes in Fiduciary Net Position may be greater than the statutorily required amounts, as members are allowed to contribute accumulated sick and vacation pay to the System upon retirement and such contributions are classified as City contributions.

Pursuant to the Governing Statute and based on the July 1, 2020 actuarial valuation, the City contribution rates and the Actuarial Determined Contributions (ADC) are as shown in the table below for the ten years ending June 30, 2031.

($000's)

Years Ended June 30,	Compensation	Employer Contribution Rate *	Actuarially Determined Contribution (ADC)
2022	$ 484,881	31.92 %	$ 154,774
2023	498,215	31.98	159,329
2024	511,916	32.03	163,967
2025	525,994	32.07	168,686
2026	540,458	32.10	173,487
2027	555,321	32.12	178,369
2028	570,592	32.13	183,331
2029	586,284	32.13	188,373
2030	602,407	32.13	193,553
2031	618,973	32.14	198,938

* The corridor midpoint is used for years 2023 – 2031.

3. Summary of Significant Accounting Policies

Basis of Presentation – As defined by generally accepted accounting principles established by the Governmental Accounting Standards Board (GASB), the accompanying financial statements include solely the accounts of the System, which include all programs, activities and functions relating to the accumulation and investment of the assets and related income necessary to provide the service, disability and death benefits required under the terms of the Governing Statutes and amendments thereto.

Basis of Accounting - Basis of accounting is the method by which revenues and expenses are recognized in the accounts and are reported in the financial statements. The accrual basis of accounting is used for the System. Under the accrual basis of accounting, revenues are recognized when they are earned and collection is reasonably assured, and expenses are recognized when the liability is incurred. Member contributions are recognized in the period in which the contributions are due. Employer contributions are recognized when due and the employer has made a legally required commitment to provide the contributions. Benefits and refunds are recognized when due and payable in accordance with the terms of the Governing Statute. Dividend income is recorded on the ex-dividend date. Income from other investments is recorded when earned. Gains and losses on sales of securities are recognized on the trade date. The cost of investments sold is determined using the average cost method.

Administrative Costs – All administrative costs of the System are paid from the System's assets.

Federal Income Tax – Accounting principles generally accepted in the United States of America require System management to evaluate tax positions taken by the System and recognize a tax liability if the plan has taken an uncertain position that more likely than not would not be sustained upon examination. As of June 30. 2021 and 2020, no such tax liabilities have been recognized by System management. A favorable determination that the System is qualified and exempt from Federal income taxes was received on September 24, 2014. The System's Board of Trustees believes that the System is designed and continues to operate in compliance with the applicable requirements of the Internal Revenue Code. The plan is subject to audit by taxing jurisdictions; however, there are currently no audits for any tax periods in progress.

Use of Estimates – The preparation of the System's financial statements, in conformity with accounting principles generally accepted in the United States of America, requires management to make significant estimates and assumptions that affect the reported amounts and net plan assets at the date of the financial statements and the actuarial information included in the footnotes to the financial statements as of the benefit information date, the changes in the System's net position during the reporting period and, when applicable, disclosures of the contingent assets and liabilities at the date of the financial statements. Actual results could differ from those estimates.

4. Investments

Investment Policy – The System's policy in regard to the allocation of invested assets is established and may be amended by the System's Board of Trustees by a majority vote of the Board. It is the policy of the System's Board of Trustees to pursue an investment strategy with a view toward the long term that maximizes the return on the System's assets with acceptable target levels of leverage, and loss of capital, liquidity and volatility risk through the prudent diversification of the portfolio across a broad selection of distinct asset classes.

The System's investment policy discourages the use of cash equivalents, except for margin, collateral, and liquidity purposes. The following was the Board's adopted asset allocation policy as of June 30, 2021:

Asset Class	Target Allocation
Domestic equity	33.65 %
International equity	18.10
Fixed income	11.70
Credit	9.80
Alternative investments:	
Private equity	20.00
Real estate	10.00
Hedge funds	6.50
Cash	(9.75)
Total	100.00 %

Investment Valuation - Statutes of the State of Texas authorize the System to invest surplus funds in a manner provided by the Government Code, Title 8, Subtitle A, Subchapter C. These statutes stipulate that the governing body of the System is responsible for the management and administration of the funds of the System and shall determine the procedure it finds most efficient and beneficial for the management of the reserve fund of the System. The governing body may directly manage the investments of the System or may choose and contract for professional investment management services. Investments are reported at fair value in accordance with GASB 72, *Fair Value Measurement and Application*, which defines fair value, establishes a framework for measuring fair value, and establishes disclosures about fair value measurements.

GASB 72 establishes a hierarchal disclosure framework which prioritizes and ranks the level of market price observability used in measuring investments at fair value. Market price observability is impacted by a number of factors, including the type of investment and the specific characteristics of the investment. Fair value represents the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Investments with readily available actively quoted prices or for which fair value can be measured from actively quoted prices generally will have a higher degree of market price observability and lesser degree of judgment used in measuring fair value.

Investments measured and reported at fair value are classified and disclosed in one of the following categories:

> Level 1 – Investments traded in an active market with available quoted prices for identical assets as of the reporting date.
>
> Level 2 – Investments not traded on an active market but for which observable market inputs are available for an asset, either directly or indirectly, as of the reporting date.
>
> Level 3 – Investments not traded in an active market and for which no significant observable market inputs are available as of the reporting date.

The System has established a framework to consistently measure the fair value of the System's assets and liabilities in accordance with applicable accounting, legal, and regulatory guidance. This framework has been provided by establishing valuation policy and procedures that will provide reasonable assurance that assets and liabilities are carried at fair value. In certain cases, the inputs used to measure fair value may fall into different levels of the fair value hierarchy. In such cases, an investment's level within the fair value hierarchy is based on the lowest level of input that is significant to the fair value measurement. The System's assessment of the significance of a particular input to the fair value measurement requires judgment and considers factors specific to the investment.

The following tables summarize the valuation of the System's investments in accordance with the above mentioned fair value hierarchy levels as of June 30, 2021 and 2020.

Investments Measured at Fair Value
($000's)

		Fair Value Measurements Using		
June 30, 2021	**Total**	**Quoted Prices in Active Markets for Identical Assets (Level 1)**	**Significant Other Observable Inputs (Level 2)**	**Significant Unobservable Inputs (Level 3)**
Investments by fair value level				
Short term investments				
Short term investment funds	$ 1,078,809	$ -	$ 1,078,809	$ -
Total short term investments	1,078,809	-	1,078,809	-
Fixed income				
Corporate bonds	79,548	-	79,548	-
High yield funds	302,068	-	302,068	-
Total fixed income	381,616	-	381,616	-
Equity securities				
Domestic equities	137,243	18	137,225	-
Total equity securities	137,243	18	137,225	-
Alternative investments				
Private equity				
Leveraged buyouts	728,478	-	2,573	725,905
Energy	129,797	-	-	129,797
Special situations	161,880	-	-	161,880
Private equity secondaries	106,570	-	-	106,570
Venture capital	14,961	-	-	14,961
Other alternatives				
Real estate	564,338	-	(590)	564,928
Private Credit	381,541	-	-	381,541
Total alternative investments	2,087,565	-	1,983	2,085,582
Total investments by fair value level	$ 3,685,233	$ 18	$ 1,599,633	$ 2,085,582
Investments measured at the net asset value (NAV)				
Domestic equities commingled funds	1,981,011			
International equities commingled funds	548,766			
Global macro hedge funds	105,365			
Multi-strategy hedge funds	161,126			
Fixed income commingled funds	595,434			
Long/short credit hedge funds	3,467			
Long/short equity hedge funds	36,965			
Total investments measured at the NAV	3,432,134			
Total investments measured at fair value	$ 7,117,836			

Investments Measured at Fair Value
($000's)

June 30, 2020	Total	Fair Value Measurements Using: Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs	Significant Unobservable Inputs (Level 3)
Investments by fair value level				
Short term investments				
US Treasury bills	$ 61,593	$ 61,593	$ -	$ -
Short term investment funds	876,504	-	876,504	-
Total short term investments	938,097	61,593	876,504	-
Fixed income				
Corporate bonds	94,831	-	94,831	-
High yield funds	116,490	-	116,490	-
Total fixed income	211,321	-	211,321	-
Equity securities				
Domestic equities	97,394	9	97,385	-
Total equity securities	97,394	9	97,385	-
Alternative investments				
Private equity				
Leveraged buyouts	500,430	-	-	500,430
Energy	107,130	-	-	107,130
Special situations	130,175	-	-	130,175
Private equity secondaries	89,503	-	-	89,503
Venture capital	17,905	-	-	17,905
Other alternatives				
Real estate	457,430	-	-	457,430
Private Credit	308,483	-	25,574	282,909
Total alternative investments	1,611,056	-	25,574	1,585,482
Total investments by fair value level	2,857,868	$ 61,602	$ 1,210,784	$ 1,585,482
Investments measured at the net asset value (NAV)				
Domestic equities commingled funds	1,437,520			
International equities commingled funds	499,501			
Global macro hedge funds	108,035			
Multi-strategy hedge funds	141,718			
Fixed income commingled funds	454,871			
Long/short credit hedge funds	15,495			
Long/short equity hedge funds	31,953			
Total investments measured at the NAV	2,689,093			
Total investments measured at fair value	$ 5,546,961			

Short-term investments include US Treasury bills and funds held in short-term investment funds of the System's custodian and asset managers.

Fixed income investments include US corporate bonds, ETF's, and units of commingled fixed income funds of US government and US government agency securities and US corporate bonds.

Equity investments consist of ETF's and units in both US and non-US commingled equity funds.

Alternative investments consist of investments in hedge funds, real estate, private equity, and private credit. These investments are in various investment vehicles including limited partnerships and commingled funds.

The System's custodian bank provides security valuations for equity and fixed income securities utilizing vendor supplied pricing. Based upon the procedures described below, equity securities and short term investments that are valued based on quoted prices in active markets are generally classified as Level 1 while fixed income securities are generally considered to be Level 2 or Level 3 investments. Vendor supplied pricing data for equity securities is based upon the daily closing price from the primary exchange of each security while vendor supplied pricing data for fixed income securities is based upon a combination of market maker quotes, recent trade activity, and observed cash flows. To minimize the potential for inaccurate valuations, multiple price types are obtained from multiple providers and whenever possible prices are put through tolerance checks with exceptions researched and resolved on a same day basis as part of the pricing process. An integral part of the custodian's pricing process is to allow portfolio managers and interested third parties to challenge custodian provided prices which provides additional validation to the custodian's pricing. The evaluation process is handled by the custodian's internal pricing system, which automatically validates substantially all of the System's securities, leaving only exceptions and missing prices for human intervention. The rules this system applies are multi-dimensional and can be applied at a number of different levels, ranging from general to security specific in nature. Consistent with the System's valuation policy, the System's staff maintains and documents an understanding of the custodian's and underlying manager's valuation process and has implemented a program to review and evaluate the reconciliation process and the fair value estimates provided by the custodian and the investment manager.

The System's custodian values the System's investment in limited partnerships at the dollar value provided by the general partners. Based upon the procedures described below, these limited partnerships are generally considered to be Level 3 assets. The fair value of securities held by limited partnerships has been estimated by the general partners in the absence of readily ascertainable fair values. The general partners utilize valuation methods which rely on significant assumptions and inputs of the portfolio company's most recent financial information such as EBITDA and debt and the equity structure of the portfolio company. Valuations may be derived by reference to observable valuation measures for comparable companies and may be adjusted for differences between the investment and the referenced comparables. General partners also utilize relevant information such as discounted cash flow analysis, pending recent transactions and potential initial public offering values in the determination of fair value. Consistent with the System's valuation policy, the System's staff maintains and documents an understanding of the general partner's valuation process and has implemented a program to review and evaluate the fair value estimates provided by each partnership.

The System's custodian values commingled funds at the net asset value provided by the commingled fund's custodian or administrator, as is applicable. The unit values of commingled funds are calculated by the custodian or administrator by dividing the commingled fund's net asset value on the calculation date by the number of units of the commingled fund that are outstanding on the calculation date. The commingled fund's net asset value is calculated by the commingled fund's custodian or administrator by using Level 1, Level 2 or Level 3 prices, as appropriate, to value each security and/or other asset held by the commingled fund on the calculation date, pursuant to the commingled fund's valuation policy. In short, the net asset value of the commingled fund is calculated based on a compilation of primarily observable market information. The number of units of a commingled fund that are outstanding on the calculation date is derived from observable purchase and redemption activity in the commingled fund. Consistent with the System's valuation policy, the System's staff maintains and documents an understanding of the underlying fund's valuation process and has implemented a program to review and evaluate the fair value estimates provided by each commingled fund.

The valuation method for investments measured at the net asset value (NAV) per share (or its equivalent) is presented on the following tables as of June 30, 2021 and 2020.

Investments Measured at the NAV ($000's)

June 30, 2021		Total	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Domestic equities commingled funds	(1)	$ 1,981,011	$ -	Daily	1 day
International equities commingled funds	(1)	548,766	-	Daily	3 days
Global macro hedge funds	(2)	105,365	-	Monthly	5 days
Multi-strategy hedge funds	(3)	161,126	-	Various up to three years	60-90 days
Fixed income commingled funds	(4)	595,434	-	Daily	2 days
Long/short credit hedge funds	(5)	3,467	-	Various up to three years	60-90 days
Long/short equity hedge funds	(6)	36,965	-	Annually	60-90 days
Total investments measured at the NAV		$ 3,432,134	$ -		

1. *Equities Commingled Funds* – This type invests in six funds, four that are invested in domestic equities and two that are invested in international equities. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. These funds have daily liquidity with a one to three day notice period.
2. *Global Macro Hedge Funds* - This type invests in two hedge funds that take long and short positions in global equity, credit, interest rate, and currency markets. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. These funds have monthly liquidity.
3. *Multi-Strategy Hedge Funds* - This type invests in four hedge funds that pursue multiple strategies to diversify risks and reduce volatility. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. One fund has quarterly liquidity over four quarters. Three other funds are in various stages of liquidation, estimated at up to two years.
4. *Fixed Income Commingled Funds* – This type invests in two domestic bond funds. The fair value of the investment in this type has been determined using the NAV per share (or its equivalent) of the investments. These funds have daily liquidity.
5. *Long / Short Credit Hedge Funds* - This type includes investments in two hedge funds that invest both long and short primarily in U.S. credit instruments. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. These funds are in various stages of liquidation, estimated at up to three years.
6. *Long / Short Equity Hedge Funds* - This type includes an investment in one hedge fund that invests both long and short primarily in U.S. common stocks. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. This fund has annual liquidity.

Investments Measured at the NAV
($000's)

June 30, 2020		Total	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Domestic equities commingled funds	(1)	$ 1,437,520	$ -	Daily	1 day
International equities commingled funds	(1)	499,501	-	Daily	3 days
Global macro hedge funds	(2)	108,035	-	Monthly	5 days
Multi-strategy hedge funds	(3)	141,718	-	Various up to three years	60-90 days
Fixed income commingled funds	(4)	454,871	-	Daily	2 days
Long/short credit hedge funds	(5)	15,495	-	Annually	60-90 days
Long/short equity hedge funds	(6)	31,953	-	Annually	60-90 days
Total investments measured at the NAV		$ 2,689,093	$ -		

1. *Equities Commingled Funds* – This type invests in four funds, two that are invested in domestic equities and two that are invested in international equities. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. These funds have daily liquidity with a one to three day notice period.
2. *Global Macro Hedge Funds* - This type invests in two hedge funds that take long and short positions in global equity, credit, interest rate, and currency markets. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. These funds have monthly liquidity.
3. *Multi-Strategy Hedge Funds* - This type invests in four hedge funds that pursue multiple strategies to diversify risks and reduce volatility. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. One fund has quarterly liquidity over four quarters. Three other funds are in various stages of liquidation, estimated at up to three years.
4. *Fixed Income Commingled Funds* – This type invests in three domestic bond funds. The fair value of the investment in this type has been determined using the NAV per share (or its equivalent) of the investments. These funds have daily liquidity.
5. *Long / Short Credit Hedge Funds* - This type includes investments in two hedge funds that invest both long and short primarily in U.S. credit instruments. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. These strategies have quarterly or annual liquidity.
6. *Long / Short Equity Hedge Funds* - This type includes an investment in one hedge fund that invests both long and short primarily in U.S. common stocks. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. This fund has annual liquidity.

Concentrations – As of both June 30, 2021 and 2020, the System did not have any single investment in any one organization which represented greater than 5% of plan net position.

Rate of return – For the year ended June 30, 2021, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 32.3%. For the year ended June 30, 2020, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 1.1%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

Investment Risk – The System's investments have been categorized to address deposit and investment risks related to custodial credit risk, credit risk, concentration of credit risk, interest rate risk, and foreign currency risk.

- *Custodial Credit Risk for Deposits and Investments* – Custodial credit risk for investments is the risk that in the event of a failure of the counterparty, the System will not be able to recover the value of the investment or collateral in possession of the counterparty. The System's policy regarding custodial credit risk requires counterparty exposures of each investment manager and strategy, as well as the overall counterparty exposure of the Fund, will be actively managed and monitored by investment managers and staff. The System considers only demand deposits as cash. As of June 30, 2021 and 2020, the System had a balance of $24 thousand and $482 thousand, respectively, on deposit at a financial institution. The Federal Depository Insurance Corporation (FDIC) covered cash on deposit up to $250 thousand at this financial institution. Therefore, as of June 30, 2021, none of the System's bank balance of $24 thousand was exposed to custodial credit risk. At June 30, 2021, the System did not have any other investments with other financial institutions subject to custodial credit risk.
- *Credit Risk* – Credit risk is the risk that the counterparty will not fulfill its obligations. As of June 30, 2021 and 2020, the System's fixed income assets that are not U.S. government guaranteed represented 100.0% and 96.2%, respectively, of the System's fixed income plus short term investments portfolio. The tables below and on the following page summarize the System's fixed income portfolio and short term investment exposure levels and credit qualities as of June 30, 2021 and 2020.

Average Credit Quality and Exposure Levels of
Non-U.S. Government Guaranteed Securities
($000's)

Fixed Income Security Type	Fair Value **June 30, 2021**	Percent of Total	Weighted Average Credit Quality
Corporate Bonds	$ 252,011	12.3 %	B
Corporate Convertible Bonds	129,605	6.3	BB
Mutual Bond Funds	595,434	29.0	Not Rated
Short Term Investment Funds	1,078,809	52.4	Not Rated
Total	$ 2,055,859	100.0 %	

Fixed Income Security Type	Fair Value **June 30, 2020**	Percent of Total	Weighted Average Credit Quality
Corporate Bonds	$ 211,321	13.7 %	BB
Mutual Bond Funds	454,871	29.5	Not Rated
Short Term Investment Funds	876,504	56.8	Not Rated
Total	$ 1,542,696	100.0 %	

Ratings Dispersion Detail
($000's)

Credit Rating Level **June 30, 2021**	Corporate Bonds	Corporate Convertible Bonds	Mutual Bond Funds	Short Term Investment Funds
A	$ -	$ 3,279	$ -	$ -
BBB	8,777	5,630	-	-
BB	128,973	2,873	-	-
B	81,569	2,228	-	-
CCC	25,046	3,181	-	
Not rated	7,646	112,414	595,434	1,078,809
Total	$ 252,011	$ 129,605	$ 595,434	$ 1,078,809

Credit Rating Level **June 30, 2020**	Corporate Bonds	Corporate Convertible Bonds	Mutual Bond Funds	Short Term Investment Funds
BBB	$ 12,966	$ -	$ -	$ -
BB	123,621	-	-	-
B	63,015	-	-	-
CCC	8,954	-	-	-
D	232	-	-	
Not rated	2,533	-	454,871	876,504
Total	$ 211,321	$ -	$ 454,871	$ 876,504

The System's investment policy allows investment managers full discretion in adopting investment strategies to deal with these risks. Specific guidelines governing risks and concentrations and portfolio quality are established in contracts with each manager and are monitored by System staff.

Credit risk for derivative instruments held by the System results from counterparty risk, which is essentially that the counterparty will be unable to fulfill its obligations, which are then assumed by the System. Information regarding the System's credit risk related to derivatives is found under the derivatives disclosures.

Policies regarding credit risk pertaining to credit risk associated with the System's securities lending program are found under the securities lending disclosures.

- *Concentration of Credit Risk* – Concentration of credit risk is the risk of loss attributable to the magnitude of the System's investment in a single issue. The System's investment policy does not provide for specific limits on investment in any one single security, as this is governed by contracts with individual managers. As of June 30, 2021 and 2020, the System did not have any single investment in any one organization which represented greater than 5% of plan net position.

- *Interest Rate Risk* – Interest rate risk is the risk that changes in interest rates will adversely affect the fair values of the System's financial instruments. This risk is managed within the portfolio using the modified duration methodology. It is widely used in the management of fixed income portfolios and estimates the sensitivity of a bond's price to interest rate changes. The System's investment policy delegates the management of interest rate risk to the individual investment managers in accordance with each manager's designated strategy. Investment managers have full discretion in adopting investment strategies to deal with these risks, and all of the System's fixed income portfolios are managed in accordance with guidelines that are specific as to the degree of interest rate risk taken.

The reporting of modified duration as of June 30, 2021 and 2020, found in the tables below and on the following page quantify the interest rate risk of the System's fixed income and short term investments. Interest rate risks associated with derivative instruments are found in the derivatives disclosures of these notes.

Modified Duration by Security Type
($000's)

Security Type **June 30, 2021**		Fair Value ($000's)	Percent of Total	Weighted Average Modified Duration (years)
Corporate Bonds	$	252,011	12.3 %	4.6
Corporate Convertible Bonds		129,605	6.3	4.9
Mutual Bond Funds		595,434	29.0	6.1
Short Term Investment Funds		1,078,809	52.4	0.1
Total	$	2,055,859	100.0 %	0.0

Security Type **June 30, 2020**		Fair Value ($000's)	Percent of Total	Weighted Average Modified Duration (years)
US Treasuries	$	61,593	3.8 %	0.1
Corporate Bonds		211,321	13.2	4.3
Mutual Bond Funds		454,871	28.4	8.5
Short Term Investment Funds		876,504	54.6	0.1
Total	$	1,604,289	100.0 %	2.3

Modified Duration Analysis by Security Type
($000's)

Corporate Bonds		Fair Value **June 30, 2021**	Average Modified Duration	Contribution to Modifed Duration
Less than 1 year	$	5,267	0.6	0.0
1 to 5 years maturities		131,034	3.2	1.6
5 to 10 years maturities		100,779	5.7	2.3
Greater than 10 years maturities		14,931	11.2	0.7
Total	$	252,011		4.6
Corporate ConvertibleBonds				
Less than 1 year	$	3,484	0.7	0.0
1 to 5 years maturities		90,444	3.8	2.6
5 to 10 years maturities		30,629	6.3	1.5
Greater than 10 years maturities		5,048	21.8	0.8
Total	$	129,605		4.9
Mutual Bond Funds				
Less than 1 year	$	13,604	6.1	0.1
1 to 5 years maturities		274,862	6.1	2.8
5 to 10 years maturities		227,893	6.1	2.4
Greater than 10 years maturities		79,075	6.1	0.8
Total	$	595,434		6.1
Short Term Investment Funds				
Less than 1 year	$	1,002,011	0.1	0.1
1 to 5 years maturities		76,798	0.1	0.0
Total	$	1,078,809		0.1

Modified Duration Analysis by Security Type
($000's)

US Treasuries	Fair Value **June 30, 2020**	Average Modified Duration	Contribution to Modifed Duration
Less than 1 year	$ 61,593	0.1	0.1
Corporate Bonds			
Less than 1 year	$ 5,523	0.7	0.0
1 to 5 years maturities	126,349	3.4	2.0
5 to 10 years maturities	67,082	5.5	1.7
Greater than 10 years maturities	12,367	9.9	0.6
Total	$ 211,321		4.3
Mutual Bond Funds			
Less than 1 year	$ 30,247	8.5	0.6
1 to 5 years maturities	213,434	8.5	4.0
5 to 10 years maturities	106,847	8.5	2.0
Greater than 10 years maturities	104,343	8.5	1.9
Total	$ 454,871		8.5
Short Term Investment Funds			
Less than 1 year	$ 840,011	0.1	0.1
1 to 5 years maturities	36,493	0.1	0.0
Total	$ 876,504		0.1

- *Foreign Currency Risk* – Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment. The books and records of the System are maintained in US dollars. Foreign currencies and non-US dollar denominated investments are translated into US dollars at the bid prices of such currencies against US dollars at each Statement of Net Position date. Realized and unrealized gains and losses on investments which result from changes in foreign currency exchange rates have been included in the net appreciation in fair value of investments. Net realized foreign currency gains and losses resulting from changes in exchange rates include foreign currency gains and losses between trade date and settlement date of investment securities transactions, foreign currency transactions and the difference between the amounts of interest and dividends recorded on the books of the System and the amount actually received. International and global managers have the permission to use currency forward and futures contracts to hedge currency against the U.S. dollar. Currency forwards and futures used for the purpose of hedging currency shall be subject to the following guidelines: 1) net forward and futures sales of any currency may not exceed total market value of the assets denominated in that currency. This limitation does not apply to global fixed income managers and currency overlay managers if provided for in their contracts, 2) foreign currency exchange contracts with a maturity exceeding 12 months are not permitted, 3) currency options may be entered into in lieu of or in conjunction with forwards sales of currencies with the same limitations as currency forwards and futures. Cross hedging, the selling of one foreign currency for another foreign currency, which may or may not be the base currency of the portfolio, is permitted. The System's exposure to foreign currency risk in U.S. dollars as of June 30, 2021 and 2020, are shown in the tables on the following pages.

Foreign Currency Exposure by Asset Class ($000's)
June 30, 2021

Currency	Short Term Investments	Fixed Income	Equities	Alternative Investments	Total
Canadian dollar	$ 57,775	$ -	$ 99,400	$ -	$ 157,175
Chinese yuan renminbi	-	-	146,055	-	146,055
Euro	(152,020)	-	278,175	2,756	128,911
Japanese yen	(107,521)	-	202,478	-	94,957
Australian dollar	-	-	62,838	6,855	69,693
Swiss franc	-	-	65,191	-	65,191
Thai baht	-	-	60,596	-	60,596
New Taiwan dollar	-	-	42,344	-	42,344
Hong Kong dollar	-	-	35,038	-	35,038
Kuwaiti dinar	-	-	34,709	-	34,709
Swedish krona	-	-	28,363	-	28,363
Indonesian rupiah	-	-	27,892	-	27,892
South Korean won	-	-	25,657	-	25,657
Brazilian real	-	-	22,653	-	22,653
Danish krone	-	-	22,616	-	22,616
Singapore dollar	-	-	18,178	-	18,178
Indian rupee	-	-	17,587	-	17,587
New Zealand dollar	-	-	16,056	-	16,056
Saudi riyal	-	-	14,511	-	14,511
British pound sterling	(66,523)	-	79,949	-	13,426
Hungarian forint	-	-	10,510	-	10,510
Turkish lira	-	-	6,967	-	6,967
Pakistan rupee	-	-	6,709	-	6,709
Mexican peso	-	-	5,326	-	5,326
New Israeli shekel	-	-	5,236	-	5,236
Norwegian krone	-	-	4,179	-	4,179
South African rand	-	-	3,638	-	3,638
Russian ruble	-	-	2,746	-	2,746
Polish zloty	-	-	2,663	-	2,663
Qatari riyal	-	-	2,459	-	2,459
Malaysian ringgit	-	-	2,166	-	2,166
Chilean peso	-	-	1,894	-	1,894
United Arab Emirates dirham	-	-	1,015	-	1,015
Philippine peso	-	-	788	-	788
Colombian peso	-	-	633	-	633
Argentine austral	-	-	540	-	540
Czech koruna	-	-	446	-	446
Egyptian pound	-	-	280	-	280
Peruvian nuevo sol	-	-	80	-	80
Total	$ (268,289)	$ -	$ 1,358,560	$ 9,611	$ 1,099,882

Foreign Currency Exposure by Asset Class ($000's)
June 30, 2020

Currency	Short Term Investments	Fixed Income	Equities	Alternative Investments	Total
Japanese yen	$ -	$ -	$ 172,656	$ -	$ 172,656
Chinese yuan renminbi	-	-	121,308	-	121,308
Euro	(108,737)	-	218,414	2,756	112,433
Canadian dollar	36,514	-	68,413	-	104,927
Swiss franc	-	-	69,935	-	69,935
Australian dollar	-	-	45,692	6,855	52,547
British pound sterling	(49,975)	-	95,730	-	45,755
New Taiwan dollar	-	-	36,365	-	36,365
South Korean won	-	-	34,306	-	34,306
Indian rupee	-	-	23,800	-	23,800
Hong Kong dollar	-	-	23,274	-	23,274
Swedish krona	-	-	20,744	-	20,744
Danish krone	-	-	15,905	-	15,905
Brazilian real	-	-	15,211	-	15,211
South African rand	-	-	11,085	-	11,085
Russian ruble	-	-	9,490	-	9,490
Saudi riyal	-	-	7,968	-	7,968
Singapore dollar	-	-	7,596	-	7,596
Thai baht	-	-	6,772	-	6,772
Malaysian ringgit	-	-	5,257	-	5,257
Mexican peso	-	-	5,096	-	5,096
Indonesian rupiah	-	-	4,348	-	4,348
New Israeli shekel	-	-	4,254	-	4,254
Norwegian krone	-	-	3,499	-	3,499
Philippine peso	-	-	2,569	-	2,569
Qatari riyal	-	-	2,469	-	2,469
New Zealand dollar	-	-	2,273	-	2,273
Polish zloty	-	-	2,151	-	2,151
Chilean peso	-	-	1,687	-	1,687
United Arab Emirates dirham	-	-	1,530	-	1,530
Turkish lira	-	-	1,403	-	1,403
Peruvian nuevo sol	-	-	732	-	732
Hungarian forint	-	-	652	-	652
Colombian peso	-	-	541	-	541
Argentine austral	-	-	399	-	399
Egyptian pound	-	-	334	-	334
Czech koruna	-	-	318	-	318
Pakistan rupee	-	-	31	-	31
Total	$ (122,198)	$ -	$ 1,044,207	$ 9,611	$ 931,620

Securities Lending Program – The System's Board of Trustees' policies permit the System to lend securities (domestic and international equities and fixed income) to securities firms on a temporary basis through its custodian bank. The System receives fees for all loans and retains the right to all interest and dividend payments while the securities are on loan. Cash, letters of credit or various government securities having market values equal to or exceeding 102% and 105% of the value of the loaned securities for domestic and international securities, respectively, collateralize all security loan agreements. Whenever the market value of the securities on loan changes, the borrower must adjust the collateral accordingly. The System's bank pools all collateral received from securities lending transactions and invests any cash collateral. The System holds an undivided share of the collateral provided by the borrowers of the securities. At June

30, 2021 the weighted-average maturity of the collateral pool was 31 days. The relationship between the maturities of the collateral pool and the System's loans has not been determined. Cash collateral invested in the custodian bank collateral pool at June 30, 2021 and 2020, was $125,217 thousand and $34,741 thousand, respectively. The System also had non-cash collateral at June 30, 2021 and 2020, of $8,095 thousand and $722 thousand, respectively, consisting of treasury securities and letters of credit. The System cannot sell or pledge the collateral unless the borrower fails to return the securities borrowed.

The market value of securities on loan at June 30, 2021 and 2020, was $130,019 thousand and $34,933 thousand, respectively. At June 30, 2021, the System had no credit risk exposure to borrowers because the amounts the System owes the borrowers, $133,312 thousand, exceeds the amounts the borrowers owe the System, $130,019 thousand.

Derivatives – The System's investment managers may invest in derivatives if permitted by the manager's contract with the System's Board of Trustees. The System's staff monitors guidelines and compliance. From time to time the System's investment managers will invest in equity, fixed income and short term futures contracts along with foreign currency forward contracts. No derivatives are purchased with borrowed funds. These investment derivatives are primarily classified in Level 1 of the fair value hierarchy as futures contracts are price base on market quotes.

The fair value balance of posted margin and collateral and notional amounts of derivative instruments outstanding at June 30, 2021 and 2020, classified by type, and the changes in fair value of such derivative instruments for the years then ended is shown in the tables below. The Change in Fair Value figures are reported as a component of net appreciation (depreciation) in the Statements of Changes in Fiduciary Net Position.

Derivative Investments by Type
($000's)

	Year ending June 30, 2021	As of June 30, 2021			
	Changes in Fair Value	Posted Margin	Collateral Held at Custodian Bank	Collateral Held at Broker	Notional Value
Equity Futures	$ 368,793	$ 82,417	$ 782,721	$ -	$ 1,364,025
Currency Futures	(2,047)	1,150	67,708	-	(270,275)
Fixed Income Futures	(1,837)	(72)	10,422	-	40,122

	Year ending June 30, 2020	As of June 30, 2020			
	Changes in Fair Value	Posted Margin	Collateral Held at Custodian Bank	Collateral Held at Broker	Notional Value
Equity Futures	$ (73,422)	$ 94,788	$ 592,396	$ -	$ 1,009,647
Currency Futures	3,617	(477)	62,305	-	(124,185)
Fixed Income Futures	1,473	-	-	-	-
Equity Options	(36,787)	-	-	-	-

Futures are used to obtain market exposure and to take advantage of mis-pricing opportunities. When a position is taken in a futures contract, a margin is posted and the contract is subject to daily mark-to-market adjustments. Foreign currency contracts are used to hedge against the currency risk in the System's investments in foreign equity and fixed income securities. To liquidate the contract prior to expiration an offsetting position in the same contract must be taken.

These derivative instruments are subject to the following risks:

- *Custodial Credit Risk* – Custodial credit risk for derivative instruments is the risk that, in the event of the failure of the counterparty to a transaction, the System will not be able to recover the value of the derivative instruments or collateral securities that are in the possession of an outside party. Consistent with the System's investment policy, the System's derivative instruments were held by the counterparty that was acting as the System's agent.

- *Credit Risk* –Credit risk is the risk that the counterparty will not fulfill its obligations. The System does not have an investment policy specifically regarding credit risk for derivative instruments and instead allows investment managers full discretion in adopting investment strategies to deal with this risk. The System's investment managers seek to control this risk through counterparty credit evaluations and approvals, counterparty credit limits, and exposure monitoring procedures.
- *Interest Rate Risk* – Interest rate risk is the risk that changes in interest rates will adversely affect the fair values of the System's derivative instruments.
- *Foreign Currency Risk* – Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of derivative instruments. The System's exposure to foreign currency risk derives from its positions in foreign currency denominated international equity and fixed income investments as outlined in the following schedule. The System has a currency hedging program in place that hedges fifty percent of the Euro, Pound, and Yen exposure in these investment programs. This hedging program is disclosed elsewhere in this footnote. The System's derivative instruments exposure to foreign currency risk in U.S. dollars as of June 30, 2021 and 2020, is shown in the tables below and on the following page.

Foreign Currencey Exposure for Derivatives ($000's)
June 30, 2021

Currency	Equity Derivatives	Currency Derivatives	Total
Canadian dollar	$ 60,800	$ 55,789	$ 116,589
Chinese yuan renminbi	88,298	-	88,298
Swiss franc	52,454	-	52,454
Australian dollar	38,484	-	38,484
Thai baht	36,631	-	36,631
Kuwaiti dinar	34,709	-	34,709
Euro	178,742	(152,020)	26,722
Indonesian rupiah	25,994	-	25,994
Swedish krona	20,072	-	20,072
Hong Kong dollar	17,395	-	17,395
Japanese yen	124,016	(107,521)	16,495
Danish krone	13,863	-	13,863
Brazilian real	13,691	-	13,691
Singapore dollar	13,250	-	13,250
British pound sterling	78,747	(66,523)	12,224
Hungarian forint	10,125	-	10,125
New Taiwan dollar	9,188	-	9,188
Saudi riyal	8,770	-	8,770
Pakistan rupee	4,574	-	4,574
Turkish lira	4,207	-	4,207
Norwegian krone	3,372	-	3,372
Mexican peso	3,225	-	3,225
New Israeli shekel	3,211	-	3,211
South Korean won	2,954	-	2,954
Qatari riyal	1,828	-	1,828
Russian ruble	1,660	-	1,660
Polish zloty	1,610	-	1,610
New Zealand dollar	1,338	-	1,338
Malaysian ringgit	1,310	-	1,310
Chilean peso	1,148	-	1,148
United Arab Emirates dirham	614	-	614
Indian rupee	580	-	580
Philippine peso	475	-	475
Colombian peso	381	-	381
Argentine austral	326	-	326
Czech koruna	270	-	270
Egyptian pound	171	-	171
Peruvian nuevo sol	47	-	47
Total	$ 858,530	$ (270,275)	$ 588,255

Foreign Currencey Exposure for Derivatives ($000's)
June 30, 2020

Currency	Equity Derivatives	Currency Derivatives	Total
Japanese yen	$ 90,388	$ -	$ 90,388
Canadian dollar	35,995	34,528	70,523
Chinese yuan renminbi	62,716	-	62,716
Swiss franc	36,618	-	36,618
Australian dollar	23,914	-	23,914
New Taiwan dollar	18,783	-	18,783
South Korean won	17,772	-	17,772
Indian rupee	12,262	-	12,262
Hong Kong dollar	12,135	-	12,135
Swedish krona	10,854	-	10,854
Danish krone	8,363	-	8,363
Brazilian real	7,868	-	7,868
South African rand	5,740	-	5,740
Euro	114,318	(108,737)	5,581
Russian ruble	4,944	-	4,944
Saudi riyal	4,072	-	4,072
Singapore dollar	3,950	-	3,950
Thai baht	3,475	-	3,475
Malaysian ringgit	2,709	-	2,709
Mexican peso	2,648	-	2,648
Indonesian rupiah	2,250	-	2,250
New Israeli shekel	2,206	-	2,206
Norwegian krone	1,850	-	1,850
Philippine peso	1,271	-	1,271
Qatari riyal	1,271	-	1,271
New Zealand dollar	1,174	-	1,174
Polish zloty	1,102	-	1,102
Chilean peso	888	-	888
United Arab Emirates dirham	781	-	781
Turkish lira	704	-	704
Peruvian nuevo sol	383	-	383
Hungarian forint	352	-	352
Colombian peso	291	-	291
British pound sterling	50,176	(49,975)	201
Argentine austral	199	-	199
Egyptian pound	184	-	184
Czech koruna	168	-	168
Pakistan rupee	31	-	31
Total	$ 544,805	$ (124,184)	$ 420,621

Alternative Investments – As of June 30, 2021 and 2020, the System was invested in various partnerships, separate accounts and commingled funds across various types of alternative investments as detailed in the table below.

Investment Type	Fair Value ($000's) June 30, 2021	June 30, 2020
Private Equity		
Leveraged Buyouts	$ 728,478	$ 500,430
Energy	129,797	107,130
Special Situations	161,880	130,175
Private Equity Secondaries	106,570	89,503
Venture Capital	14,961	17,905
Other Alternatives		
Real Estate	564,338	457,430
Private Credit	381,541	308,483
Hedge Funds		
Global macro hedge funds	105,365	108,035
Multi-strategy hedge funds	161,126	141,718
Long/short credit hedge funds	3,937	15,495
Long/short equity hedge funds	36,964	31,953
	$ 2,394,957	$ 1,908,257

On January 30, 2020, the World Health Organization ("WHO") announced a global health emergency because of a new strain of coronavirus originating in Wuhan, China (the "COVID-19 outbreak") and the risks to the international community as the virus spreads globally beyond its point of origin. In March 2020, the WHO classified the COVID-19 outbreak as a pandemic, based on the rapid increase in exposure globally.

The COVID-19 pandemic continues to affect global economic activity as of the date of this report. While the pandemic greatly contributed to significant deterioration and instability in financial markets in the previous fiscal year, the response by global governments and the development of vaccines brought back strong growth in financial markets during the current fiscal year. As a result, the System's investment portfolio experienced a significant increase in fair value. Similar to previous market downturns, the values of the Plan's individual investments have and will fluctuate in response to changing market conditions, and the amount of gains or losses that may be recognized in subsequent periods, if any, and any related impact on the Plan's liquidity cannot be determined at this time. The value of the Plan's assets and liabilities have a direct impact on its funded status and the volatility of markets can translate into volatile portfolio asset values. Should the funded status of the Plan deteriorate due to market movements or liability losses the risk sharing agreement with the City (as disclosed in the Required Supplementary Information) calls for a series of mitigating steps including an increase in the employer and employee contributions, a decrease in cost-of-living adjustments, an increase in the normal retirement age, and other benefit or plan changes considered necessary through negotiations with the City to decrease the City contribution to the corridor mid-point (see note 2). The Plan is currently not at risk of those thresholds being impacted.

Supplemental Information on investment and professional expenses included in Summary of Investment and Professional Services on page 38 herein does not include the investment management fees and performance fees embedded in the structure of the private equity and other limited partnership investments listed above. Rather, these fees are a component of the Net appreciation in fair value of investments in the accompanying Statements of Changes in Fiduciary Net Position.

5. Capital Assets

Land – In December of 2020, the System purchased land in Houston, Texas for $5,322 thousand.

Building – In April of 2021, the System began the process of designing a single-tenant office building for use in its operations. The costs associated with the construction of the building are being capitalized and classified as building in the Statements of Fiduciary Net Position.

6. Deferred Retirement Option Program (DROP) Balances

The Deferred Retirement Option Plan (DROP) is an optional method of accruing pension benefits under the System's benefit structure. Members with at least 20 years of service and who were hired prior to October 9, 2004, are eligible to participate in the DROP. Effective July 1, 2017, the lump sum benefit is the accumulated balance in the member's notional DROP account which is equal to an amount calculated as if the member's annuity and an interest component had been deposited in a separate account in the member's name during the member's participation in DROP. Subsequent to July 1, 2017, none of the member's contributions are credited to a notional DROP account.

Prior to July 1, 2017, employee contributions were also credited to the member's notional DROP account. For the period from October 9, 2004 through June 30, 2017, an eligible member contributed 9.00% of pensionable pay with 8.75% of pensionable pay credited to his or her notional DROP account and the additional 0.25% credited to the System's general fund. Prior to October 9, 2004, 100% of a member's contributions were credited to his or her notional DROP account. The following tables page show the change in DROP accounts during the years ended June 30, 2021 and 2020.

DROP Activity

Year ended June 30, 2021	DROP Accounts ($000's)		DROP Participants
Balance at June 30, 2020	$ 824,325	Participants at June 30, 2020	1,673
Accumulations	23,398	Entrants	95
Transfers to PROP	(120,406)	Withdrawals	(197)
Distributions	51,463	Participants at June 30, 2021	1,571
Balance at June 30, 2021	$ 778,780		

Year ended June 30, 2020	DROP Accounts ($000's)		DROP Participants
Balance at June 30, 2019	$ 822,996	Participants at June 30, 2019	1,749
Accumulations	135,285	Entrants	89
Transfers to PROP	(110,321)	Withdrawals	(165)
Distributions	(23,635)	Participants at June 30, 2020	1,673
Balance at June 30, 2020	$ 824,325		

The Post Retirement Option Plan (PROP) prior to July 1, 2017, allowed retired members to have all or a portion of their monthly retirement and DROP lump sum credited to a notional account maintained by the System which accumulates interest and can be disbursed to the member under certain options as designated by the System. Effective July 1, 2017, retired members can no longer credit a portion of their monthly benefit to the PROP account. Surviving spouses can transfer a DROP or PROP balance to a PROP account of their own but are not eligible to credit all or a portion of their survivor benefit to a PROP account. Members hired or rehired subsequent to October 9, 2004 are not eligible for this benefit. The following tables shows the change in PROP accounts during the years ended June 30, 2021 and 2020.

PROP Activity

Year ended June 30, 2021	PROP Accounts ($000's)		PROP Participants
Balance at June 30, 2020	$ 1,155,794	Participants at June 30, 2020	1,975
Accumulations	28,552	Entrants	108
Transfers from DROP	120,406	Withdrawals	(29)
Distributions	(91,194)	Participants at June 30, 2021	2,054
Balance at June 30, 2021	$ 1,213,558		

Year ended June 30, 2020	PROP Accounts ($000's)		PROP Participants
Balance at June 30, 2019	$ 1,097,520	Participants at June 30, 2019	1,889
Accumulations	40,469	Entrants	105
Transfers from DROP	110,321	Withdrawals	(19)
Distributions	(92,516)	Participants at June 30, 2020	1,975
Balance at June 30, 2020	$ 1,155,794		

7. Net Pension Liability

The net pension liability is measured as the total pension liability, less the amount of the pension plan's fiduciary net position. The components of the net pension liability at June 30, 2021 and 2020 were as follows ($000's):

	6/30/2021	**6/30/2020**
Total pension liability	$ 7,343,837	$ 7,083,961
Plan fiduciary net position	7,137,251	5,572,476
System's net pension liability	$ 206,586	$ 1,511,485
Plan fiduciary net position as a percentage of the total pension liability	97.19%	78.66%

Actuarial assumptions – The total pension liability was determined by an actuarial valuation as of July 1, 2021 and July 1, 2020, using the following actuarial assumptions, applied to all periods included in the measurement:

	July 1, 2021	July 1, 2020
Inflation	2.30%	2.30%
Salary Increases	0.00% to 20.00% , plus a 2.75% inflation and productivity component	0.00% to 20.00% , plus a 2.75% inflation and productivity component

Investment Rate of Return	7.00%, net of pension plan investment expense, including inflation	7.00%, net of pension plan investment expense, including inflation
Mortality	Healthy retirees - The Gender-distinct RP-2014 Healthy Annuitant Mortality Tables with Blue Collar Adjustment for Males and no collar adjustment for Females. The rates are projected from the 2006 central rates to 2018 using scale MP-2017, and thereafter on a fully generational basis by the ultimate values of scale MP-2014 to account for future mortality improvements.	Healthy retirees - The Gender-distinct RP-2014 Healthy Annuitant Mortality Tables with Blue Collar Adjustment for Males and no collar adjustment for Females. The rates are projected from the 2006 central rates to 2018 using scale MP-2017, and thereafter on a fully generational basis by the ultimate values of scale MP-2014 to account for future mortality improvements.
	Disabled members - The gender-distinct RP-2014 Disabled Retiree Mortality Tables are used without adjustment. The rates are projected on a fully generational basis by the ultimate values of scale MP-2014 to account for future mortality improvements.	Disabled members - The gender-distinct RP-2014 Disabled Retiree Mortality Tables are used without adjustment. The rates are projected on a fully generational basis by the ultimate values of scale MP-2014 to account for future mortality improvements.
	Active members - The Gender-distinct RP-2014 Employee Mortality Tables with Blue Collar Adjustment. The rates are projected on a fully generational basis by the ultimate values of scale MP-2014 to account for future mortality improvements..	Active members - The Gender-distinct RP-2014 Employee Mortality Tables with Blue Collar Adjustment. The rates are projected on a fully generational basis by the ultimate values of scale MP-2014 to account for future mortality improvements..

The long-term expected rate of return on the System's investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of June 30, 2021 (see the discussion of the pension plan's investment policy) are summarized in the following table:

Asset Class	Long-Term Expected Real Rate of Return
Domestic equity	3.90 %
International equity	5.10
Fixed income	(1.10)
Credit	3.40
Alternative investments:	
Private equity	7.40
Real estate	4.90
Hedge funds	3.20
Cash	(0.80)

Discount rate – A single discount rate of 7.00% was used to measure the total pension liability for the June 30, 2021 measurement date. This single discount rate was based on the expected rate of return on pension plan investments of 7.00% and the current municipal bond rate was not applicable. The projection of cash flows used to determine this single discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at the rate determined actuarially in the annual RSVS study. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, a single discount rate of 7.00% was applied to all periods of projected benefit payments to determine the total pension liability. For the June 30, 2020 measurement date, the single discount rate used was 7.00%.

Sensitivity of the net pension liability to changes in the discount rate – The following table presents the net pension liability as of July 1, 2021, calculated using the discount rate of 7.00%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.00%) or 1-percentage-point higher (8.00%) than the current rate:

($000's)	1% Decrease 6.00%	Current Discount Rate 7.00%	1% Increase 8.00%
Net pension liability (asset)	$ 989,884	$ 206,586	$ (434,122)

8. Commitments and Contingencies

As described in Note 1, there are 3,623 non-vested active members of the System who are entitled to refunds of their accumulated contributions, without interest, upon termination of employment with the City prior to being eligible for pension benefits. At June 30, 2021 and 2020, aggregate contributions from these members of the System were $210,267 thousand and $197,219 thousand, respectively. The portion of these contributions that might be refunded to members who terminate prior to pension eligibility has not been determined.

At June 30, 2021 and 2020, the total accumulated lump sum benefit due to DROP members was $778,780 thousand and $824,325 thousand, respectively.

At June 30, 2021 and 2020, the total accumulated lump sum benefit due to PROP participants was $1,213,558 thousand and $1,155,794 thousand, respectively.

The System has outstanding investment commitments to various limited partnerships totaling $1,161,854 thousand and $1,062,891 thousand, as of June 30, 2021 and 2020, respectively. These outstanding commitment amounts include amounts that are due for investments that may have been made on behalf of the limited partnerships prior to the Statement of Net Position dates.

The System has a lease for the office it occupies through October 31, 2023. The System has the on-going right to terminate the lease from and after November 1, 2022 upon at least six months prior written irrevocable notice to the landlord. The monthly base rental and outstanding lease commitment is as detailed in the following chart ($000's).

Period	Monthly Base Rent	Fiscal Year	Total Rent
July 2020 - October 2020	$ 23	2022	$ 334
November 2020 - October 2021	27	2023	344
November 2021 - October 2022	28	2024	116
November 2022 - October 2023	29		$ 794

9. Subsequent Events

The System has evaluated subsequent events through October 12, 2021, the date the financial statements were available for issuance. The System has determined that no subsequent events require disclosure in these financial statements.

Schedule of Changes in the Net Pension Liability and Related Ratios
($000's)

Fiscal year ending June 30,	2021	2020	2019	2018	2017	2016	2015	2014
Total Pension Liability								
Service Cost	$ 73,040	$ 70,080	$ 66,750	$ 63,632	$ 60,930	$ 66,098	$ 56,062	$ 52,844
Interest	484,527	474,376	462,692	445,113	433,598	488,223	473,065	466,649
Benefit Changes (1)	-	-	-	-	(1,006,000)	-	-	-
Difference between Expected and Actual Experience	99,635	(23,461)	(16,454)	69,534	80,023	10,390	26,706	(41,034)
Assumption Changes	-	-	-	21,399	778,710	(676,151)	664,974	162,849
Benefit Payments	(394,893)	(355,373)	(335,600)	(361,033)	(458,733)	(259,076)	(225,656)	(211,690)
Refunds	(2,433)	(2,209)	(2,278)	(1,329)	(1,696)	(978)	(945)	(906)
Net Change in Total Pension Liability	259,876	163,413	175,110	237,316	(113,168)	(371,494)	994,206	428,712
Total Pension Liability - Beginning	7,083,961	6,920,548	6,745,438	6,508,122	6,621,290	6,992,784	5,998,578	5,569,866
Total Pension Liability - Ending (a)	$ 7,343,837	$ 7,083,961	$ 6,920,548	$ 6,745,438	$ 6,508,122	$ 6,621,290	$ 6,992,784	$ 5,998,578
Plan Fiduciary Net Position								
Employer Contributions	$ 151,094	$ 149,078	$ 142,429	$ 887,143	$ 133,805	$ 137,392	$ 113,665	$ 103,372
Employee Contributions	49,749	49,062	46,896	45,254	40,104	39,017	37,719	37,012
Pension Plan Net Investment Income	1,764,927	61,193	340,166	463,080	667,476	(135,833)	35,341	649,153
Benefit Payments	(394,893)	(355,373)	(335,600)	(361,033)	(458,733)	(259,076)	(225,656)	(211,690)
Refunds	(2,433)	(2,209)	(2,278)	(1,329)	(1,696)	(978)	(945)	(906)
Pension Plan Administrative Expense	(3,669)	(3,922)	(3,580)	(3,679)	(4,238)	(4,585)	(3,478)	(3,439)
Net Change in Plan Fiduciary Net Position	1,564,775	(102,171)	188,033	1,029,436	376,718	(224,063)	(43,354)	573,502
Plan Fiduciary Net Position - Beginning	5,572,476	5,674,647	5,486,614	4,457,178	4,080,460	4,304,523	4,347,877	3,774,375
Plan Fiduciary Net Position - Ending (b)	$ 7,137,251	$ 5,572,476	$ 5,674,647	$ 5,486,614	$ 4,457,178	$ 4,080,460	$ 4,304,523	$ 4,347,877
Net Pension Liability - Ending (a) - (b)	$ 206,586	$ 1,511,485	$ 1,245,901	$ 1,258,824	$ 2,050,944	$ 2,540,830	$ 2,688,261	$ 1,650,701
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	97.19%	78.66%	82.00%	81.34%	68.49%	61.63%	61.56%	72.48%
Covered Payroll	$ 473,801	$ 464,301	$ 444,871	$ 412,786	$ 424,300	$ 407,058	$ 395,360	$ 388,756
Net Pension Liability as a Percentage of Covered Payroll	43.60%	325.54%	280.06%	304.96%	483.37%	624.19%	679.95%	424.61%

(1) The benefit changes in fiscal year 2017 are detailed in the "Final Risk Sharing Valuation Study as of June 30, 2016" dated September 25, 2017, as a result of the amendment of the Governing Statute on July 1, 2017, which included changes to normal retirement eligibility, normal retirement benefit, and post-retirement Cost of Living Adjustments (COLA).

(2) This schedule is intended to present information for 10 years. GASB Statement 67 established the requirement for this schedule and went into effect for fiscal year ending June 30, 2014. The statement allows that if retroactive information is not presented for the full 10 years, required supplementary information should be presented for as many years for which information measured in conformity with the requirements of this Statement is available in the transition year and until 10 years of such information is available.

Schedule of Employer Contributions
($000's)

Measurement Year Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2014	$ 139,991	$ 103,372	$ 36,619	$ 388,756	26.59 %
2015	150,949	113,665	37,284	395,360	28.75
2016	161,154	137,392	23,762	407,058	33.75
2017	167,980	133,805	34,175	424,300	31.54
2018	131,142	887,143	(756,001)	412,786	214.92
2019	141,202	142,429	(1,227)	444,871	32.02
2020	146,626	149,078	(2,452)	464,301	32.11
2021	140,292	151,094	(10,802)	473,801	31.89

This schedule is intended to present information for 10 years. GASB Statement 67 established the requirement for this schedule and went into effect for fiscal year ending June 30, 2014. The statement allows that if retroactive information is not presented for the full 10 years, required supplementary information should be presented for as many years for which information measured in conformity with the requirements of this Statement is available in the transition year and until 10 years of such information is available.

Notes to Schedule

Valuation Date: July 1, 2021

Actuarially determined contribution rates, payable by the City, are determined in accordance with the 2016 Risk Sharing Valuation Study (RSVS) and become effective in the fiscal year beginning one year after the valuation date. Previously, actual contributions were based on the terms of the 2011 Meet and Confer Agreement. For more information regarding the actuarially determined contribution, refer to the July 1, 2021 HPOPS Valuation Report.

A new set of assumptions were adopted in the July 1, 2018 actuarial valuation and are first reflected in the contribution rate determined for the fiscal year ending 2020.

Methods and Assumptions Used to Determine Contribution Rates:

Actuarial Cost Method	Ultimate Entry Age Normal
Amortization Method	Level Percentage of Payroll, 30 year closed laddered bases
Remaining Amortization Period	26 years as of July 1, 2021
Asset Valuation Method	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.
Inflation	2.30%
Salary Increases	0.00% to 20.00% , plus a 2.75% inflation and productivity component
Investment Rate of Return	7.00%
Retirement Age	Experience-based table of rates based on age and years of service. The assumption was last updated in the July 1, 2018 valuation pursuant to an experience study of the five-year period ending June 30, 2017.
Mortality	Healthy retirees - The Gender-distinct RP-2014 Combined Healthy Annuitant Mortality Tables with Blue Collar Adjustment for males and no collar adjustment for females. The base rates were developed using the 2006 central rates, projected forward to 2018 using the MP-2017 projection scale. The rates are projected on a fully generational basis by ultimate values of scale MP-2014 to account for future mortality improvements. Disabled members – The gender-distinct RP-2014 Disabled Retiree Mortality Tables are used without adjustment. The rates are projected on a fully generational basis by the ultimate values of scale MP-2014 to account for future mortality improvements. Active members - The Gender-distinct RP-2014 Employee Mortality Tables with Blue Collar Adjustment are used without adjustment. The rates are projected on a fully generational basis by the ultimate values of scale MP to account for future mortality improvements.

Schedule of Investment Returns

Fiscal Year Ended June 30,	Annual Money-weighted Rate of Return, net of Investment Expense
2014	17.4 %
2015	0.8 %
2016	(3.2)%
2017	16.8 %
2018	9.8 %
2019	6.3 %
2020	1.1 %
2021	32.3 %

This schedule is intended to present information for 10 years. GASB Statement 67 established the requirement for this schedule and went into effect for fiscal year ending June 30, 2014. The statement allows that if retroactive information is not presented for the full 10 years, required supplementary information should be presented for as many years for which information measured in conformity with the requirements of this Statement is available in the transition year and until 10 years of such information is available.

Houston Police Officers' Pension System

Investment, Professional and Administrative Expenses ($000's)

Year ended June 30,	2021	2020
Investment services:		
Custodial services	$ 224	$ 255
Money management services	5,206	6,147
Consulting services	837	837
Department operating expense	843	671
Total investment services	7,110	7,910
Professional services:		
Actuarial services	96	83
Auditing services	102	119
Election audit services	13	21
Legal services	21	7
Lobbyist services	379	369
Total professional services	611	599
Administrative expenses:		
Information technology	334	337
Education	12	34
Fiduciary insurance	111	105
Office rent	241	234
Other office costs	2,360	2,613
Total administrative expenses	3,058	3,323
	$ 10,779	$ 11,832

Houston Police Officers' Pension System

Summary of Investment and Professional Services ($000's)

Year Ended June 30, 2021	Official System Position	Expense	Nature of Services
Franklin Park Associates, LLC	Consultant	$ 400	Consulting
Mercer Investment Consulting LLC	Consultant	437	Consulting
The Northern Trust Company	Custodian	224	Custodian
BlackRock Institutional Trust	Money Manager	382	Money Management
Blackstone Alternative Solutions LLC	Money Manager	11	Money Management
Bridgewater Associates, Inc.	Money Manager	1,909	Money Management
The Northern Trust Company	Money Manager	1,003	Money Management
Parametric	Money Manager	692	Money Management
Shenkman Capital Management, Inc.	Money Manager	1,209	Money Management
Gabriel Roeder Smith & Co.	Actuary	96	Actuarial
BDO USA, LLP	Auditors	102	Auditing
IceMiller LLP	Attorneys	17	Legal Service
HillCo Partners, LLC	Attorneys	157	Lobbyists
Locke Lord LLP	Attorneys	210	Lobbyists
Election Services Company	Consultant	13	Election Auditing
Other	Other	16	Other
Total investment and professional services		$ 6,878	

SECTION THREE

INVESTMENT SECTION

HPOPS®
FOR TODAY & TOMORROW

602 Sawyer St.
Houston, TX 77007
www.hpop.org

Patrick S. Franey
Executive Director

Stacey A. Galo
Chief Investment Officer

December 16, 2021

Dear Members,

The primary long-term financial goal of the System is to earn the assumed actuarial investment rate of return at the minimum, which is currently set at 7.0% net of all fees and expenses over a full market cycle. HPOPS' net fiscal year 2021 annualized rate of return was 32.2%, surpassing the long-term objective and placing in the top quartile of our custodian bank's universe for public funds with assets greater than $1 billion.

In order to meet its objective, the System must take market risks which are correlated to the performance of underlying economies. In stark contrast to fiscal year 2020 when both global economies and markets tumbled due to the spread of Covid-19, fiscal year 2021 was the year of the recovery. Global markets rallied as vaccination levels increased, additional financial stimulus packages were approved and companies began to report positive earnings.

The Board and Investment Staff recognize that avoiding large losses during periods of declining economic growth is a prudent component of our investment strategy. As such, the System manages a Risk Control Program that is designed to signal when market risks have become elevated and provides for the systematic reduction of risk. Conversely, the Risk Control Program is also designed to signal when risks are abating to allow full participation in expansionary periods. Market events during the fiscal year provided the opportunity for the Risk Control Program to demonstrate its effectiveness as it was one of the metrics used to determine when to reinstate the System's leverage in its public equity portfolio. The use of leverage in the System's public equity portfolio added approximately 3.9% to the asset class's annual return during fiscal year 2021.

No changes were made to the System's strategic asset allocation targets year-over-year. Staff continues to diligently monitor economic data and potential market risks that drive the asset allocation decision in order to optimally position the portfolio in the current market environment.

I appreciate the opportunity to serve as the System's Chief Investment Officer and will continue to strive to deliver strong risk-adjusted performance for the members of the System.

Sincerely,

Stacey A. Galo

Stacey A. Galo
Chief Investment Officer

Responsibilities of the Board of Trustees

The primary fiduciary fiscal responsibility of the Board of Trustees is to ensure that the System's assets are responsibly managed in accordance with the actuarial needs of the System, and also with sound, generally accepted financial investment procedures. The determination of the appropriate asset mix is based on capital market assumptions that incorporate historical returns, volatility and correlation of various asset classes as well as the consideration of liquidity and current and forward-looking market expectations.

The Standard of Investment for the System in making investments is to exercise the judgment and care in the circumstances then prevailing which persons of prudence, discretion and intelligence exercise in the management of their own affairs. The Trustees' responsibility is to invest the System's funds solely in the interest of the membership and their beneficiaries, and for the exclusive purpose of providing benefits to the membership and their beneficiaries and defraying reasonable expenses of administering the System.

Investment Philosophy and Objectives

The Board of Trustees believes that the System's assets should be managed in a manner that reflects the uniqueness of the System and that the System's assets should be diversified over a spectrum of investment strategies. Specifically, the Board recognizes and adheres to the following philosophical positions:

- Diversification should be based upon the prudent allocation of risk rather than solely the allocation of capital.

- Asset classes are priced to have long-term expected returns above cash and their return above cash is proportional to their risk (they have similar Sharpe Ratios). Since asset classes have similar expected Sharpe Ratios, they can be made competitive through the prudent use of leverage or leverage-like techniques.

- Over the long term, the risk of owning equities has been, and should continue to be, rewarded with a somewhat greater return than that available from fixed income investments.

- Fixed income investments provide the System with an investment strategy that contributes diversification, liquidity and a predictable stream of income; and that dampens volatility in investment returns.

- Diversification into alternative investments provides the System with an opportunity to enhance returns and to achieve broader diversification of the System's assets.

Investment Policy

The Board of the Houston Police Officers' Pension System (HPOPS) has established an Investment Policy with the following broad guidelines and objectives.

- Establish overall financial objectives and set investment policy
- Select appropriate investment options
- Select qualified investment manager(s) and consultants
- Select a qualified custodian
- Communicate on a structured and ongoing basis with those responsible for investment results; and
- Monitor performance to assure that objectives are being met and that policy and guidelines are being followed.

This Investment Policy represents the formal document for HPOPS and is to be communicated to the appointed Investment Manager(s) and is their principal source for developing an appropriate investment strategy and, in addition, serves as the basis for these Managers' and the System's future performance evaluation.

Texas Government Code 802.103 requires public retirement systems to disclose direct and indirect fees paid for the sale, purchase and management of assets. In addition, profit sharing fees and fees paid for investment services are also required to be reported. For compliance purposes, a fee column and a portfolio expense column has been added to each asset class table. The fee column details the dollars paid to investment managers or consultants for their portfolio management or advisory services. The portfolio expense column details the underlying costs incurred to run the mandate or the profit sharing fees, both accrued and paid during the fiscal year. Portfolio expenses are not explicitly paid by the System, but instead deducted from the assets by the managers. Footnotes have been added to the asset class tables to provide clarity on the expenses being reported.

Investment Strategy and Performance

The System's asset allocation strategy is reviewed periodically by the Board and is changed in anticipation of or in response to changing market conditions. The current asset allocation targets and the actual asset allocation of the System at June 30, 2021 are as follows:

	Target % of Fund[1]	Current Actual % of Fund	Dollars Invested (000's)
Domestic Equity	33.7%	36.5%	$ 2,398,894
International Equity	18.1%	19.6%	1,184,146
Total Equity	51.8%	56.1%	3,583,040
Credit Strategies	9.8%	9.3%	663,658
Traditional Fixed Income	11.7%	9.1%	648,829
Total Fixed Income	21.5%	18.4%	1,312,487
Private Equity/Energy	20.0%	16.1%	1,142,814
Hedge Funds	6.5%	6.1%	432,735
Real Estate	10.0%	7.9%	564,343
Total Alternatives	36.5%	30.1%	2,139,892
Total Cash	-9.8%	-4.6%	86,859
Total Fund	100.0%	100.0%	$ 7,122,278

[1] See footnote 4 to the financial statements for disclosure of portfolio leverage.

Fiscal year 2021 was a continuation of the post-pandemic global economic recovery. Reopening's across the developed world have allowed pent up demand to flow through to the economy. Consumer spending was fueled by savings levels at all-time highs and the government's continued fiscal support, which lead to better than expected earnings for a majority of companies and markets during the year. The System returned 32.2% during fiscal year 2021 outperforming its benchmark by 0.5%.

The System's outperformance versus its benchmark was primarily attributable to the public equity portfolio. During fiscal year 2020 leverage was reduced to preserve capital and reduce risk. As the recovery took hold in 2021 the System's risk model began to indicate a less volatile environment supportive of growth, at which time leverage was reinstated. Leverage in the public equity portfolio added approximately 3.9% to the return of the asset class.

Domestic Equity

The U.S equity portfolio generated a 46.4% return, outperforming its benchmark, the Russell 3000, by 2.2%. This outperformance of the System's domestic equity portfolio versus the benchmark was primarily due to the System's use of leverage within the Parametric U.S. Futures portfolio.

During the year two tactical positions were implemented, an allocation to small cap stocks and an allocation to value stocks. The small cap allocation was implemented given the propensity of small cap companies to bounce back more quickly and grow more rapidly in a recovery. In response to accelerating inflation and concerns around rising rates, the System implemented an allocation to value stocks.

Assets under management, annualized rates of return and fees paid to domestic equity managers for the fiscal year ending June 30, 2021 are as follows (dollars in 000's):

Manager	Style	Assets	% Returns	Fees	Portfolio Expense[2]
BlackRock	S&P 500 Index	$ 831,058	41.0%	$ 95	$ 75
Northern Trust	Russell 3000 Index	952,138	44.9%	104	78
Parametric [1]	Russell 3000 Futures	417,884	66.4%	271	52
Northern Trust [3]	Russell 2000 Index	137,339	3.5%	5	14
Northern Trust [4]	S&P 500 Value Index	60,475	3.0%	-	
		$ 2,398,894		$ 475	$ 219

[1] See footnote 4 to the finacial statements for disclosure of leverage in this strategy.

[2] Portfolio expenses include commissions, exchange fees and admin costs.

[3] NT Russell 2000 Index funded February 2021, return not annualized

[4] NT Russell S&P 500 Value Index funded June 2021, return not annualized

International Equity

The international equity portfolio returned 40.7%, outperforming the return of the MSCI ACWI ex U.S. benchmark for the fiscal year by 5.0%. The international equity mandate is passive, however the leverage and currency hedges within the allocation may cause the portfolio to outperform or underperform its benchmark at times. During fiscal year 2021, leverage added approximately 7.4% to the performance of the asset class while the currency hedges detracted approximately 2.4% from performance.

Assets under management, annualized rates of return and fees paid to international equity managers for the fiscal year ending June 30, 2021 are as follows (dollars in 000's):

Manager	Style	Assets	% Returns	Fees	Portfolio Expense[2]
BlackRock	World Equity ex-US	$ 304,561	37.0%	$ 181	$ 51
Parametric	World Equity ex-US Futures[1]	603,215	50.0%	317	190
Parametric	Currency Hedge	32,166	-6.6%	63	35
Northern Trust	World Equity ex-US	244,206	36.7%	118	43
		$ 1,184,147		$ 680	$ 319

[1] See footnote 4 to the financial statements for disclosure of leverage in this strategy.

[2] Portfolio expenses include commissions, exchange fees and admin costs.

Credit

HPOPS has a dedicated allocation to credit strategies designed to take advantage of perceived opportunities in the credit markets. Credit investments are segregated by HPOPS as a separate investment category with a target allocation of 9.8% of the System's total assets.

While the asset class has seen immense growth in recent years, the opportunity set continues to appear attractive and is well suited for a rising rate environment due to its floating rate nature. We continue to believe that this asset class has the potential to outperform versus high yield due to the illiquidity premium and the manager's potential to add alpha. In addition, these illiquid funds should be less volatile than high yield, while at the same time distributing current income.

Assets under management, annualized rates of return and fees paid to credit-oriented managers for the fiscal year ending June 30, 2021 are as follows (dollars in 000's):

Manager	Style	Assets	% Returns	Fees	Portfolio Expense
MacKay Shields [1]	High Yield	$ 13	NA	$ -	$ -
Shenkman	High Yield	182,604	13.8%	613	-
Northern Trust HY [4,7]	High Yield	98,859	9.8%	-	8
Golub BDC3 [2]	Opportunistic Credit	28,420	13.4%	316	377
GSO Capital Opps III [2]	Opportunistic Credit	14,470	18.9%	217	980
Mesa West IV [2,8]	Opportunistic Credit	9,599	6.5%	218	(7)
Sculptor RE Credit [2]	Opportunistic Credit	13,587	17.9%	100	287
SP Speciality Credit [2]	Opportunistic Credit	42,927	19.7%	195	1,656
SP Speciality Credit II [2]	Opportunistic Credit	24,238	25.0%	146	432
Sculptor Structured Prod	Opportunistic Credit	551	45.5%	-	114
Golub X [2]	Opportunistic Credit	22,671	18.6%	275	2,350
Golub XII [2]	Opportunistic Credit	21,773	24.0%	240	864
Monroe Capital II [2,8]	Opportunistic Credit	16,464	13.1%	290	952
Monroe Capital III [2,8]	Opportunistic Credit	22,265	14.9%	-	494
Monroe Opportunistic [2]	Opportunistic Credit	6,009	19.2%	96	-
Anchorage Illiquid III [2]	Opportunistic Credit	2,434	-4.9%	-	-
Anchorage Illiquid V [2,8]	Opportunistic Credit	65,728	54.0%	594	8,371
Pathlight [2,8]	Opportunistic Credit	19,155	11.1%	47	178
Pathlight II [2,3]	Opportunistic Credit	9,634	-7.7%	244	-
Whitehorse II [2,8]	Opportunistic Credit	17,281	16.0%	244	126
Whitehorse III [2,8]	Opportunistic Credit	18,126	37.2%	225	588
Post Road SOF II [6]	Opportunistic Credit	15,006	5.1%	169	217
HarbourVest COF II [2,3]	Opportunistic Credit	11,845	-1.0%	134	-
		$ 663,659		$4,365	$ 17,988

[1] Terminated May 30, 2014.

[2] Fees paid to Opportunistic Credit managers in this schedule are not explicitly paid by the System, but instead are deducted from assets by the managers. Thus, these fees are not included as a component of investment expense in the financial statements.

[3] Funded January 2021, return not annualized.

[4] Funded September 2021, return not annualized.

[5] Funded March 2021, return not annualized.

[6] Funded August 2020, return not annualized.

[7] Portfolio expense includes admin and commission costs.

[8] Portfolio expenses reflects carried interest accrued and paid during the fiscal year.

Fixed Income

The System rotated 1.2% of its allocation from high yield bonds in to investment grade credit in early 2021 to protect against the possibility of increasing defaults as the path to a full recovery was uncertain due to a slow rollout of the vaccine, possible variants and supply chain disruptions. During the fiscal year, the fixed income portfolio returned 1.3%, outperforming the Barclays US Aggregate benchmark by 1.6%.

Assets under management, annualized rates of return and fees paid to fixed income managers for the fiscal year ending June 30, 2021 are as follows (dollars in 000's):

Manager	Style	Assets	% Returns	Fees	Portfolio Expense
Blackrock[1]	BC US Aggregate	$ 360,926	-0.3%	$ 101	$ 24
Shenkman	Short Duration High Yield	81,087	6.0%	290	-
Northern Trust	Investment Grade Debt	135,649	2.0%	40	6
Blackrock[1,2]	TIPS SD Fund	71,167	1.7%	5	-
		$ 648,829		$ 436	$ 30

[1] Portfolio expenses include commissions, exchange fees and admin costs.

[2] Funded March 18, 2021, return is not annualized.

Alternative Investments

Private Equity

The System's alternative investment program consists of allocations to private equity, energy assets, real estate, and hedge funds. The private equity program is managed by Franklin Park, although the portfolio still contains funds recommended by Abbott Capital who managed the asset class from 1997 – 2008, as well as funds recommended by Mercer (formerly Hammond Associates) who served as the interim manager between Abbott Capital and Franklin Park. Although the private equity program is a relatively mature strategy, it remains underfunded by approximately 4.0% due primarily to target allocation increases during fiscal years 2016 and 2020, as well as distributions exceeding drawdowns in recent years. The System had investments in, or commitments to, 113 individual private equity and energy partnerships with 61 general partners as of June 30, 2021. The current allocation within this strategy is approximately 64% leveraged buyouts, 14% special situation funds, 1% venture capital, 9% secondary and 11% in energy funds. This program required $189.6 million of additional funding during fiscal 2021 while at the same time generating distributions of $233.1 million for the same period. The private equity program generated a 46.5% return for the 2021 fiscal year versus a return of 53.2% for its benchmark, the Cambridge Private Equity Index. The System's energy allocation returned 22.8%, underperforming its benchmark, the S&P 500 Energy Index by 26.6%.

$Millions

Strategy	# of Funds	Committed Capital	Contributed Capital	Unfunded Commitment	Distributed Capital	Market Value	Exposure	TVPI	Since Inception IRR
Buyout	63	$ 1,073	$ 859	$ 335	$ 845	$ 770	$ 1,105	1.9	25.3%
Debt for Control	1	10	4	-	2	0	0	0.5	-26.6%
Distressed Debt	2	35	33	2	30	19	21	1.5	8.3%
Energy	16	260	250	30	152	130	160	1.1	9.7%
Growth Equity	7	98	53	45	73	21	66	1.8	1.9%
Multi-Strategy	12	286	207	92	173	154	246	1.6	23.2%
Special Assets	1	25	7	18	0	5	23	0.8	-14.3%
Structured Finance	2	45	46	14	35	36	50	1.5	14.9%
Turnaround	3	45	44	8	35	22	30	1.3	9.2%
Venture Capital	6	34	33	0	43	2	2	1.3	8.2%
	113	$ 1,910	$ 1,536	$ 544	$ 1,389	$ 1,159	$ 1,704	1.7	20.0%

- Remaining Value is defined as the investor's value as reported by the fund's manager.
- Exposure is defined as the sum of an investor's Remaining Value plus Unfunded Commitment.
- TVPI is the ratio of Distributed Capital plus Remaining Value to Contributed Capital.
- Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Remaining Value as of the Report Date, of fees and expenses, including late closing interest.
- Results include fully liquidated investments (if applicable).
- Commitments made in a foreign currency have been converted into U.S. dollars using an exchange rate as of the Report Date.

Real Estate

As of June 30, 2021 the market value of real estate assets comprised 7.9% of the System's total assets. The 2.1% shortfall between the target allocation and the current allocation is due to the increased target allocation during 2015, in addition to the timing and relatively immature nature of the portfolio. The System began committing to the asset class during 2007, immediately prior to the great recession. During the recession, capital was not called due to extreme market uncertainty, essentially delaying investment into the asset class for approximately two years. The System had investments in, or commitments to, 41 individual real estate partnerships with 22 general partners as of June 30, 2021. This program required $92.5 million of additional funding during fiscal 2021 while at the same time generating distributions of $67.4 million for the same period. The System's real estate portfolio returned 17.5% during fiscal year 2021, outperforming its benchmark the NCREIF Property Index by 14.9%.

$Millions

Strategy	# of Funds	Committed Capital	Contributed Capital	Unfunded Commitment	Distributed Capital	Remaining Value	Total Exposure	TVPI	Since Inception Net IRR
Europe Diversified	1	$ 27	$ 22	$ 5	$ 5	$ 25	$ 30	1.4	12.1%
Global Distressed	3	51	47	10	43	15	25	1.2	9.8%
Global Diversified	13	292	181	147	111	131	278	1.3	14.4%
Hospitality	1	35	30	5	0	23	28	0.8	-17.6%
US Diversified	14	424	294	160	127	263	423	1.3	11.3%
US Multi-Family	3	79	43	35	19	35	71	1.3	21.1%
US Logistics	1	36	22	14	1	20	34	0.9	-61.3%
US Office	1	10	14	1	14	0	1	1.1	1.7%
US Real Estate Debt	3	70	79	-	57	40	40	1.2	8.6%
Secondaries	1	25	12	15	3	11	25	1.1	13.0%
	41	$ 1,048	$ 744	$ 391	$ 380	$ 564	$ 955	1.3	9.9%

*Data on HPOPS' active Real Estate portfolio

Other Alternatives

The target hedge fund and market opportunities allocation remained at 6.5% during fiscal year 2021. The System had $432.7 million invested as of June 30, 2021. The hedge fund component of this mandate generated fiscal year performance of approximately 14.9%, underperforming the HFR Fund of Funds Composite Index by 3.4%. The market opportunities component is a carve out of the hedge fund allocation designed to allow the System to strategically invest in pockets of dislocation or outsized opportunities, which typically arise due to market imbalances but will not persistent. An allocation to convertible bonds was funded in August 2020 to capitalize on high levels new issuance in the sector and pricing premiums due to the optionality of the bond structure. Convertible bonds returned 16.3% during the year, which added approximately 18bps to the total return of the mandate.

Assets under management, annualized rates of return and fees paid to alternative investment managers for the fiscal year ending June 30, 2021 are as follows (dollars in 000's):

Manager	Style	Assets	% Returns	Base Fee	Portfolio Expense
Bridgewater[1]	Hedge Funds	$ 105,365	16.6%	$ 1,448	$ 461
Mercer[2]	Hedge Funds	408	NA	-	-
Blackstone Opportunistic[3]	Hedge Funds	1,147	NA	11	-
Mercer[4,8]	Real Estate	564,343	17.5%	437	18,387
Franklin Park[5,8]	PE/Energy	1,142,814	43.4%	400	174,808
Elliott[6]	Hedge Funds	159,943	14.1%	2,265	3,952
King Street[6]	Hedge Funds	3,795	1.5%	14	-
Viking[6]	Hedge Funds	36,964	15.7%	139	5,017
Shenkman[7]	Convertible Bonds	125,112	16.3%	305	-
		$ 2,139,891		$ 5,019	$ 202,625

[1] Includes the Pure Alpha and Pure Alpha Major Markets funds.

[2] Residual illiquid investments from hedge funds terminated between 2010 - 2016.

[3] Terminated 2016, residual illiquid holdings.

[4] Fees consist of the $437 thousand annual consulting fee.

[5] Fess consist of the $400 thousand annual consulting fee.

[6] Management fees paid to Elliott, King Street and Viking are deducted directly from the assets of each fund and are not a component of investment expense in the financial statements.

[7] Mandate funded in August 2020, return not annualized.

[8] Expenses include manager fees, paid and accrued carried interest.

Cash

The System has a cash securitization program which was initiated in order to more closely track our strategic asset allocation through the securitization of excess cash. During March 2020, the cash securitization program was suspended due to excessive market volatility and risk related to the pandemic. Cash remained invested at the System's custodial bank, split between the traditional STIF account and a "government only" STIF account. Both STIF accounts have an average quality rating of A1+.

Manager	Style	Assets (000's)	% Return	Base Fee (000's)	Portfolio Expense (000's)[1]
Northern Trust	STIF	$ 98,498	NA	$ 45	$ 41

[1] Portfolio expenses include sweep fees.

Securities Lending

The System's master custodian, Northern Trust, operates the Securities Lending program on behalf of HPOPS. Securities are loaned on a short-term basis to brokers in exchange for (generally) cash collateral. Northern Trust then invests this collateral and the investment income is divided between HPOPS and Northern Trust in accordance with agreed-upon percentages.

This program generates incremental income for HPOPS but is subject to certain risks. These risks include (1) the possibility that the borrower cannot return the securities and s(2) that the investments in which Northern invests the collateral lose money. This first risk is controlled by strict guidelines on which borrowers will be approved to participate in the program and daily adjustment of the collateral for changes in the market value of the securities that are out on loan. The second risk is controlled by strict quality and duration guidelines on the securities that the collateral can be invested in. In June 2008 the System switched to a "government only" collateral pool thus avoiding exposure to the liquidity issues experienced by many securities lending collateral pools during the credit crisis.

Vendors other than Northern Trust could be used for this program which could generate additional income but this is not likely without what has been determined to be an unacceptable increase in risk. Northern's participation in the Securities Lending program also allows for a reduction in custody fees.

Following is a chart of securities lending activity for the most recent three fiscal years (dollars in 000's).

	2021	2020	2019
Avg Securities on Loan	$ 61,590	$ 62,207	$ 86,117
Avg Eligible Securities	$ 398,135	$ 448,506	$ 492,487
% on Loan	15.5%	13.9%	17.5%
HPOPS Net Earnings	$ 148	$ 186	$ 295
Duration of Collateral Pool (days)	30	31	29

Compounded Annualized Rates of Return (%)
Periods Ended June 30, 2021

Year	System Total	Composite Benchmark	Domestic Equity	Russell 3000	Int'l Equity	MSCI ACWI ex U.S.	Fixed Income	BC US Agg	Credit	FTSE HY Market TR	Alternative Investments
2	15.6	15.5	25.2	23.9	15.6	13.7	3.6	4.1	10.0	6.9	13.2
3	12.5	12.4	19.9	18.7	10.6	9.4	4.9	5.3	8.9	7.0	11.3
5	12.9	12.1	19.6	17.9	11.5	11.1	NA	NA	9.4	7.2	11.8
10	8.8	9.2	15.1	14.7	5.3	5.5	NA	NA	8.3	6.4	9.0

*The System did not have an allocation to fixed income during fiscal years 2014 – 2017 and only had a fixed income allocation for the final six months of fiscal 2018. For this reason, annualized returns are not available before the fiscal year 2019 as such returns would be misleading.

Rates of Return by Year (%)
Years Ended June 30th

Year	System Total	Composite Benchmark	Domestic Equity	Russell 3000	Int'l Equity	MSCI ACWI ex U.S.	Fixed Income	BC US Agg	Credit	FTSE Market TR	Alternative Investments
2017	16.8	14.1	22.2	18.5	22.0	20.5	NA	NA	12.7	12.3	12.6
2018	10.2	9.2	16.5	14.8	4.4	7.3	NA	NA	7.5	2.8	12.5
2019	6.4	7.1	9.9	9.0	1.7	1.3	6.0	8.7	7.3	7.2	7.5
2020	1.1	2.9	7.1	6.5	-5.0	-4.8	4.8	8.3	2.3	-1.1	-1.1
2021	32.2	31.7	46.4	44.2	40.7	35.7	1.3	-0.3	18.3	15.7	29.6

*See note on fixed income above.

These calculations were prepared using a time-weighted rate of return in accordance with The CFA Institute's Global Investment Performance Standards. The System's total rates of return are net of investment fees and expenses. Though these standards do not apply to plan sponsors per se, we have used them herein for purposes of presenting investment rates of return. The Composite Benchmark returns are calculated as if the System's current asset allocation had been in place for all time periods.

Schedule of Ten Largest Equity Holdings
As of June 30, 2021[1]

Shares	Description	Market Value ($000's)	% of Total Domestic Equity
14,114,734	Northern Trust Collective Russell 3000 Index Fund	$ 952,138	35.7%
505,831	Blackrock Equity Index Fd	831,058	31.2%
8,347,164	Blackrock ACWI Ex-Us Superfund A	304,560	11.4%
1,101,450	Northern Trust MSCI ACWI Ex-US Index Fund	244,206	9.2%
2,261,806	Northern Trust Collective Russell 2000 Index Fund	137,339	5.1%
348,446	Vanguard Index Funds S&P 500 EFT SHSNEW	137,120	5.1%
756,269	NT Collective S&P 500 Citigroup/Value Index	60,475	2.3%

[1]The HPOPS public equity portfolio is passive, no direct equity securities are held in HPOPS' name.
All private equity holdings are immaterial, therefore only seven material holdings have been listed.

**A complete list of all available holdings is available upon request.*

Schedule of Ten Largest Fixed Income Holdings
As of June 30, 2021

Units	Description	Market Value ($000's)	% of Total Fixed Income
4,438,646	Blackrock US Debt Index A FD	$ 360,926	36.9%
1,073,084	NT COL 1-10 YR INT CR BD IDX FD NL TIER J	135,649	13.9%
2,418,279	NTGI COLTV Daily Hi Yield FXD Inc FD	98,859	10.1%
3,734,000	Diamond 1 Fin Corp. 7.125% due 06-15-2024	3,830	0.4%
3,318,000	PVTPL Stars Group Hldgs B Vistars 7.0% 07-15-2026	3,434	0.4%
2,877,000	PVTPL Verscend Escrow Corp 9.75%08-15-2026	3,032	0.3%
2,892,000	Splunk Inc. 1.125%Due 06-15-2027 BEO	2,818	0.3%
2,447,000	Dish Network Corp NT Conv 3.375% 08-15-2026	2,497	0.3%
2,201,000	PVTPL Altice France S 144A 8.125% Due 02-01-2027	2,398	0.2%
2,123,000	Change Healthcare 5.75% Due 03-01-2025	2,157	0.2%

**A complete list of all available holdings is available upon request.*

Schedule of Investment Managers as of June 30, 2021

Manager Name	Location	Strategy
Abacus Multi-Family Partners	New York, NY	Real Estate
Advent International	New York, NY	Private Equity
Altus Investment Group LLC	Concord, NH	Private Equity
Anchorage Capital Group	New York, NY	Illiquid Credit
Apollo Investment Management	New York, NY	Private Equity
Atlas Holdings LLC	Greenwich, CT	Private Equity
Ardian	Paris, France	Private Equity
Ares Management	Dallas, TX	Illiquid Credit
Atlas Venture LP	Cambridge, MA	Private Equity
Austin Ventures	Austin, TX	Private Equity
Bain Capital	Boston, MA	Real Estate
Beacon Capital Partners	Boston, MA	Real Estate
Blackstone	New York, NY	Private Equity
Blackrock	New York, NY	Public Equity and Fixed Income
Boston Ventures Investment Partners	New York, NY	Private Equity
Bridgewater Associates	Westport, CT	Hedge Funds
Brookfield	New York, NY	Real Estate
Calera Capital	Boston, MA	Private Equity
Canaan Partners	Westport, CT	Private Equity
Carlyle Realty Partners	Washington, DC	Real Estate
Carnelian Energy Capital	Houston, TX	Private Equity
Castlelake , L.P.	Minneapolis, MN	Private Equity
CBRE	Houston, TX	Real Estate
Charterhouse Capital Partners	London, United Kingdom	Private Equity
Clearlake Capital	Santa Monica, CA	Private Equity
Court Square Capital Partners	New York, NY	Private Equity
CVC European Equity Investors	St Helier, Jersey	Private Equity
Cypress Partners	New York, NY	Private Equity
DW Healthcare Partners	Park City, UT	Private Equity
DRA Advisors	New York, NY	Real Estate
EIF Management	Boston, MA	Private Equity
Elliott Mangement	New York, NY	Hedge Funds
The Energy and Minerals Group	Houston, TX	Private Equity
EnCap Investments L.P.	Houston, TX	Private Equity
First Reserve	Houston, TX	Private Equity
Cinven	New York, NY	Private Equity
Genstar Capital	San Francisco, CA	Private Equity
GLP Capital Partners	Santa Monica, CA	Real Estate
Golub Capital	New York, NY	Illiquid Credit
Great Hill Partners	Boston, MA	Private Equity
H2 Capital Partners	Stamford, CT	Real Estate
HarbourVest Partners, LLC	Boston, MA	Illiquid Credit
JF Lehman & Company	New York, NY	Private Equity
Lexington Capital Partners	New York, NY	Private Equity
LLR Equity Partners	Philadelphia, PA	Private Equity
Lone Star Funds	New York, NY	Real Estate
Longroad Asset Managment	Old Greenwich, CT	Private Equity

Schedule of Investment Managers as of June 30, 2021- Continued

Manager Name	Location	Strategy
Longpoint Realty Partners	Boston, MA	Real Estate
Lovell Minnick Partners	New York, NY	Private Equity
Kelso	New York, NY	Private Equity
King Street Captial Management LLC	New York, NY	Hedge Funds
Levine Leichtman Capital Partners	Beverly Hills, CA	Private Equity
Madison Dearborn Partners	Chicago, IL	Private Equity
Mesa West Capital	Los Angeles, CA	Illiquid Credit
Monroe Capital LLC	Chicago, IL	Illiquid Credit
Montauk Triguard	Irvine, CA	Private Equity
Natural Gas Partners	Irving, TX	Private Equity
New Enterprise Associates	Timonium, MD	Private Equity
Neuberger Berman	New York, NY	Private Equity
Noble Hospitality Fund	Atlanta, GA	Real Estate
Northern Trust Wealth Management	Chicago, IL	Public Equity and Fixed Income
NovaCap	Quebec, Canada	Private Equity
Oak Investment Partners	Norwalk, CT	Private Equity
Oak Hill Capital Partners	New York, NY	Private Equity
Oaktree Capital Management	Los Angeles, CA	Private Equity and Real Estate
Odyssey Investment Partners	New York, NY	Private Equity
Parametric	Edina, MN	Public Equity and Alternatives
Pathlight Capital	Hingham, MA	Illiquid Credit
Post Road Group LP	Stamford, CT	Illiquid Credit
Quantum Energy Partners	Houston, TX	Private Equity
The Related Companies, LP	New York, NY	Real Estate
Resolute Fund	New York, NY	Private Equity
Revelstoke Capital Partners	Denver, CO	Private Equity
Riverside	New York, NY	Private Equity
Rockpoint Group	Boston, MA	Real Estate
Scultptor Capital Management	New York, NY	Illiquid Credit and Hedge Funds
Sentinel Capital Partners	New York, NY	Private Equity
Shenkman Capital	New York, NY	Fixed Income
Silverpeak Real Estate Partners	New York, NY	Real Estate
Silver Point Capital, LP	Greenwich, CT	Illiquid Credit and Hedge Funds
Stark Investments (Shepherd)	Milwaukee, WI	Hedge Funds
Starwood Capital	Greenwich, CT	Real Estate
Sycamore Partners	New York, NY	Private Equity
Summit Partners	Boston, MA	Private Equity
TA Associates Mgmt., L.P.	Boston, MA	Private Equity
Thoma Bravo	San Francisco, CA	Private Equity
Thor Equities	New York, NY	Real Estate
Torchlight Investors	New York, NY	Real Estate
Trident	San Mateo, CA	Private Equity

Schedule of Investment Managers as of June 30, 2021- Continued

Manager Name	Location	Strategy
Veritas Capital	New York, NY	Private Equity
Vestar Capital Partners	New York, NY	Private Equity
Viking Global Investors	Greenwich, CT	Hedge Funds
Vista Equity Partners	San Francisco, CA	Private Equity
Walton Street Capital	Chicago, IL	Real Estate
Warburg Pincus	New York, NY	Private Equity
Waud Capital	Chicago, IL	Private Equity
WCAS	New York, NY	Private Equity
Whitehorse Liquidity Partners, LP	Toronto, Ontario	Illiquid Credit
Wicks Group	New York, NY	Private Equity
W L Ross	New York, NY	Private Equity
WNG Aircraft Opportunities	Dallas, TX	Private Equity


HOUSTON POLICE DEPARTMENT
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911
NON EMERGENCY
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POLICE

SECTION FOUR

ACTUARIAL SECTION

Houston Police Officers' Pension System

ACTUARIAL VALUATION REPORT FOR THE YEAR BEGINNING JULY 1, 2021

P: 469.524.0000 | www.grsconsulting.com

October 18, 2021

Board of Trustees
Houston Police Officers' Pension System
602 Sawyer
Suite 300
Houston, TX 77007

Re: Risk Sharing Valuation Study as of July 1, 2021

Dear Members of the Board:

We are pleased to present our Risk Sharing Valuation Study (RSVS, or sometimes referred to as the actuarial valuation in the report) of the Houston Police Officers' Pension System ("HPOPS" or "the System") for the plan year commencing July 1, 2021. This Report describes the current actuarial condition of HPOPS, determines the calculated employer contribution rate (the actuarially determined rate), and analyzes changes in this contribution rate from the prior year. Valuations are prepared annually, as of July 1st, the first day of the HPOPS plan year. This report was prepared at the request of the Board and is intended for use by the HPOPS staff and those designated or approved by the Board. This report may be provided to parties other than HPOPS staff only in its entirety and only with the permission of the Board, or as required by law.

Financing objectives and funding policy

Under the HPOPS statute, the employer contribution rate is determined actuarially, based on the Board's funding policy and the HPOPS governing law. The contribution rate determined by a given actuarial valuation and implemented by the Board becomes effective twelve months after the valuation date, i.e., the rates determined by this July 1, 2021 actuarial valuation will be used by the Board when determining the employer contribution rate for the year beginning July 1, 2022 and ending June 30, 2023.

While inside the RSVS Corridor, the actual City Contribution Rate will be the greater of the Estimated City Contribution Rate determined below and the Corridor Midpoint that was established in the June 30, 2016 RSVS. The Estimated City Contribution Rate (City of Houston) for FY 2023 is 27.02%, which is less than the Corridor Midpoint of 31.98%. Thus, the City Contribution rate for FY 2023 is 31.98%.

The Estimated City Contribution Rate and liabilities are computed using the Ultimate Entry Age Normal (UEAN) actuarial cost method. The Estimated City Contribution Rate is the sum of two pieces: the employer normal cost rate and the amortization rate. The normal cost rate is determined as a percentage of active member payroll, with the employer normal cost being the difference between the total normal cost and the member contribution rate. The amortization rate is determined as a level percentage of active member payroll. It is the amount required to amortize the unfunded actuarial accrued liability (UAAL) over a closed period using the process of "laddering".

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

The UAAL as of June 30, 2016, as restated in the "Final Risk Sharing Valuation Study as of June 30, 2016" (RSVS Study), which was dated September 28, 2017, is the initial base and is amortized over a closed 30-year period beginning FY2018. 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). New loss bases will be amortized over a 30-year period, while new gain bases will be amortized over the remaining amortization period as of one year after the valuation date of the largest remaining loss base (will typically be the initial RSVS base). The amortization of all bases will begin one year after the valuation date using a level percentage of payroll amortization method.

Gains from assets returning 11.77% on an AVA basis compared to the 7.00% assumed were partially offset by the COLA and DROP credit risk sharing provisions. Note that the calculation of the COLA (return on AVA less 5.0% with a minimum of 0.0% and max of 4.0%) means that gains due to asset performance will necessarily result in liability losses due to COLAs being greater than assumed, while asset losses will result in liability gains from COLAs being less than assumed. Please see Table 6 under Section IV of our Report for a detailed analysis of the change in the estimated City contribution rate from the prior year to this year.

The contribution rate is determined using an actuarial value of assets rather than market value. The actuarial value of assets recognizes 20% of the difference (typically referred to as "five-year smoothing") between the market value of assets and the expected actuarial value of assets, based upon the assumed valuation rate of return of 7.00% per annum. There are currently $1.055 billion in asset gains being deferred that will be recognized in the future and will provide tailwinds for the improvement in the funded status and provide a cushion against future asset losses.

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 85.4% which is up compared to last year's funded ratio of 82.4%. The funded ratio measured on the market value of assets is higher at 100.2% as of July 1, 2021. The funded status alone may not be appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

Benefit provisions

The benefit provisions reflected in this valuation are those which were in effect on July 1, 2021. There were no changes in the benefit provisions since the prior valuation. The benefit provisions are summarized in Appendix B of our Report.

Assumptions and methods

Actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the System's actuary. As part of the legislation enacting the 2016 RSVS benefit changes, the investment return assumption (7.0%) was set into statute (Article 6243g-4, Vernon's Texas Civil Statutes). This assumption is now considered a prescribed assumption under the actuarial standards of practice. The assumptions used in this valuation were adopted by the Board based on the recommendations from GRS following the Actuarial Experience Investigation Study for the 5-year period ending June 30, 2017. These assumptions were first used in the June 30, 2018 actuarial valuation. There have been no changes in assumptions or methods since the prior valuation.

The results of the actuarial valuation are dependent upon the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. The actuarial calculations presented in our Report are intended to provide information for rational decision making.

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

The actuarial assumptions and methods used in this Report all comply with the actuarial standards of practice (ASOPs)and are described in Appendix A of our Report.

Data

Member data for retired, active and inactive members was supplied as of July 1, 2021 by the HPOPS 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. GRS is not responsible for the accuracy or completeness of the information provided to us.

Asset and all financial information as of July 1, 2021 were supplied to us by the HPOPS staff.

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 under Section IV of our Report.

Actuarial Certification

All of the tables contained in this actuarial valuation report and in the actuarial section of the HPOPS Comprehensive Annual Financial Report (CAFR) were prepared by Gabriel, Roeder, Smith & Company. Historical information for years prior to 2008 was prepared by the prior actuarial firm and was not subjected to our actuarial review. We certify that the information presented herein is accurate and fairly portrays the actuarial position of HPOPS as of July 1, 2021.

All of our work conforms with generally accepted actuarial principles and practices, and to 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 the Statements of the Governmental Accounting Standards Board. The undersigned are independent actuaries and consultants. All of the undersigned are Enrolled Actuaries, Members of the American Academy of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries. Finally, all of the undersigned are experienced in performing valuations for large public retirement systems.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

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

Bradley E. Stewart, ASA, EA, MAAA
Consultant & Actuary

Blake Orth, FSA, EA, MAAA
Actuary

EXECUTIVE SUMMARY

Item	July 1, 2021	July 1, 2020
Membership (dollar amounts in thousands)		
• Number of:		
- Active members	5,238	5,319
- Retirees and beneficiaries	4,786	4,622
- Inactive members	55	49
- Total	10,079	9,990
• Total annualized salaries supplied by HPOPS	$ 465,722	$ 459,273
Contribution Rates		
• City Contribution Rate	31.98%	31.92%
• Member	10.50%	10.50%
Assets ($000s)		
• Market value	$ 7,137,251	$ 5,572,476
• Actuarial value	6,082,317	5,631,533
• Estimation of return on market value	32.3%	1.1%
• Estimation of return on actuarial value	11.8%	6.7%
• Employer contribution	$ 151,094	$ 149,078
• Member contribution	$ 49,749	$ 49,062
• Ratio of actuarial value to market value	85.2%	101.1%
Actuarial Information ($000s)		
• Employer normal cost %	13.49%	13.48%
• Unfunded actuarial accrued liability (UAAL)	$ 1,038,643	$ 1,204,149
• Amortization rate	13.54%	15.74%
• Funding period	26.0 years	27.0 years
• Funded ratio	85.4%	82.4%
Projected employer contribution		
• Fiscal year ending June 30,	2023	2022
• Projected payroll (millions)	$ 491.7	$ 484.9
• Projected employer contribution (millions)	$ 157.2	$ 154.8

HISTORICAL SOLVENCY TEST ($000)
TABLE 14

	Aggregated Accrued Liabilities for				Portions of Accrued Liabilities Covered by Reported Assets		
Valuation Date	Active Members Contributions	Retirees Beneficiaries and Vested Terminations	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	145,255	718,779	1,729,696	2,337,157	100%	100%	85%
July 1, 2003	153,634	838,090	1,883,014	2,394,411	100%	100%	74%
July 1, 2004	153,088	995,841	2,190,295	2,466,070	100%	100%	60%
July 1, 2005	249,804	1,259,243	1,883,927	2,508,794	100%	100%	53%
July 1, 2006	262,514	1,421,330	1,949,301	2,681,375	100%	100%	51%
July 1, 2007	275,990	1,575,900	2,005,790	3,004,927	100%	100%	57%
July 1, 2008	294,678	1,726,121	2,058,165	3,337,612	100%	100%	64%
July 1, 2009	312,489	1,872,226	2,183,786	3,430,946	100%	100%	57%
July 1, 2010	149,252	1,998,683	2,084,797	3,526,703	100%	100%	66%
July 1, 2011	160,828	2,146,222	2,181,093	3,718,052	100%	100%	65%
July 1, 2012	167,739	2,320,239	2,259,195	3,888,504	100%	100%	62%
July 1, 2013	163,660	2,501,745	2,344,556	4,070,951	100%	100%	60%
July 1, 2014	162,982	2,834,747	2,366,263	4,342,936	100%	100%	57%
July 1, 2015	157,344	3,131,654	2,417,132	4,550,620	100%	100%	52%
July 1, 2016	151,259	3,381,371	2,548,761	4,758,079	100%	100%	48%
July 1, 2017	158,648	3,812,704	2,246,942	4,868,614	100%	100%	40%
July 1, 2018	166,807	4,033,323	2,263,742	5,128,835	100%	100%	41%
July 1, 2019	179,254	4,198,909	2,276,980	5,434,933	100%	100%	46%
July 1, 2020	194,868	4,368,772	2,272,042	5,631,533	100%	100%	47%
July 1, 2021	210,110	4,685,333	2,225,517	6,082,317	100%	100%	53%

SCHEDULE OF FUNDING PROGRESS ($000)
TABLE 15

Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)	Annual Payroll	UAAL as % of Payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
July 1, 2002	2,337,157	2,593,730	256,573	90.1%	286,150	89.7%
July 1, 2003	2,394,411	2,874,738	480,327	83.3%	300,405	159.9%
July 1, 2004	2,466,070	3,339,224	873,154	73.9%	329,840	264.7%
July 1, 2005	2,508,794	3,392,974	884,180	73.9%	321,057	275.4%
July 1, 2006	2,681,375	3,633,145	951,770	73.8%	327,080	291.0%
July 1, 2007	3,004,927	3,857,680	852,753	77.9%	336,029	253.8%
July 1, 2008	3,337,612	4,078,963	741,351	81.8%	351,525	210.9%
July 1, 2009	3,430,946	4,368,501	937,556	78.5%	366,924	255.5%
July 1, 2010*	3,526,703	4,232,732	706,029	83.3%	377,779	186.9%
July 1, 2011	3,718,052	4,488,142	770,090	82.8%	388,409	198.3%
July 1, 2012	3,888,504	4,747,173	858,669	81.9%	389,884	220.2%
July 1, 2013	4,070,951	5,009,961	939,010	81.3%	391,957	239.6%
July 1, 2014	4,342,936	5,363,992	1,021,056	81.0%	399,447	255.6%
July 1, 2015	4,550,620	5,706,130	1,155,510	79.7%	406,233	284.4%
July 1, 2016**	4,758,079	6,081,392	1,323,313	78.2%	424,300	311.9%
July 1, 2017	4,868,614	6,218,293	1,349,679	78.3%	440,614	306.3%
July 1, 2018	5,128,835	6,463,872	1,335,037	79.3%	438,396	304.5%
July 1, 2019	5,434,933	6,655,143	1,220,210	81.7%	454,696	268.4%
July 1, 2020	5,631,533	6,835,682	1,204,149	82.4%	471,903	255.2%
July 1, 2021	6,082,317	7,120,960	1,038,643	85.4%	478,530	217.0%

* Change to Projected Unit Credit cost method. Prior results were provided based on Entry Age Normal.
** Change to Ultimate Entry Age Normal cost method and benefit changes to all groups.

HISTORICAL ACTIVE PARTICIPANT DATA
TABLE 17

Valuation Date	Active Count	Average Age	Average Svc	Covered Payroll	Average Salary	Percent Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2002	5,352	40.7	N/A	$286,150	$53,466	7.8%
2003	5,387	41.3	N/A	$300,405	$55,765	4.3%
2004	5,225	41.7	N/A	$329,840	$63,127	13.2%
2005	4,867	42.0	N/A	$321,057[1]	$65,966	4.5%
2006	4,785	42.3	N/A	$327,080	$68,355	3.6%
2007	4,879	42.1	N/A	$336,029	$68,873	0.8%
2008	5,065	42.0	15.7	$351,525	$69,403	0.8%
2009	5,245	41.8	15.4	$366,924	$69,957	0.8%
2010	5,347	41.9	15.3	$377,779	$70,652	1.0%
2011	5,312	42.3	15.7	$388,409	$73,119	3.5%
2012	5,326	42.5	15.7	$389,884	$73,204	0.1%
2013	5,364	42.6	15.7	$391,957	$73,072	-0.2%
2014	5,343	42.6	15.7	$399,447	$74,761	2.3%
2015	5,261	42.8	15.9	$406,233	$77,216	3.3%
2016	5,261	42.6	15.7	$418,252	$79,500	3.0%
2017	5,164	41.7	14.5	$417,320	$80,813	1.7%
2018	5,226	41.6	14.4	$438,396	$83,887	3.8%
2019	5,282	41.6	14.3	$454,696	$86,084	2.6%
2020	5,319	41.5	14.1	$471,903	$88,720	3.1%
2021	5,238	41.5	14.1	$478,530	$91,357	3.0%

[1] Beginning October 9, 2004, pensionable pay is the total of the last 26 pay periods, excluding CMEPP and SOSP.

RETIREES, BENEFICIARIES, AND DISABLED PARTICIPANTS ADDED TO AND REMOVED FROM ROLLS ($000)
TABLE 18

	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	104	2,809	46	1,113	1,859	55,013	1.9%	29,593
2003	106	2,967	47	1,109	1,918	61,531	11.8%	32,081
2004	220	9,172	33	1,014	2,105	70,307	14.3%	33,400
2005	353	15,962	55	1,776	2,403	86,933	23.6%	36,177
2006	254	10,195	66	2,197	2,549	96,812	11.4%	37,980
2007	175	8,056	49	1,809	2,717	105,481	9.0%	38,823
2008	149	11,889	57	1,995	2,809	115,375	9.4%	41,073
2009	154	9,639	63	2,275	2,900	122,738	6.4%	42,324
2010	165	8,891	56	2,355	3,009	129,274	5.3%	42,963
2011	171	10,567	59	2,218	3,121	137,623	6.5%	44,096
2012	180	11,934	71	2,820	3,230	146,737	6.6%	45,429
2013	183	11,674	64	2,345	3,349	156,066	6.4%	46,601
2014	217	13,857	63	2,627	3,503	167,296	7.2%	47,758
2015	288	16,132	65	2,762	3,726	180,666	8.0%	48,488
2016	259	16,357	77	3,291	3,908	193,733	7.2%	49,573
2017	460	26,911	95	4,139	4,273	216,505	11.8%	50,668
2018	221	14,138	98	4,370	4,396	226,273	4.5%	51,473
2019	189	12,198	91	4,344	4,494	234,127	3.5%	52,098
2020	236	14,280	108	4,943	4,622	243,464	4.0%	52,675
2021	287	18,223	123	6,070	4,786	255,617	5.0%	53,409

MEMBERSHIP DATA
TABLE 19

	July 1, 2021 (1)	July 1, 2020 (2)	July 1, 2019 (3)
1. Active members			
a. Number	5,238	5,319	5,282
b. Number in DROP	1,571	1,673	1,749
c. Total payroll	$ 478,529,570	$ 471,903,477	$ 454,696,012
Payroll in DROP	$ 169,162,929	$ 175,558,515	$ 177,645,844
d. Average salary	91,357	88,720	86,084
e. Average age	41.5	41.5	41.6
f. Average service	14.1	14.1	14.3
2. Inactive participants			
a. Vested	55	49	43
b. Total annual benefits (deferred)	$ 1,714,915	$ 1,533,356	$ 1,210,454
c. Average annual benefit	31,180	31,293	28,150
3. Service retirees			
a. Number	3,726	3,613	3,512
b. Total annual benefits	$ 206,298,011	$ 197,500,986	$ 190,276,099
c. Average annual benefit	55,367	54,664	54,179
d. Average age	66.1	65.8	65.5
4. Disabled retirees			
a. Number	188	179	175
b. Total annual benefits	$ 8,837,984	$ 8,261,132	$ 8,123,143
c. Average annual benefit	47,011	46,152	45,893
d. Average age	58.1	58.1	56.7
5. Beneficiaries and spouses			
a. Number	872	830	807
b. Total annual benefits	$ 40,480,635	$ 37,702,031	$ 35,727,748
c. Average annual benefit	46,423	45,424	44,382
d. Average age	70.1	70.1	69.9

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

The following methods and assumptions were used in preparing the July 1, 2021 actuarial valuation report.

1. Valuation Date

   The valuation date is as of July 1st, the first day 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

   The Ultimate Entry Age Normal (UEAN) actuarial cost method allocates the System's actuarial present value of future benefits to various periods based upon service. The portion of the present value of future benefits allocated to years of service prior to the valuation date is the actuarial accrued liability, and the portion allocated to years following the valuation date is the present value of future normal costs. The normal cost is determined for each active member as the level percent of payroll necessary to fully fund the expected benefits to be earned over the career of each individual active member. Under UEAN, the normal cost calculation is done assuming all members earn benefits that would be applicable to a newly hired member so that the normal cost should remain fairly stable as the relative distribution of active employees in different benefit groups changes. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

   An unfunded accrued liability exists in the amount equal to the excess of accrued liability over valuation assets. The amortization period of the System is the number of years required to fully amortize the unfunded accrued liability, on an actuarial value of asset basis, with the expected amount of employer contributions in excess of the employers' portion of the normal cost.

   The contribution rate determined by this valuation will not be effective until one year later, but the determination of the rate does not reflect 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) over 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 bases 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.

4. Economic Assumptions

a. Investment return: 7.00% per year, compounded annually, composed of an assumed 2.30% inflation rate and a 4.70% net real rate of return. This rate represents the assumed return, net of all investment expenses.

b. Cost of Living Adjustment (COLA): Monthly benefits for participants receiving payments are increased each April 1 by the five-year average investment return minus 5.00%, with a minimum of 0.00% and a maximum of 4.00%. For this valuation, the annual COLA is assumed to be 2.00%.

c. Salary increase rate: A service-related component, plus a 2.75% component for inflation and productivity, as follows:

Years of Service	Service-related Component	Total Annual Rate of Increase Including 2.75% Component for Inflation & Productivity
(1)	(2)	(3)
1	0.00%	2.75%
2	20.00%	22.75%
3	3.00%	5.75%
4	3.00%	5.75%
5	3.00%	5.75%
6	6.00%	8.75%
7	6.00%	8.75%
8	2.00%	4.75%
9	2.00%	4.75%
10	2.00%	4.75%
11	6.00%	8.75%
12	1.00%	3.75%
13	5.00%	7.75%
14	1.00%	3.75%
15	1.00%	3.75%
16	1.00%	3.75%
17	5.00%	7.75%
18 and Over	0.00%	2.75%

d. 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.

5. Demographic Assumptions

a. Retirement Rates

	Service		
Age	<25	25 - 29	30+
40-49	3.0%	3.0%	9.0%
50-54	4.0%	6.0%	10.0%
55-59	6.8%	10.2%	17.0%
60-64	9.6%	14.4%	24.0%
65 +	100.0%	100.0%	100.0%

For members hired after October 9, 2004, 3% per year the member's first retirement eligibility exceeds 45 is added to the retirement rate at first eligibility up to a maximum increase of 30% at age 55. For members in DROP as of July 1, 2016, retirement rates are multiplied by 110% to reflect that future employee contributions are no longer credited to the DROP balance.

b. DROP Participation

100% of eligible active participants are assumed to elect the DROP.

c. DROP Entry Date

Active members (not already in DROP) are assumed to take advantage of the DROP and enter when first eligible. Participants are assumed to elect the maximum duration for the DROP, up to 20 years.

d. DROP Interest Credit

Interest in the amount of 65% of the five-year average investment return, with a minimum of 2.50%, will be credited to existing DROP accounts on a monthly basis. For this actuarial valuation, the drop interest credit is assumed to be 5.10%.

e. Withdrawal of DROP and PROP Balances

Members are assumed to withdraw balances in equal annual installments over 10 years.

f. Mortality rates (for active and retired members)

- Healthy retirees - The Gender-distinct RP-2014 Healthy Annuitant Mortality Tables with Blue Collar Adjustment for Males and no collar adjustment for Females. The rates are projected from the 2006 central rates to 2018 using scale MP-2017, and thereafter on a fully generational basis by the ultimate values of scale MP-2014 to account for future mortality improvements.

- Disabled males and females – The Gender-distinct RP-2014 Disabled Retiree Mortality Tables are used without adjustment. The rates are projected on a fully generational basis by the ultimate values of scale MP-2014 to account for future mortality improvements.

- Active members - The Gender-distinct RP-2014 Employee Mortality Tables with Blue Collar Adjustment. The rates are projected on a fully generational basis by the ultimate values of scale MP-2014 to account for future mortality improvements.

Sample rates are shown below for 2021:

Age	Healthy Retired Males	Healthy Retired Females	Disabled Males	Disabled Females	Healthy Active Males	Healthy Active Females
(1)	(2)	(3)	(4)	(5)	(6)	(7)
25	0.08%	0.03%	0.79%	0.22%	0.06%	0.02%
30	0.11%	0.07%	0.74%	0.28%	0.05%	0.02%
35	0.15%	0.12%	0.85%	0.37%	0.06%	0.03%
40	0.21%	0.17%	1.03%	0.51%	0.08%	0.04%
45	0.28%	0.22%	1.59%	0.84%	0.12%	0.07%
50	0.41%	0.27%	1.90%	1.11%	0.20%	0.12%
55	0.61%	0.38%	2.18%	1.35%	0.34%	0.17%
60	0.89%	0.58%	2.48%	1.58%	0.57%	0.26%
65	1.34%	0.85%	2.95%	1.94%	1.00%	0.39%
70	2.04%	1.31%	3.76%	2.63%	1.61%	0.65%
75	3.25%	2.16%	5.06%	3.83%	2.60%	1.09%
80	5.42%	3.69%	7.14%	5.69%	4.19%	1.84%

g. Termination Rates and Disability Rates

Termination rates (for causes other than death, disability or retirement) are a function of the member's service and are not applied after a member becomes eligible for a retirement benefit. Disability rates are age-based and not applied for members in the DROP or those members eligible to back DROP. All disabilities are assumed to be duty-related. Rates at selected ages and service levels are shown below.

Termination		
Service	Male	Female
1	2.71%	2.71%
3	1.95%	1.95%
5	1.40%	1.40%
7	1.01%	1.01%
9	0.72%	0.72%
11	0.52%	0.52%
13	0.37%	0.37%
15	0.27%	0.27%
17	0.19%	0.19%
19	0.14%	0.14%
20 +	0.10%	0.10%

Age Based Rates of Disability		
Age	Male	Female
20	0.1149%	0.1149%
25	0.1145%	0.1145%
30	0.1197%	0.1197%
35	0.1321%	0.1321%
40	0.1516%	0.1516%
45	0.1785%	0.1785%
50	0.2126%	0.2126%
55	0.2538%	0.2538%
60	0.3023%	0.3023%

1% is also added to the rates above during the period that members hired post-2004 would have been eligible to retire under pre-2004 retirement eligibilities, but are not yet eligible.

6. Other Assumptions

a. Percent married: 90% of employees are assumed to be married. (No beneficiaries other than the spouse assumed.)

b. Valuation payroll: To determine the amortization rate, the payroll used is the amount budgeted by the City for the fiscal year following the valuation date increased by one year of payroll growth.

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: 50% of vested terminating members are assumed to elect a refund rather than take a deferred benefit at age 60.

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: Administrative expenses are accounted for as an explicit component on the normal cost rate.

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 converted to probabilities in order to account for multiple decrements.

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

o. Benefit Service: All members are assumed to accrue one year of service each year**.** Exact fractional service is used to determine the amount of benefit payable.

7. <u>Participant Data</u>

Participant data was supplied in 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, gender, 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, gender, 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.

All healthy and disabled retirees are assumed to have 100% joint and survivor annuities, prorated by the 90% marriage assumption and reflecting the three-year spousal age differential described above. All beneficiaries are assumed to have life annuity only benefits.

Salary supplied for the current year was based on the earnings for the year preceding the valuation date. This salary was adjusted by the salary increase rate for one year.

In fiscal years when a 27^{th} pay period occurs the individual pays for employees who were employed throughout the year will be adjusted by multiplying their reported pay by the ratio of 26/27. In years that have only 26 pay periods no adjustment would be needed.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

SUMMARY OF PLAN PROVISIONS

Covered Members	All police officers sworn before September 1, 1975 are covered under Plan 1, except those who elected by December 31, 1981 to participate in Plan 3. All police officers sworn on or after September 1, 1975, but before September 1, 1981 are covered under Plan 2, except those who elected by December 31, 1981 to participate in Plan 3 and those Plan 1. All other police officers are covered by Plan 3, except those from Police Cadet Classes 70 and 71 who elected to pay additional contributions and transfer to Plan 1.
Final Compensation	
Prior to November 28, 1998	Monthly base salary paid to the participant in his/her last month of service. For any participant from a position held for less than 3 years, final compensation is the average monthly base salary for the 3 years prior to retirement.
After November 28, 1998 but prior to July 1, 2001	Monthly total direct pay less overtime paid to the participant in his/her last month of service. For any participant from a position held for less than 3 years, final compensation is the average monthly base pay for the 3 years prior to retirement plus the other current components of total direct pay.
After July 1, 2001 but prior to October 9, 2004	Highest biweekly pay period (excluding overtime) during the last 26 pay periods annualized. Amounts not paid on a biweekly basis are deducted from period paid. Annual amounts are divided by 26 and added to the highest pay period, including motorcycle allowances.
On or after October 9, 2004	Average of the last three years of compensation (excluding exempt time, overtime and strategic officer staffing pay). This average will be phased in beginning with the pay period ending after October 9, 2004 until the new definition is fully phased in after 78 pay periods.
Service Retirement	
Eligibility	
▸ Sworn prior to October 9, 2004	20 years of service.
▸ Sworn on or after October 9, 2004	The age at which the sum of age and years of service is at least 70 (Rule of 70).

Benefit

▸ Prior to November 1, 1955	$75 per month plus $2 per month for each year of service in excess of 25 years.
▸ After November 1, 1955 but prior to January 13, 1968	30% of final compensation plus 1 % of final compensation for each year of service in excess of 20 years.
▸ After January 13, 1968 but prior to July 1, 1986	Plans 1 and 2: 30% of final compensation plus 2% of final compensation for each year of service in excess of 20 years. Plan 3: 2% of final compensation for each year of service up to 40 years, reduced 0.42% for each month benefit commencement precedes age 55.
▸ After July 1, 1986 but prior to July 1, 1988	2% of final compensation for each year of service up to 40 years.
▸ After July 1, 1988 but prior to September 1, 1997	45% of final compensation plus 2% of final compensation for each year of service in excess of 20 years; maximum 80% of final compensation. Benefit based on prior formula is payable until July 1, 1991 and recomputed benefit is payable thereafter
▸ After September 1, 1997 but prior to July 1, 2001	50% of final compensation plus 2% of final compensation for each year of service in excess of 20 years; maximum 80% of final compensation.
▸ After July 1, 2001 but prior to October 9, 2004	55% of final compensation plus 2% of final compensation for service in excess of 20 years. The Pension System recomputed the benefit of each person who retired before July 1, 2001. The retiree's benefit was increased by the result of multiplying the difference between 55% and the percentage used at the time of retirement in computing the retiree's benefit for the first 20 years of service by the base salary of the retiree at the time of retirement. Retroactive cost-of-living increases were not applied to the increased benefit. This recomputed benefit is effective for all payments on or after July 1, 2001.

- After October 9, 2004 — Participants sworn prior to October 9, 2004 will receive the highest of the following alternatives using Final Average Compensation effective after October 9, 2004, from October 9, 2004 through October 7, 2007:

  1) 2.75% of Final Average Compensation for each of the first 20 years of service plus 2% of Final Average Compensation for each year of service in excess of 20 years, with a maximum of 80% of Final Average Compensation.
  2) Benefit participant would have received had participant retired or entered the DROP immediately before October 9, 2004
  3) Benefit calculated using a sliding average of the pay received for the pay periods elapsed since October 9, 2004.

  New participants after October 9, 2004:
  2.25% of Final Average Compensation for each of the first 20 years of service plus 2% of Final Average Compensation for each year of service in excess of 20 years, with a maximum of 80% of Final Average Compensation.

Additional Benefits — An extra monthly benefit of $150.00 is payable for life. Effective November 28, 1998, a $5,000 lump sum is payable upon retirement for members sworn prior to October 9, 2004.

Terminated Vested Pension Benefit

Eligibility — Sworn in before October 9, 2004 and more than 10 but less than 20 years of service. Termination on or after November 28, 1998.

Benefit

- Sworn prior to October 9, 2004 — 2.75% of final average compensation times years of service. This benefit commences at age 60 or at termination of service if later.
- Sworn on or after October 9, 2004 — 2.25% of final average compensation times years of service. This benefit commences at the age at which the sum of age and years of service is at least 70 (Rule of 70) or at termination of service if later.

Deferred Retirement Option Plan (DROP)

Eligibility — 20 years of service and sworn in prior to October 9, 2004.

Benefit

- After September 1, 1995 but prior to September 1, 1997 — Eligible participants may elect to participate in the DROP until they leave active service. The member’s retirement pension will be calculated based on service and earnings at the time the DROP is elected.

A notional account will be maintained for each DROP participant. This account will be credited with the following amounts while the member is participant of the DROP:

- The member's monthly retirement pension, including applicable cost-of-living adjustments,
- The member's contribution to the Pension System, limited to 8.75% of pay, and
- Investment earnings/losses at the rate of the Pension System's earnings/losses averaged over a five-year period. Effective July 1, 2001, this rate is subject to a minimum of 0%.

A benefit equal to the DROP account balance is paid at the time the member leaves active service. The payment is made as a single lump sum.

If a DROP participant suffers an on-duty disability resulting in the inability to perform his/her usual and customary duties as a police officer or dies in the line of duty, he (or his survivors) are allowed to revoke the DROP election and to receive the more generous on-duty disability or death benefits.

After September 1, 1997 but prior to December 1, 1998	The Pension System recomputed the benefit of each person who entered the DROP before September 1, 1997. The benefit was increased in the same manner as the retiree's benefit.
After December 1, 1998 but prior to July 1, 2001	The Pension System recomputed the benefit of each person who entered the DROP before December 1, 1998. The benefit was recalculated based on Total Direct Pay less overtime upon entry to the DROP. This recomputed benefit is effective for all payments on or after December 1, 1998.
After July 1, 2001 but prior to October 9, 2004	The Pension System recomputed the benefit of each person who entered the DROP before July 1, 2001. The member's benefit was increased by the result of multiplying the difference between 55% and the percentage used at the time of DROP entry in computing the member's benefit for the first 20 years of service by the base salary of the member at the time of DROP entry. Retroactive cost-of-living increases were applied to the increased benefit. The account balance for each participant was recomputed as if this new benefit had been effective since DROP entry.
After October 9, 2004	A minimum of 3.00% interest will be credited to existing DROP accounts with a maximum of 7.00%. If the actuary certifies that past service costs are fully funded, the credit may be as high as 10.00%.
After July 1, 2016	Participants may participate in the DROP for a maximum of 20 years. Cost of living adjustments will not be granted while still active, and the member's contributions to the Pension System will no longer be credited to the DROP account. DROP accounts will be credited with interest equal 65% of the five-year average investment return, with a minimum of 2.50%.

Benefit Recalculation	Effective July 1, 2001, monthly benefit at retirement will be recalculated to be the greater of (i) current monthly benefit, or (ii)monthly benefit based on service at DROP entry and Final Compensation at retirement date. The recalculation provision was discontinued effective July 1, 2016.
Back DROP Option	Effective on July 1, 2001, a back DROP option is available for all eligible participants. The DROP account is recalculated under the option based on what the account balance would have been had the participant elected the DROP earlier than he/she actually did. The initial DROP entry date cannot be backdated prior to September 1, 1995 or prior to 20 years of credited service, and must be on the first of the month selected. The Back DROP provision was discontinued effective July 1, 2016.

Postretirement Option Plan (PROP)

Eligibility	Retired from DROP and sworn in prior to October 9, 2004.
Benefit	
▸ After November 28, 1998 but prior to July 1, 2001	A retired member is allowed to leave all or a portion of their DROP account in the System. These accounts are credited every calendar year with the 30-year Treasury bond rate as of June of the preceding year.
▸ After July 1, 2001	The interest rate earned on PROP accounts will be the same as the interest rate credited to DROP accounts, including a minimum credited rate of 0%.

Partial Lump Sum Optional Payment (PLOP)

Eligibility	Participant on or after October 9, 2004.
Benefit	
▸ After October 9, 2004	Up to 20% of the actuarial value of the accrued pension at retirement.

Disability Retirement

Eligibility	Effective July 1, 2001, a disabled participant is eligible for Disability Retirement as defined below: – Disability is defined as “unable to perform his/her usual and customary duties as a police officer”.

Benefit	
▸ Duty-connected	The service retirement benefit accrued to date of disability. For participants before October 9, 2004, the disability benefit is 2.75% of final average pay times years of service with a minimum of 55% of final average pay. For participants after October 9, 2004, the disability benefit is 2.25% of final average pay times years of service with a minimum of 45% of final average pay.
Additional Benefits	For participants before October 9, 2004, an education allowance equal to 100% of final compensation less disability benefit is payable for up to four years for off-duty or duty-related disability. Proportionate members injured while on-duty as a municipal worker will receive immediate off-duty benefit upon Board approval.
Survivor Benefits	
Eligibility	Surviving spouses and dependent children and parents of participants, including surviving spouses of retired or disabled participants who were not married at the time of retirement or disability, provided the spouse was married to the participant for at least 5 years at the time of death.
Benefit	
▸ Prior to September 1, 1997	If duty-connected: monthly lifetime benefit equal to 100% of final compensation at date of death. If not duty-connected: monthly lifetime benefit equal to 100% of the service retirement benefit the participant had accrued at the time of death. Spouse's benefit upon death after retirement: monthly lifetime benefit equal to actual benefit payable at time of death. Dependent children's benefit if no surviving spouse: the benefit that would have been payable to the spouse is divided equally among the dependent children. If there is a surviving spouse, the dependent children of Plan 1and Plan 2 participants receive $25 per month. Dependent children include unmarried children who are under age 18, and for Plan 3, full-time students under age 22, or permanently disabled children.

Dependent parent's income if no surviving spouse or children, but there is a dependent parent: the benefit that would have been payable to the spouse will be paid to the dependent parent.

- After September 1, 1997 but prior to July 1, 2001 — The Pension System recomputed the benefit of each survivor whose original benefit was computed prior to September 1, 1997. The benefit was increased in the same manner as the retiree's benefit.
- After July 1, 2001 — The Pension System recomputed the benefit of each survivor whose original benefit was computed prior to July 1, 2001. The benefit was increased in the same manner as the retiree's benefit.

Additional Benefits — Effective December 1, 1998, a $5,000 lump sum is paid upon the death of an active member who was sworn in prior to October 9, 2004.

Effective July 1, 2001, an extra monthly benefit of $150.00 is payable for life. Children receiving equivalent of the spouse's benefit do not receive this additional benefit.

Benefit Adjustments

Cost-of-Living

- Prior to October 9, 2004 — Monthly benefits for participants receiving payments are increased each April 1 by 2/3 of the increase in the Consumer Price Index for All Urban Consumers (CPI-U) for the preceding calendar year. Effective September 1, 1997 this increase is subject to a minimum of 3.0% per year compounded and a maximum increase of 8.0% per year compounded.
- Between October 9, 2004 and July 1, 2016 — Monthly benefits for participants receiving payments are increased each April 1 by 80% of the increase in the Consumer Price Index for All Urban Consumers (CPI-U) for the preceding year, with a minimum of 2.4% and a maximum of 8%.
- After July 1, 2016 — Monthly benefits for participants receiving payments are increased each April 1 by 100% of the five-year average investment return minus 5.00%, with a minimum of 0.00% and a maximum of 4.00%. Members will receive their COLA once they reach age 55.

Service Adjustments	Effective November 28, 1998, participants with previous service with the City in non-classified positions may use that service to satisfy the service requirement of 20 years for retirement purposes only. Effective July 1, 2001, participants who have service credit in more than one City of Houston Pension Plan may use their combined service to qualify for DROP participation. Effective July 1, 2001, participants involuntarily transferred to the System from the Houston Municipal Employees System will receive service under this plan for years worked while serving as a City Marshall, Airport Police or Park Police.

Contributions

Employee Contributions

▸ Prior to December 1, 1998	Each participant contributes 8.75% of base salary.
▸ After December 1, 1998 but before October 9, 2004	Each participant contributes 8.75% of average total direct pay less overtime.
After October 9, 2004 – Members sworn in prior to October 9, 2004	Each participant contributes 9.00% of pay. The additional 0.25% will be credited to the Plan's general fund. 8.75% of pay is used for purposes of crediting eligible DROP accounts
– Others	Each participant contributes 10.25% of pay, which will be credited to the Plan's general fund.
▸ After July 1, 2016	Each participant contributes 10.50% of pay, which will be credited to the Plan's general fund.
Refunds	Contributions are refunded without interest.

Employer Contribution	The City of Houston will contribute the City Contribution Rate which will consistent of a normal cost contribution and a fixed layer closed amortization schedule with each new loss layer having a 30 year period. Each layer will be assumed to begin with the fiscal year beginning 12 months after the valuation date.

STATISTICAL SECTION

Summary

This section of the System's comprehensive annual financial report presents detailed information as a context for understanding what the information in the financial statements, note disclosures, and required supplementary information says about the System's overall financial health. All information presented was derived from the comprehensive annual financial reports for the relevant year and/or the System's benefits administration system.

Financial Trends

The **Changes in Fiduciary Net Position** schedule shows the additions and deductions from plan net assets and the resulting changes in plan net assets for the ten years ending June 30, 2021. Contributions from members and the City have grown steadily, increasing 70% during this ten year period. At the same time, deductions from plan net assets, which are primarily for benefits paid to members, have increased 117% during this period. The System's investment income during this ten year period, even with a loss in 2016, provided 64% of additions to plan net assets.

City and member contributions to the System are external sources of additions to plan net assets. The **Contribution Rates** schedule shows what percent the City's and the members' contributions are of payroll for the ten years ending June 30, 2021. The accompanying chart of **Contributions and Benefits Paid** compares the total contributions made and the benefits paid for the ten years ending June 30, 2021. While the growth in benefits paid exceeds the growth in contributions, under the July 1, 2017 amendment to the System's governing statute, the System received $750 million from pension obligation bonds in fiscal year 2018 and changes were made to the member and City contributions, COLAs, and benefits with the purpose of addressing the System's unfunded liability through a risk sharing approach.

Contributions are not the only source from which benefits are paid. Earnings from the System's investments are the fund's internal source of and, in most years, the largest component of additions to plan net assets. The **Investment Income** schedule provides details of the System's net investment gain/loss for the ten years ending June 30, 2021.

Deductions from Net Position for Benefits and Refunds by Type presents a detailed view of the benefits and refunds paid to members for the ten years ending June 30, 2021, and the accompanying chart graphically represents this data. Service retirements have historically accounted for the majority of benefit payments, growing over the last ten years as the number of retirees has increased. Lump sum benefits are payments members and survivors receive at their discretion from their lump sum accounts either on or after the date they begin receiving monthly benefit payments, and therefore vary from year to year. Lump sum benefits increased 24.3% year over year in fiscal year 2021 to $144,140 thousand after having increased 9.9% in fiscal year 2020. Service and disability retirements combined increased 4.7% year over year in fiscal year 2021 to $250,753 thousand after having increased 4.0% in fiscal year 2020.

Valuation of Assets as a Percent of Pension Liabilities shows the percentage of the pension liability that is funded and **Net Assets Compared to Pension Liability** compares the actuarial value of the System's assets to the actuarial accrued liability. These charts graphically represent the funding progress of the System for the ten years ending June 30, 2021. The July 1, 2017 amendment to the System's governing statute addressed the System's unfunded liability through a risk sharing approach. With the $750 million from pension obligation bonds in fiscal year 2018, the changes made to the member and City contributions, COLAs, and benefits, and adequate earnings and gains provided from investments, the System has a more sustainable funded status.

Participant Information

The **Membership** schedule provides a breakdown of the System's membership for the ten years ending June 30, 2021. For fiscal year 2021, active members decreased by 76 to 5,244 and retired members and their beneficiaries increased by 162. During the past ten years, the number of active members has decreased by (1.6)% while the number of retired members and their beneficiaries increased by 45.4%.

Operating Information

The **Pensions in Force** and **Pensions Awarded** schedules provide the number of pensions by type, age and payment amount for the year ended June 30, 2021.

The **Average Monthly Benefit Amounts by Years Credited Service** schedule presents the average final average salary and the number of retired members, in five-year increments of credited service, for the ten years ended June 30, 2021.

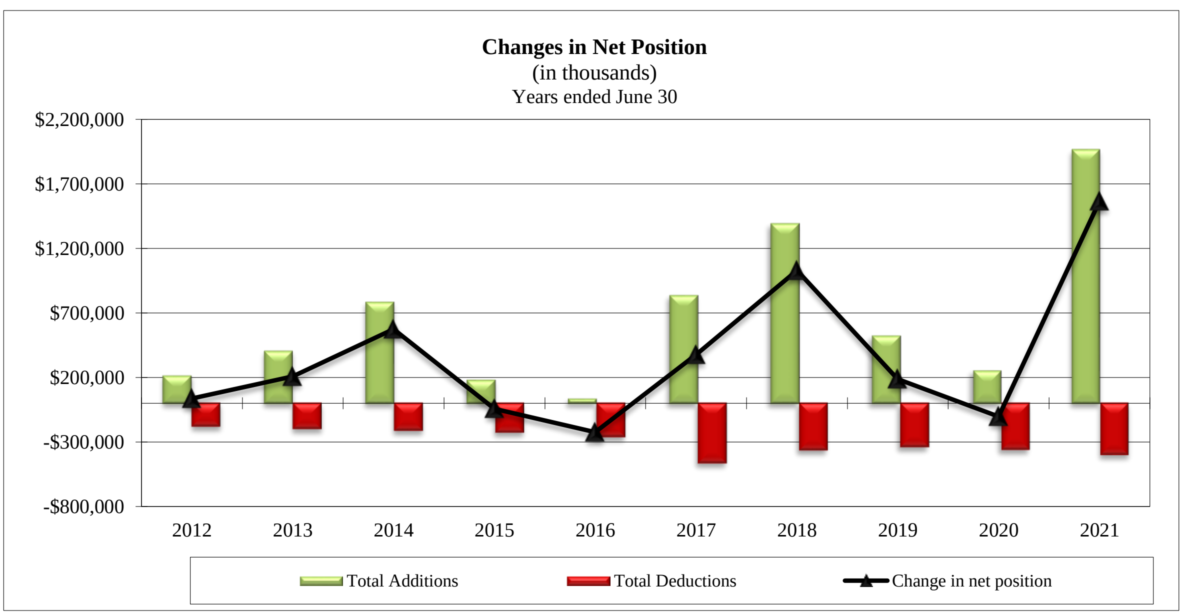
The **DROP and PROP Activity** schedules provide information about the total amount in DROP and PROP accounts and the total number of participants as well as the changes to those totals for the ten years ending June 30, 2021.

Changes in Fiduciary Net Position
Previous Ten Fiscal Years
($000's)

Fiscal Year	2012	2013	2014	2015	2016
Additions					
City contributions	$ 83,027	$ 93,392	$ 103,372	$ 113,665	$ 137,392
Members contributions	35,151	35,586	37,012	37,719	39,017
Investment income (net of expenses)	102,095	281,724	649,022	35,249	(136,018)
Securities lending income (net of expenses)	485	269	131	92	185
Total additions to plan net assets	220,758	410,971	789,537	186,725	40,576
Deductions:					
Benefits paid to members	180,014	199,255	211,690	225,656	259,076
Refunds to members	704	641	906	945	978
Professional and administrative expense	3,689	3,668	3,439	3,478	4,585
Total deductions from plan net assets	184,407	203,564	216,035	230,079	264,639
Change in net position	$ 36,351	$ 207,407	$ 573,502	$ (43,354)	$ (224,063)

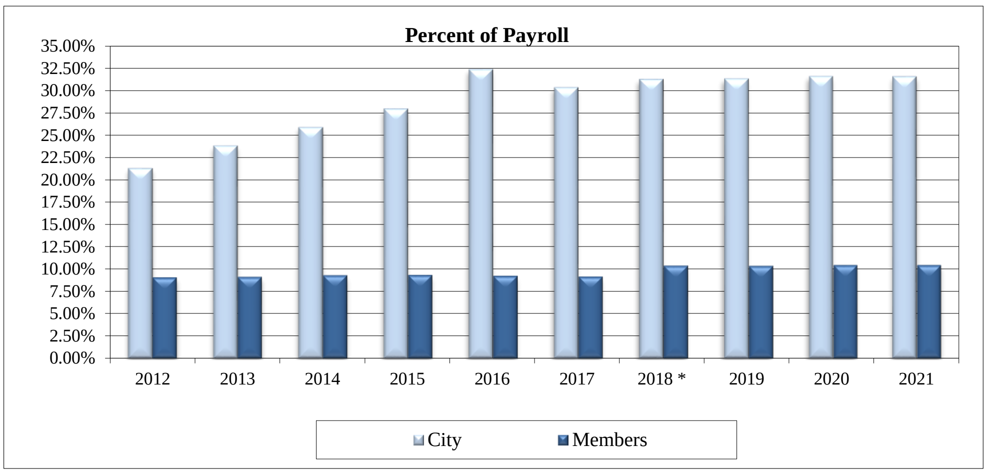
Fiscal Year	2017	2018	2019	2020	2021
Additions					
City contributions *	$ 133,805	$ 887,143	$ 142,429	$ 149,078	$ 151,094
Members contributions	40,104	45,254	46,896	49,062	49,749
Investment income (net of expenses)	667,171	462,801	339,870	61,007	1,764,781
Securities lending income (net of expenses)	305	279	296	186	146
Total additions to plan net assets	841,385	1,395,477	529,491	259,333	1,965,770
Deductions:					
Benefits paid to members	458,733	361,033	335,600	355,373	394,893
Refunds to members	1,696	1,329	2,278	2,209	2,433
Professional and administrative expense	4,238	3,679	3,580	3,922	3,669
Total deductions from plan net assets	464,667	366,041	341,458	361,504	400,995
Change in net position	$ 376,718	$ 1,029,436	$ 188,033	$ (102,171)	$ 1,564,775

* City contributions in FY 2018 include a one time $750,000 thousand payment received from pension obligation bonds.

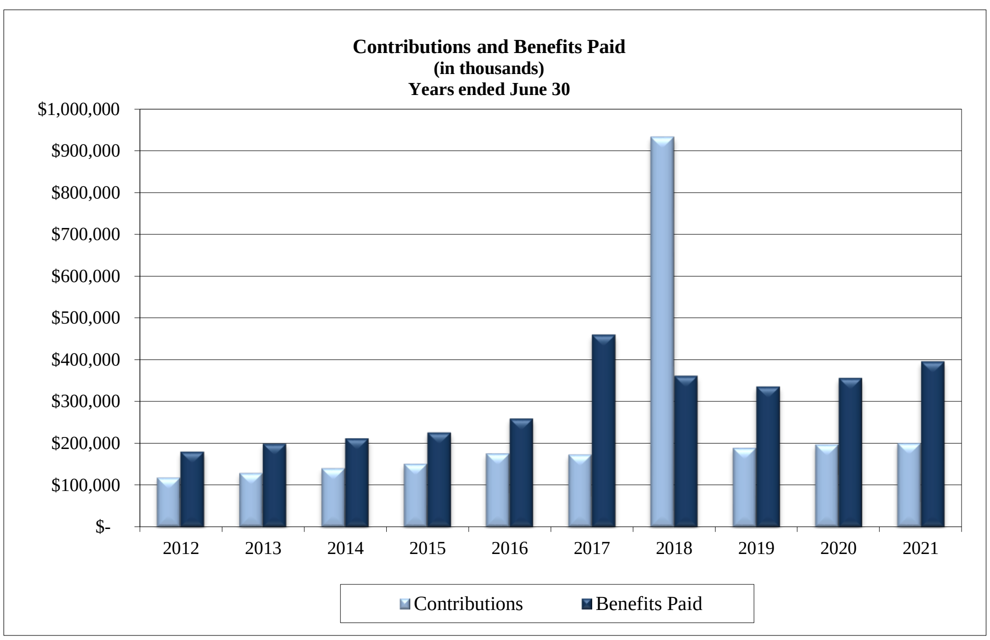


Contribution Rates
Previous Ten Fiscal Years

	Percent of Payroll	
Fiscal Year	City	Members
2012	21.30%	9.02%
2013	23.83%	9.08%
2014	25.88%	9.27%
2015	27.98%	9.29%
2016	32.38%	9.20%
2017	30.37%	9.10%
2018 *	31.28%	10.32%
2019	31.32%	10.31%
2020	31.59%	10.40%
2021	31.57%	10.40%



* 2018 percent of payroll does not include the $750,000,000 the City contributed through Pension Obligation Bonds. This amount is included in the contributions total in the table below.



Investment Income
Previous Ten Fiscal Years
($000's)

Fiscal Year	2012	2013	2014	2015	2016
Investing activities					
Net appreciation (depreciation) in fair value of investments	$ 53,935	$ 241,324	$ 625,973	$ 21,504	$ (152,667)
Interest	47,121	32,330	25,288	16,156	12,322
Dividends	19,200	20,238	18,119	20,714	18,714
Other income *	1,135	2,550	2,167	-	-
Total	121,391	296,442	671,547	58,374	(121,631)
Less investment expense	(19,296)	(14,718)	(22,525)	(23,125)	(14,387)
Net income (loss) from investing activities	102,095	281,724	649,022	35,249	(136,018)
Securities lending activities					
Securities lending income	646	359	175	123	250
Securities lending expense	(161)	(90)	(44)	(31)	(65)
Net income from securities lending activities	485	269	131	92	185
Total investment income (loss)	102,580	281,993	649,153	35,341	(135,833)

Fiscal Year	2017	2018	2019	2020	23021
Investing activities					
Net appreciation (depreciation) in fair value of investments	$ 632,552	$ 413,755	$ 278,112	$ 3,478	$ 1,712,466
Interest	15,789	31,795	46,331	40,219	24,677
Dividends	32,923	31,590	28,926	25,197	34,722
Other income	-	-	-	23	26
Total	681,264	477,140	353,369	68,917	1,771,891
Less investment expense	(14,093)	(14,339)	(13,499)	(7,910)	(7,110)
Net income (loss) from investing activities	667,171	462,801	339,870	61,007	1,764,781
Securities lending activities					
Securities lending income	407	373	394	248	195
Securities lending expense	(102)	(94)	(98)	(62)	(49)
Net income from securities lending activities	305	279	296	186	146
Total investment income (loss)	$ 667,476	$ 463,080	$ 340,166	$ 61,193	$ 1,764,927

* The June 30, 2011 Agreement with the City allowed for a shortfall in the City's fixed payment for contributions for fiscal years 2012 and 2013, for which the City started making quarterly interest payments of $361 thousand in fiscal year 2012 and $542 thousand in fiscal year 2013 and 2014. These payments are included in Other income.

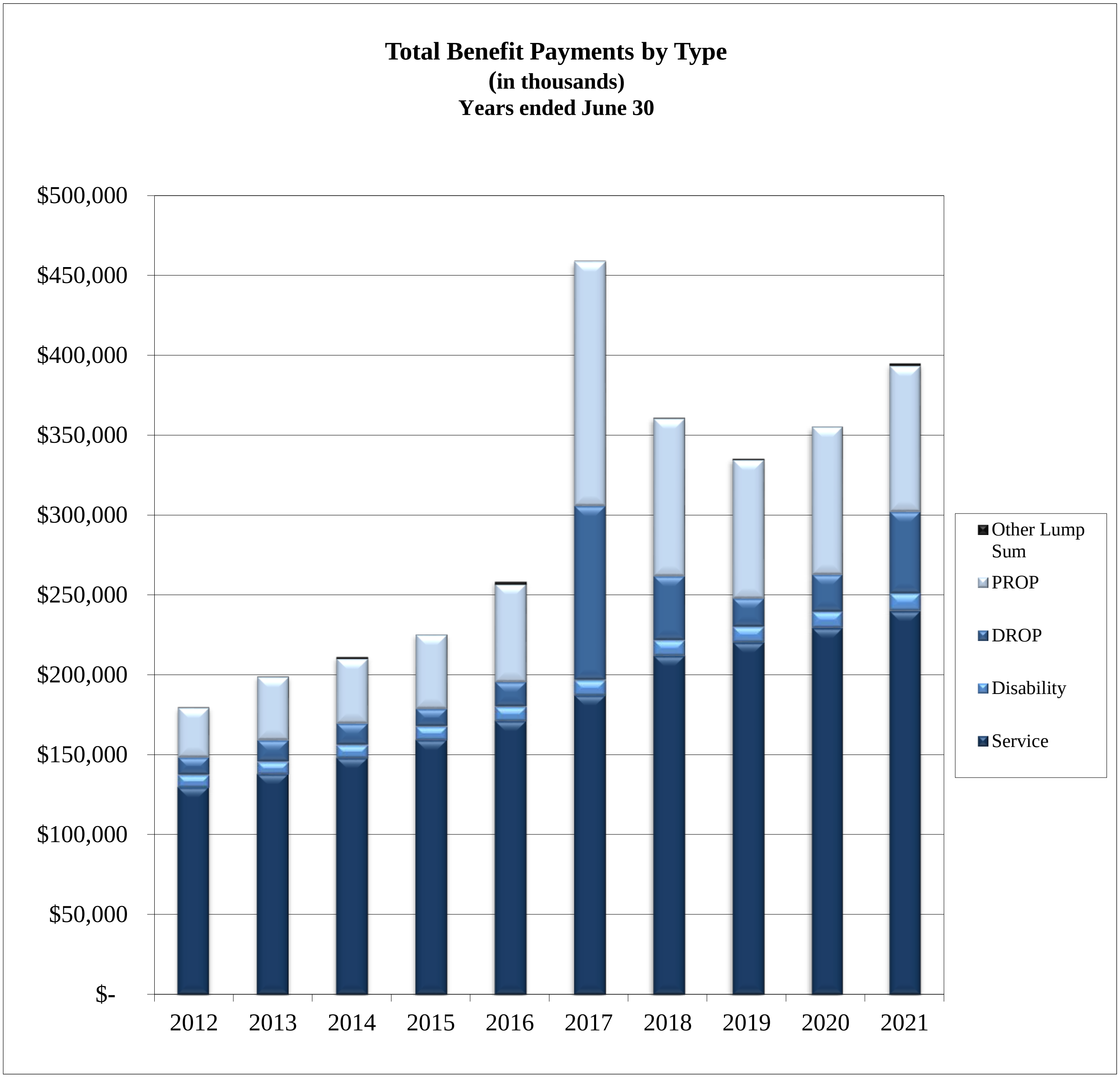
Deductions from Net Position for Benefits and Refunds by Type
Previous Ten Fiscal Years
($000's)

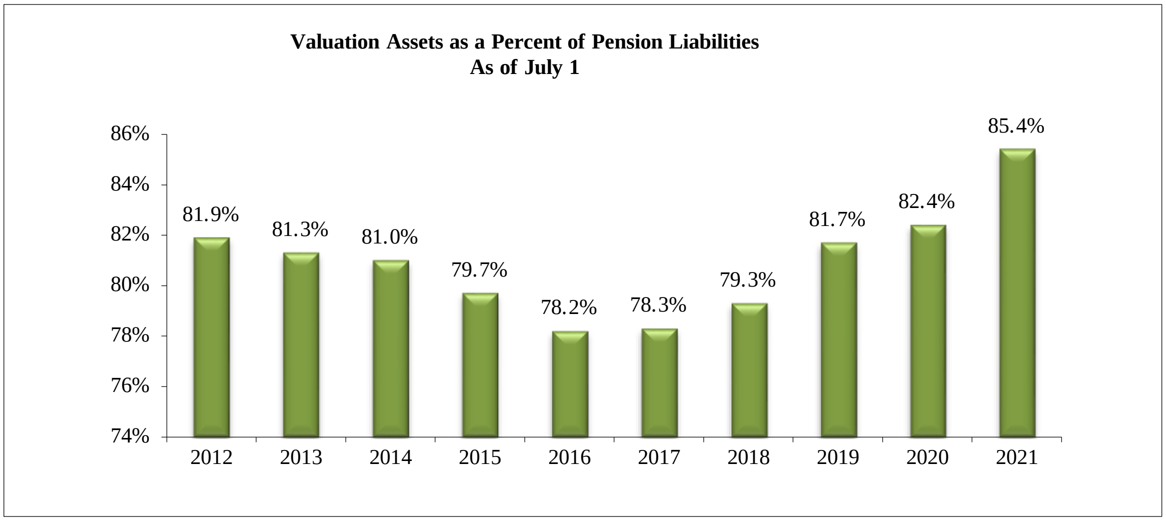
Fiscal Year	2012	2013	2014	2015	2016
Type of Benefit					
Service					
Retirees	$ 108,886	$ 116,217	$ 125,616	$ 135,705	$ 145,866
Survivors	20,694	21,586	22,333	23,510	25,244
Disability					
Retirees - duty	5,218	5,378	5,517	5,678	6,119
Retirees - nonduty	538	546	598	626	629
Survivors	2,147	2,120	2,195	2,290	2,344
Lump Sum					
DROP distributions	11,078	13,334	13,526	11,054	15,431
PROP distributions	31,180	39,857	40,623	46,575	61,580
Other *	273	217	1,282	218	1,863
Total benefits	$ 180,014	$ 199,255	$ 211,690	$ 225,656	$ 259,076
Type of Refund					
Death	$ -	$ -	$ -	$ -	$ -
Separation	704	641	906	945	978
Total refunds	$ 704	$ 641	$ 906	$ 945	$ 978

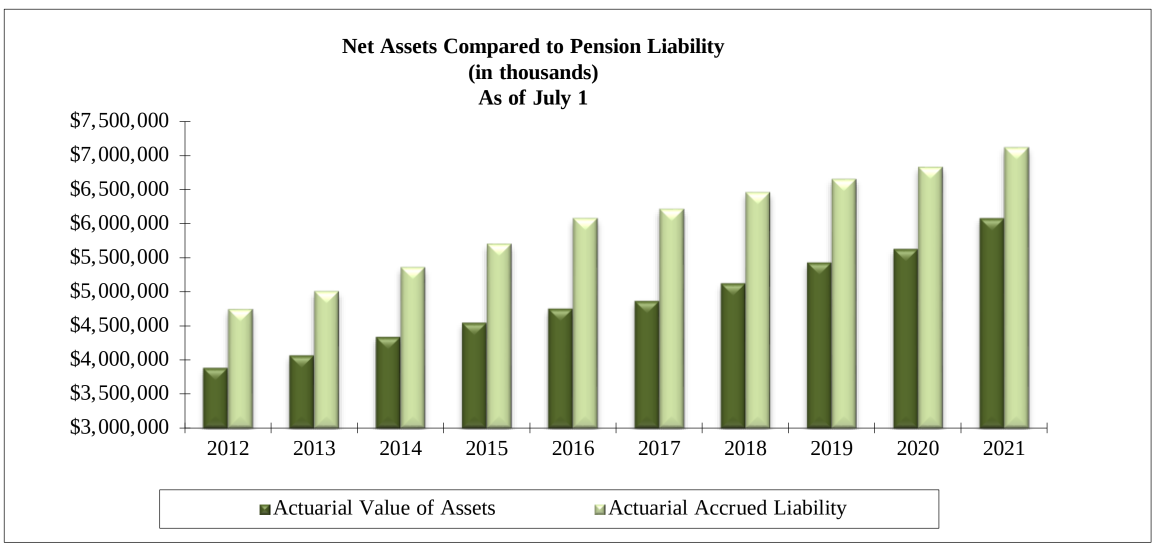
Fiscal Year	2017	2018	2019	2020	2021
Type of Benefit					
Service					
Retirees	$ 159,686	$ 182,932	$ 189,982	$ 197,083	$ 205,982
Survivors	27,371	28,956	30,238	32,183	33,951
Disability					
Retirees - duty	6,398	6,598	6,779	6,890	7,182
Retirees - nonduty	950	724	692	701	703
Survivors	2,398	2,462	2,430	2,555	2,935
Lump Sum					
DROP distributions	109,051	40,187	17,818	23,365	51,462
PROP distributions	152,780	98,690	86,791	92,516	91,194
Other *	99	484	870	80	1,484
Total benefits	$ 458,733	$ 361,033	$ 335,600	$ 355,373	$ 394,893
Type of Refund					
Death	$ -	$ -	$ -	$ -	$ -
Separation	1,696	1,329	2,278	2,209	2,433
Total refunds	$ 1,696	$ 1,329	$ 2,278	$ 2,209	$ 2,433

* Lump Sum, Other: Under the provisions of Article 6243g-4, Vernon's Annotated Texas Statutes (VATS), Sec. 12(b) and Sec. 15(c) a member who retires, including a member who was a DROP participant, and begins to receive a monthly service pension shall receive a one-time lump sum payment of $5,000. All one-time lump sum payments of $5,000 are reported with the DROP distributions.

Article 6243g-4, Vernon's Annotated Texas Statutes (VATS), Sec. 15(h) provides for the payment of an additional monthly disability benefit in the form of a lump sum to assist members retired due to disability with the costs of an education or training program. Payment of the additional monthly disability benefit occurs only after the member successfully completes each semester.


Total Benefit Payments by Type
(in thousands)
Years ended June 30
$500,000
$450,000
$400,000
$350,000
$300,000
$250,000
$200,000
$150,000
$100,000
$50,000
$-
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Other Lump Sum
PROP
DROP
Disability
Service





Charts through most recent actuarial valuation dated July 1, 2021.

Membership
Last Ten Fiscal Years

Fiscal Year	Active Nonvested	Active Fully Vested	Retired/ Beneficiaries	Terminated Vested	Totals
2012	3,572	1,758	3,207	22	8,559
2013	3,481	1,885	3,326	24	8,716
2014	3,416	1,931	3,477	24	8,848
2015	3,255	2,007	3,647	22	8,931
2016	3,210	2,064	3,807	22	9,103
2017	3,357	1,814	4,157	27	9,355
2018	3,439	1,808	4,275	26	9,548
2019	3,509	1,773	4,376	31	9,689
2020	3,610	1,710	4,500	40	9,860
2021	3,654	1,590	4,662	40	9,946

Total Pensions in Force by Type and by Age
Year Ended June 30, 2021

		Type of Pension		
Age on June 30,	Total	Service	Disability	Survivor
Under 40	33	-	8	25
40-44	23	2	9	12
45-49	89	60	14	15
50-54	318	255	37	26
55-59	705	619	37	49
60-64	976	882	30	64
65-69	877	752	21	104
70-74	802	646	18	138
75-79	391	276	4	111
80-84	246	136	4	106
85 and over	202	99	-	103
Total	4,662	3,727	182	753

Pensions Awarded in Current Year by Type and by Age
Year Ended June 30, 2021

		Type of Pension		
Age on June 30,	Total	Service	Disability	Survivor
Under 40	6	-	3	3
40-44	3	-	2	1
45-49	22	17	1	4
50-54	67	62	2	3
55-59	82	75	1	6
60-64	41	30	1	10
65-69	22	9	-	13
70-74	14	1	-	13
75-79	7	-	-	7
80-85	5	-	-	5
85 and over	3	-	-	3
Total	272	194	10	68

Pensions Awarded in Current Year by Type and by Monthly Amount
Year Ended June 30, 2021

		Type of Pension		
Monthly Amount	Total	Service	Disability	Survivor
Under $1000	-	-	-	-
$1000-$2000	3	1	1	1
$2000-$3000	6	3	1	2
$3000-$4000	105	81	2	22
$4000-$5000	111	84	3	24
$5000-$6000	30	22	-	8
$6000 and over	17	3	3	11
Total	272	194	10	68

Average Monthly Benefit Amounts
Previous Ten Fiscal Years

Member Retiring During Fiscal Years		Years Credited Service <5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	>45
2012	Avg monthly benefit	$ 972	$ 4,489	$ -	$ 2,605	$ 3,681	$ 4,011	$ 3,696	$ 4,148	$ 4,008	$ 5,642
	Avg final Avg salary	$ 4,320	$ 4,489	$ -	$ 5,920	$ 6,606	$ 6,844	$ 6,663	$ 7,047	$ 6,047	$ 5,961
	Avg DROP Balance	$ -	$ -	$ -	$ 5,000	$146,704	$466,282	$ 729,916	$1,066,076	$1,179,404	$1,536,548
	Number of retirees	1	1	-	1	17	70	33	15	3	2
2013	Avg monthly benefit	$ -	$ -	$ -	$ -	$ 3,900	$ 4,024	$ 4,167	$ 4,076	$ 3,983	$ 5,535
	Avg final Avg salary	$ -	$ -	$ -	$ -	$ 6,728	$ 6,554	$ 7,171	$ 7,208	$ 6,113	$ 7,236
	Avg DROP Balance	$ -	$ -	$ -	$ -	$ 59,940	$514,240	$ 775,272	$1,161,766	$1,318,435	$1,674,363
	Number of retirees	-	-	-	-	19	58	43	23	2	1
2014	Avg monthly benefit	$ -	$ -	$ -	$ 2,375	$ 3,769	$ 4,117	$ 4,162	$ 4,029	$ 3,802	$ -
	Avg final Avg salary	$ -	$ -	$ -	$ 5,106	$ 6,713	$ 6,728	$ 6,841	$ 7,217	$ 6,019	$ -
	Avg DROP Balance	$ -	$ -	$ -	$ 5,000	$ 87,531	$578,735	$ 762,664	$1,135,941	$1,309,578	$ -
	Number of retirees	-	-	-	1	21	51	82	26	1	-
2015	Avg monthly benefit	$ -	$ 2,069	$ 1,246	$ 3,454	$ 3,811	$ 4,022	$ 4,286	$ 3,994	$ 4,346	$ -
	Avg final Avg salary	$ -	$ 4,491	$ 5,277	$ 6,361	$ 6,786	$ 6,608	$ 7,112	$ 7,083	$ 7,076	$ -
	Avg DROP Balance	$ -	$ -	$ -	$ 5,000	$132,108	$524,044	$ 751,329	$1,153,557	$1,443,545	$ -
	Number of retirees	-	2	1	4	33	42	78	27	5	-
2016	Avg monthly benefit	$ 2,042	$ 1,744	$ 3,258	$ 2,578	$ 3,864	$ 3,928	$ 4,405	$ 4,345	$ 4,584	$ -
	Avg final Avg salary	$ 4,432	$ 3,785	$ 5,784	$ 6,687	$ 6,831	$ 6,812	$ 7,198	$ 7,939	$ 8,747	$ -
	Avg DROP Balance	$ -	$ -	$ -	$217,215	$106,042	$552,746	$ 897,392	$1,303,984	$1,842,540	$ -
	Number of retirees	1	1	1	3	41	17	92	25	5	-
2017	Avg monthly benefit	$ -	$ 1,254	$ 2,514	$ 3,723	$ 4,015	$ 4,130	$ 4,470	$ 4,434	$ 4,475	$ 5,943
	Avg final Avg salary	$ -	$ 5,574	$ 6,531	$ 6,769	$ 7,315	$ 7,282	$ 7,374	$ 7,809	$ 7,954	$ 8,400
	Avg DROP Balance	$ -	$ -	$ -	$ 5,000	$183,834	$428,829	$ 927,025	$1,312,229	$1,769,362	$2,272,697
	Number of retirees	-	2	1	1	64	28	187	77	23	4
2018	Avg monthly benefit	$ -	$ 2,500	$ 2,800	$ 3,333	$ 4,098	$ 4,235	$ 4,540	$ 4,465	$ 4,134	$ -
	Avg final Avg salary	$ -	$ 5,555	$ 6,223	$ 6,389	$ 6,915	$ 6,661	$ 6,031	$ 5,347	$ 4,417	$ -
	Avg DROP Balance	$ -	$ -	$ -	$ 46,065	$162,600	$435,687	$ 982,032	$1,231,062	$1,690,871	$ -
	Number of retirees	-	2	1	2	39	36	68	13	1	-
2019	Avg monthly benefit	$ 1,988	$ 1,036	$ -	$ 4,020	$ 4,037	$ 4,097	$ 4,524	$ 4,428	$ 4,226	$ -
	Avg final Avg salary	$ 4,418	$ 4,604	$ -	$ 6,861	$ 7,125	$ 6,547	$ 6,136	$ 5,490	$ 4,520	$ -
	Avg DROP Balance		$ -	$ -	$ -	$140,098	$443,321	$1,081,425	$1,295,577	$1,801,150	$ -
	Number of retirees	1	1	-	3	35	42	41	22	4	-
2020	Avg monthly benefit	$ -	$ -	$ -	$ -	$ 4,093	$ 4,162	$ 4,516	$ 4,374	$ 4,234	$ -
	Avg final Avg salary	$ -	$ -	$ -	$ -	$ 7,336	$ 6,679	$ 6,198	$ 5,452	$ 4,629	$ -
	Avg DROP Balance	$ -	$ -	$ -	$ -	$182,909	$500,779	$1,117,025	$1,348,515	$1,634,064	$ -
	Number of retirees	-	-	-	-	42	55	33	29	5	-
2021	Avg monthly benefit	$ 1,099	$ -	$ 4,913	$ 4,367	$ 4,254	$ 4,156	$ 4,175	$ 4,640	$ 3,788	$ 3,428
	Avg final Avg salary	$ 4,886	$ -	$ 6,733	$ 7,940	$ 7,750	$ 6,808	$ 6,102	$ 6,005	$ 4,219	$ 3,436
	Avg DROP Balance	$ -	$ -	$ -	$ -	$145,817	$491,722	$ 910,300	$1,415,626	$1,649,189	$2,073,218
	Number of retirees	1		4	1	38	73	36	47	6	1
Ten Years Ended June 30, 2021											
	Avg Monthly Benefit	$ 1,525	$ 2,102	$ 3,684	$ 3,334	$ 3,987	$ 4,094	$ 4,345	$ 4,339	$ 4,296	$ 5,502
	Avg Final Avg Salary	$ 4,514	$ 4,902	$ 6,343	$ 6,538	$ 7,092	$ 6,734	$ 6,885	$ 6,845	$ 6,716	$ 7,024
	Avg DROP Balance	$ -	$ -	$ -	$ 48,673	$144,446	$493,936	$ 887,776	$1,273,623	$1,664,933	$1,988,933
	Number of Retirees	4	9	8	16	349	472	693	304	55	8

The above chart includes all Service, Proportionate and Disability retirements. It does not include Survivor benefits or pending Delayed Retirements. The DROP Balance includes $5,000 lump sum benefit.

DROP Activity
(dollars in thousands)
Years ended June 30

	DROP Accounts				DROP Participants		
Fiscal Year	Accumulations	Transfers to PROP	Distributions	Total	Entrants	Withdrawals	Total
2012	$ 142,330	$ (75,432)	$ (11,078)	$ 819,967	148	(129)	1,762
2013	150,662	(89,028)	(13,334)	868,267	253	(143)	1,872
2014	147,948	(114,777)	(13,526)	887,912	232	(183)	1,921
2015	172,993	(128,413)	(11,054)	921,438	256	(186)	1,991
2016	189,245	(137,929)	(15,431)	957,323	253	(186)	2,058
2017	155,058	(228,259)	(109,051)	775,071	90	(342)	1,806
2018	162,511	(101,910)	(40,187)	795,485	137	(149)	1,794
2019	141,082	(95,753)	(17,818)	822,996	95	(140)	1,749
2020	135,285	(110,321)	(23,635)	824,325	89	(165)	1,673
2021	126,324	(120,406)	(51,463)	778,780	95	(197)	1,571

PROP Activity
(dollars in thousands)
Years ended June 30

	PROP Accounts				PROP Participants		
Fiscal Year	Accumulations	Transfers from DROP	Distributions	Total	Entrants	Withdrawals	Total
2012	$ 23,454	$ 75,432	$ (31,180)	$ 441,137	144	(23)	980
2013	25,364	89,028	(39,857)	515,672	162	(33)	1,109
2014	29,541	114,777	(40,623)	619,367	176	(28)	1,257
2015	41,104	128,413	(46,575)	742,309	176	(11)	1,422
2016	52,774	137,929	(61,580)	871,432	158	(11)	1,569
2017	49,295	228,259	(152,781)	996,205	208	(17)	1,760
2018	42,894	101,910	(98,706)	1,042,303	79	(15)	1,824
2019	46,255	95,753	(86,791)	1,097,520	82	(17)	1,889
2020	40,469	110,321	(92,516)	1,155,794	105	(19)	1,975
2021	28,552	120,406	(91,194)	1,213,558	108	(29)	2,054

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