AGENDA

Date: November 6, 2020

The regular meeting of the Dallas Police and Fire Pension System Board of Trustees will be held at **8:30 a.m. on Thursday, November 12, 2020, via telephone conference for audio at 214-271-5080 access code 588694 or Toll-Free (US & CAN): 1-800-201-5203 and Zoom meeting for visual https://us02web.zoom.us/j/87136913186?pwd=OFhtSC80RnJUS0kwek0zeWQvSHUrUT09 Passcode: 806351. Items of the following agenda will be presented to the Board:**

A. MOMENT OF SILENCE

B. CONSENT AGENDA

1. **Approval of Minutes**

   Regular meeting of October 8, 2020

2. **Approval of Refunds of Contributions for the Month of October 2020**

3. **Approval of Activity in the Deferred Retirement Option Plan (DROP) for November 2020**

4. **Approval of Estate Settlements**

5. **Approval of Survivor Benefits**

6. **Approval of Service Retirements**

7. **Spouse Wed After Retirement (SWAR)**

8. **Approval of Payment of Previously Withdrawn Contributions**

9. **Approval of Payment of Military Leave Contributions**

C. DISCUSSION AND POSSIBLE ACTION REGARDING ITEMS FOR INDIVIDUAL CONSIDERATION

1. **January 1, 2020 Actuarial Valuation**

2. **Financial Audit Status**

3. **Second Reading and discussion of the 2021 Budget**

4. **Quarterly Financial Reports**

5. **Investment Policy Statement**

   a. Investment Advisory Committee
   b. Policy Benchmark Change

6. **Board Committee Membership**

7. **Monthly Contribution Report**

8. **Staff Leave Accrual During COVID-19**

9. **Required Training Manual Delivery**

10. **Board approval of Trustee education and travel**

    a. Future Education and Business-related Travel
    b. Future Investment-related Travel

11. **Portfolio Update**

12. **Loomis Sayles High Yield Bonds**

13. **Global Bond Allocation**

14. **Lone Star Investment Advisors Update**

    Portions of the discussion under this topic may be closed to the public under the terms of Section 551.071 of the Texas Government Code.

15. **Legal issues - In accordance with Section 551.071 of the Texas Government Code, the Board will meet in executive session to seek and receive the advice of its attorneys about pending or contemplated litigation or any other legal matter in which the duty of the attorneys to DPFP and the Board under the Texas Disciplinary Rules of Professional Conduct clearly conflicts with Texas Open Meeting laws.**

16. **Closed Session - Board serving as Medical Committee**

    Discussion of the following will be closed to the public under the terms of Section 551.078 of the Texas Government Code:

    Application for death benefits for disabled child

D. BRIEFING ITEMS

1. **Public Comment**

2. **Executive Director's report**

   a. Associations' newsletters
   - NCPERS Monitor (October 2020)
   - TEXPERS Pension Observer http://online.anyflip.com/mxfu/alie/mobile/index.html

   b. Open Records

   c. Operational Response to COVID-19

The term "possible action" in the wording of any Agenda item contained herein serves as notice that the Board may, as permitted by the Texas Government Code, Section 551, in its discretion, dispose of any item by any action in the following non-exclusive list: approval, disapproval, deferral, table, take no action, and receive and file. At the discretion of the Board, items on this agenda may be considered at times other than in the order indicated in this agenda.

At any point during the consideration of the above items, the Board may go into Closed Executive Session as per Texas Government Code, Section 551.071 for consultation with attorneys, Section 551.072 for real estate matters, Section 551.074 for personnel matters, and Section 551.078 for review of medical records.

DALLAS POLICE & FIRE PENSION SYSTEM

ITEM A

MOMENT OF SILENCE

In memory of our Members and Pensioners who recently passed away

NAME	ACTIVE/ RETIRED	DEPARTMENT	DATE OF DEATH
Larry D. Jackson	Retired	Fire	Sept. 27, 2020
Ronald M. Hubner	Retired	Police	Sept. 30, 2020
Bobby M. Dillard	Retired	Police	Oct. 6, 2020
Rufus W. High, Jr.	Retired	Police	Oct. 8, 2020
Clifford B. Norfleet	Retired	Police	Oct. 11, 2020
T. G. Dickerson	Retired	Police	Oct. 20, 2020
William P. Rossi	Retired	Police	Oct. 26, 2020
T. J. Walker	Retired	Fire	Oct. 31, 2020

Regular Board Meeting – Thursday, November 12, 2020

Dallas Police and Fire Pension System
Thursday, October 8, 2020
8:30 a.m.
Via telephone conference

Regular meeting, William F. Quinn, Chairman, presiding:

ROLL CALL

Board Members

Present at 8:31 a.m.	William F. Quinn, Nicholas A. Merrick, Armando Garza, Michael Brown, Robert B. French, Gilbert A. Garcia, Kenneth Haben, Tina Hernandez Patterson, Steve Idoux, Mark Malveaux, Allen R. Vaught
Absent:	None
Staff	Kelly Gottschalk, Josh Mond, Kent Custer, Brenda Barnes, John Holt, Greg Irlbeck, Milissa Romero, Cynthia Thomas, Ryan Wagner, Michael Yan
Others	Kenneth Latz, Robert Denious

* * * * * * * *

The meeting was called to order at 8:31 a.m.

* * * * * * * *

A. TRUSTEES

1. WELCOME NEW AND REAPPOINTED TRUSTEES

The terms of William Quinn, Nicholas Merrick, and Susan Byrne ended on August 31, 2020. These three trustees were serving as hold-over trustees pending Mayor Johnson’s trustee appointments. Mayor Johnson made the following appointments:

- Michael Brown to serve a two-year term ending August 31, 2022;
- Nicholas Merrick (reappointment) to serve a three-year term ending August 31, 2023;
- William Quinn (reappointment) to serve a two-year term ending August 31, 2022.

The Board welcomed new Trustee Michael Brown and the reappointed Trustees Nicholas Merrick and William Quinn.

No motion was made.

* * * * * * * *

Regular Board Meeting
Thursday, October 8, 2020

2. Election of Deputy Vice Chairman

Article 6243a-1, Section 1.53(f) requires that the board elect Trustees to serve as officers of the Board in June of odd-numbered years, however, the position of Deputy Vice Chairman is vacant due to Trustee turnover.

After discussion, Mr. Quinn made a motion to appoint Armando Garza to serve as Deputy Vice Chairman until the full slate of officers are elected in June 2021. Ms. Hernandez Patterson seconded the motion, which was unanimously approved by the Board.

* * * * * * * *

B. MOMENT OF SILENCE

The Board observed a moment of silence in memory of active firefighter Ceasar Rios, retired police officers Earl C. Gage, Bobby J. Coslin, W. G. Hilliard, Fred W. Martin, and retired firefighters Thomas E. McCarley, Robert E. Justis, Archie R. Kelly, C. I. Chancellor.

No motion was made.

* * * * * * * *

C. CONSENT AGENDA

1. Approval of Minutes

Regular meeting of September 10, 2020

2. Approval of Refunds of Contributions for the Month of September 2020

3. Approval of Activity in the Deferred Retirement Option Plan (DROP) for September 2020

4. Approval of Estate Settlements

5. Approval of Survivor Benefits

6. Approval of Service Retirements

7. Approval of Alternate Payee Benefits

Regular Board Meeting
Thursday, October 8, 2020

8. Spouse Wed After Retirement (SWAR)

After discussion, Mr. Quinn made a motion to approve the minutes of the regular meeting of September 10, 2020. Mr. Garza seconded the motion, which was unanimously approved by the Board.

After discussion, Mr. Quinn made a motion to approve the remaining items on the Consent Agenda, subject to the final approval of the staff. Mr. Vaught seconded the motion, which was unanimously approved by the Board.

* * * * * * * *

D. DISCUSSION AND POSSIBLE ACTION REGARDING ITEMS FOR INDIVIDUAL CONSIDERATION

1. Audit Status

The Chief Financial Officer provided a status update on the annual financial audit.

No motion was made.

* * * * * * * *

2. Initial Reading and discussion of the 2021 Budget

The Chief Financial Officer presented the initial reading of the 2021 budget, prepared in total for both the Combined Pension Plan and the Supplement Plan.

After discussion, Mr. Quinn made a motion to authorize forwarding the 2021 proposed budget to the City of Dallas for comment and the posting of the proposed budget to www.dpfp.org for member review prior to the November meeting and bring the proposed budget to the Board at the November 12, 2020 Board meeting for consideration. Mr. Haben seconded the motion, which was unanimously approved by the Board.

* * * * * * * *

3. Peer Organizational & Expense Review

The Executive Director briefed the Board on the results of the Peer Organizational and Expense review.

No motion was made.

* * * * * * * *

Regular Board Meeting
Thursday, October 8, 2020

4. Monthly Contribution Report

The Executive Director reviewed the Monthly Contribution Report.

No motion was made.

* * * * * * * *

5. Board approval of Trustee education and travel

a. Future Education and Business-related Travel
b. Future Investment-related Travel

The Board and staff discussed future Trustee education. There was no future Trustee business-related travel or investment-related travel scheduled.

No motion was made.

* * * * * * * *

6. Portfolio Update

Investment staff briefed the Board on recent events and current developments with respect to the investment portfolio.

No motion was made.

* * * * * * * *

7. Report on Investment Advisory Committee

The Investment Advisory Committee met on September 28, 2020. The Committee Chair and Investment Staff commented on Committee observations and advice.

No motion was made.

* * * * * * * *

Regular Board Meeting
Thursday, October 8, 2020

8. Fixed Income Portfolio Review

Staff provided an overview of DPFP public fixed income investments.

No motion was made.

* * * * * * * *

9. Private Asset Cash Flow Projection Update

Staff provided the quarterly update on the private asset cash flow projection model. The cash flow model projects estimated contributions to, and distributions from, private assets through the end of 2023. These estimates are intended to assist the Board in evaluating the expected time frame to reduce DPFP's exposure to these assets and the implications for the public asset redeployment, overall asset allocation, and expected portfolio risk and return.

No motion was made.

* * * * * * * *

10. Lone Star Investment Advisors Update

Investment staff updated the Board on recent performance, operational, and administrative developments with respect to DPFP investments in funds managed by Lone Star Investment Advisors.

The Board went into closed executive session at 10:09 a.m.

The meeting was reopened at 10:51 a.m.

After discussion, Mr. Quinn made a motion to authorize the Executive Director and the Board Chair, conditioned upon their approval of satisfactory diligence, to approve the terms of the mediated settlement agreement with Lone Star Investment Advisors and its affiliates and authorize the Executive Director to approve up to $16 million of funding in senior secured notes to the Lone Star Investment Advisors funds to cover obligations including settlement costs, working capital needs, follow-on investments and other fund obligations. Ms. Hernandez Patterson seconded the motion, which was unanimously approved by the Board.

* * * * * * * *

Regular Board Meeting
Thursday, October 8, 2020

11. **Legal issues - In accordance with Section 551.071 of the Texas Government Code, the Board will meet in executive session to seek and receive the advice of its attorneys about pending or contemplated litigation or any other legal matter in which the duty of the attorneys to DPFP and the Board under the Texas Disciplinary Rules of Professional Conduct clearly conflicts with Texas Open Meeting laws.**

The Board went into closed executive session at 10:09 a.m.

The meeting was reopened at 10:51 a.m.

No motion was made.

* * * * * * * *

The Board went into closed executive session at 11:47 a.m.

The meeting was reopened at 11:57 a.m.

No motion was made.

* * * * * * * *

12. **Widows and Children's Fund**

The Widows and Children's Fund (Fund) is a non-profit organization operated by the City of Dallas. On behalf of the Fund, Chief Hall has requested information from DPFP to be used for the Fund's narrow purpose.

After discussion, Mr. Haben made a motion to authorize the Executive Director to provide the requested information to the Widows and Children's Fund. Mr. Garza seconded the motion, which was unanimously approved by the Board.

* * * * * * * *

E. BRIEFING ITEMS

1. **Public Comment**

Prior to commencing items for Board discussion and deliberation, the Chairman extended an opportunity for public comment. No one requested to speak to the Board.

* * * * * * * *

Regular Board Meeting
Thursday, October 8, 2020

2. Executive Director's report

a. Open Records
b. Operational Response to COVID-19

The Executive Director's report was presented.

* * * * * * * *

Ms. Gottschalk stated that there was no further business to come before the Board. On a motion by Mr. Quinn and a second by Mr. Haben, the meeting was adjourned at 12:00 p.m.

____
William F. Quinn
Chairman

ATTEST:

____
Kelly Gottschalk
Secretary

DISCUSSION SHEET

ITEM #C1

Topic: **January 1, 2020 Actuarial Valuation**

Attendees: Jeff Williams, Vice President and Consulting Actuary, Segal Consulting
Caitlin Grice, Consulting Actuary, Segal Consulting

Discussion: Jeff Williams and Caitlin Grice of Segal Consulting, DPFP's actuarial firm, will be present to discuss results of the January 1, 2020 actuarial valuation report, including the GASB No. 67 actuarial valuation.

Staff Recommendation: **Approve** issuance of the January 1, 2020 actuarial valuation report, subject to final review by the auditors (BDO) and review and approval by the Executive Director.

Dallas Police and Fire Pension System

Annual Valuation Summary as of January 1, 2020

Board of Trustees Meeting

November 12, 2020 / Jeff Williams / Caitlin Grice

Segal

Agenda

Portrait of a Pension Valuation

Summary of January 1, 2020 Actuarial Valuation Results

Summary of Data

Historical Results

Solvency Projection

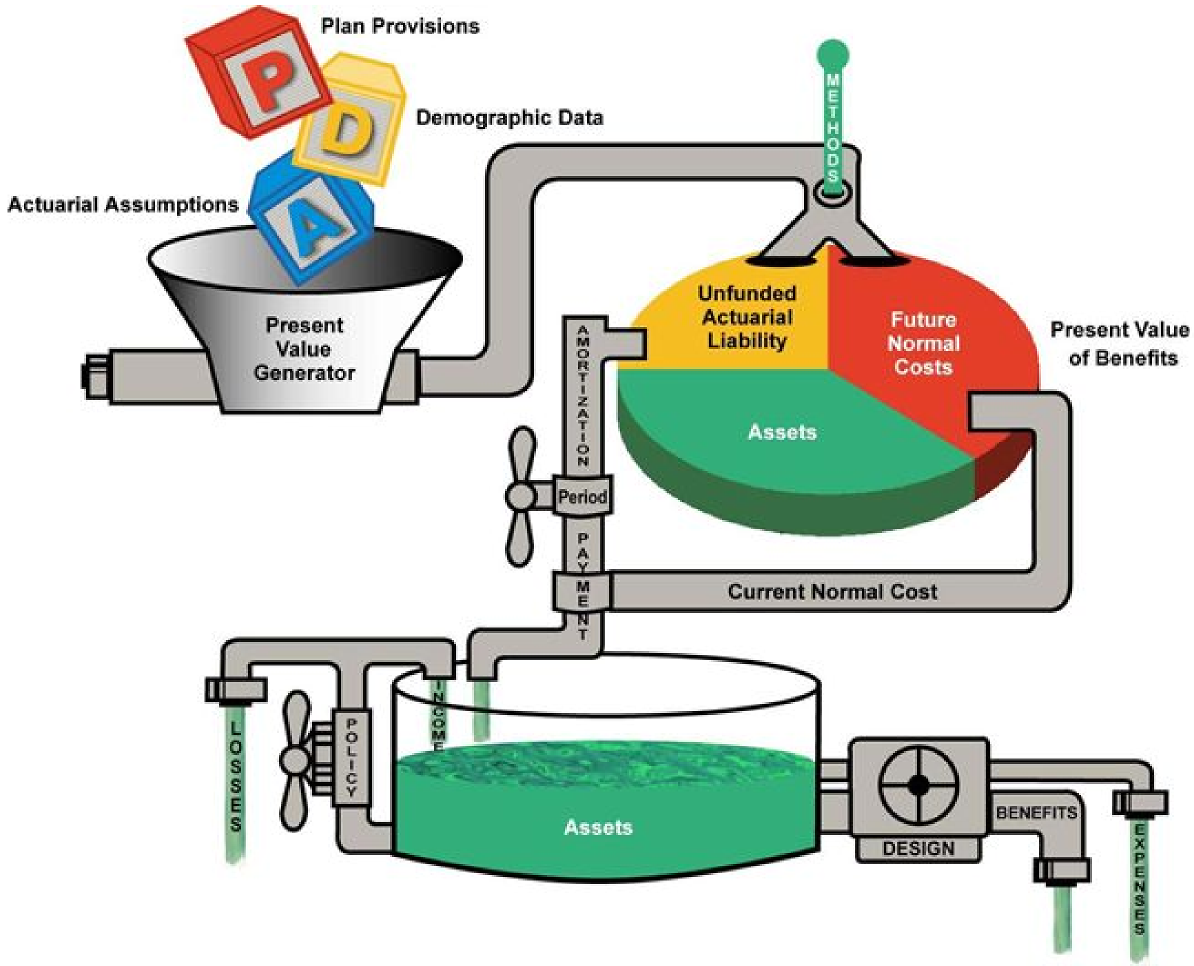
Risk

Importance of Accurate Payroll Projections

GASB Accounting Disclosures

Supplemental Plan Results

Portrait of a Pension Valuation



Combined Plan Results

Summary of 2020 Actuarial Valuation Results

Actuarial Determined Contribution (ADC)

- City's ADC is based on a 30-year amortization of the System's unfunded actuarial accrued liability, in accordance with Texas Code Section 802.101
  - Actual City contributions expected to be less than ADC
  - Unfunded liability is projected to be paid off in **55** years, based on City's Hiring Plan payroll projections (up from **38** years in the 2019 valuation)
- City's ADC for 2020 is $170.0 million (42.82% of computation pay)
  - Increased from $152.1 million (41.88% of computation pay) in 2019, primarily due to investment losses, demographic experience and assumption changes
  - Actual City contributions for 2019 were $155.7 million, or 102.4% of the 2019 ADC
    - Contributions were expected to be approximately $157.8 million ($5.571 million for 26 pay periods, plus $13 million)
  - City contributions for 2020 are expected to be approximately $161.8 million ($5.724 million for 26 pay periods, plus $13 million)
    - If this amount is contributed, it will be 95.2% of the 30-year ADC

Funded ratios

- On an actuarial basis, decreased from 48.10% in 2019 to 45.73% in 2020
- On a market basis, decreased from 45.43% in 2019 to 43.56% in 2020

Summary of 2020 Actuarial Valuation Results

Financial information

- Actuarial value of assets remained level at $2.16 billion
- Market value of assets increased from $2.04 billion to $2.06 billion
- Rates of return
  - Assumed return of 7.25%
  - Market return of 6.25%
  - Actuarial return of 5.05%
  - Lowered assumed return from 7.25% to 7.00% with this year's valuation

Assumption changes

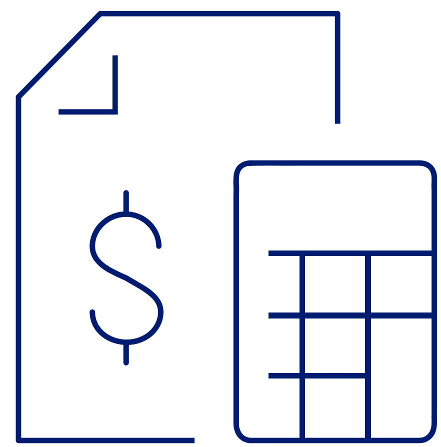
- Variety of assumption changes, as recommended in January 1, 2015 – December 31, 2019 experience study that was presented in May 2020
  - Net investment return assumption
  - Salary scale
  - Payroll growth rate
  - Mortality tables
  - Retirement rates
  - DROP Annuitization interest rate
  - Withdrawal (or turnover) rates
- System provided revised short-term market rates of return to be assumed for projecting assets and funding status
- Ad-hoc COLA timing was updated to reflect all assumption changes

Summary of 2020 Actuarial Valuation Results

Reconciliation of City's ADC (30-year amortization)

- 2019 ADC — **$152.1M**, or **41.88%** of computation pay
- 2020 ADC, prior to assumption changes — **$157.6M**, or **39.71%** of computation pay
- 2020 ADC, after assumption changes — **$170.0M**, or **42.82%** of computation pay

Note: Total computation pay, or valuation pay, shown in the valuation report is the active members' actual payroll for the preceding year, increased by the salary scale applicable for each member to account for their anticipated salary increases in the upcoming year.



Summary of 2020 Actuarial Valuation Results

	2020	2019
Total normal cost, including administrative expenses	$69,083,972	$60,600,247
Expected member contributions	-53,588,890	-49,020,851
Employer normal cost	$15,495,082	$11,579,396
Total normal cost as % of computation pay	17.40%	16.69%
Employer normal cost as a % of computation pay	3.90%	3.19%
Actuarial accrued liability	$4,723,972,480	$4,494,822,504
Actuarial value of assets	-2,160,125,611	-2,161,899,662
Unfunded liability	$2,563,846,869	$2,332,922,842
Funded ratio	45.73%	48.10%
Computation pay	$396,954,743	$363,117,415
Actuarial Determined Contribution, in dollars	**$169,987,256**	**$152,084,297**
Actuarial Determined Contribution, as a % of computation pay	**42.82%**	**41.88%**
Projected year of full funding, based on City's Hiring Plan Payroll	**2075**	**2057**

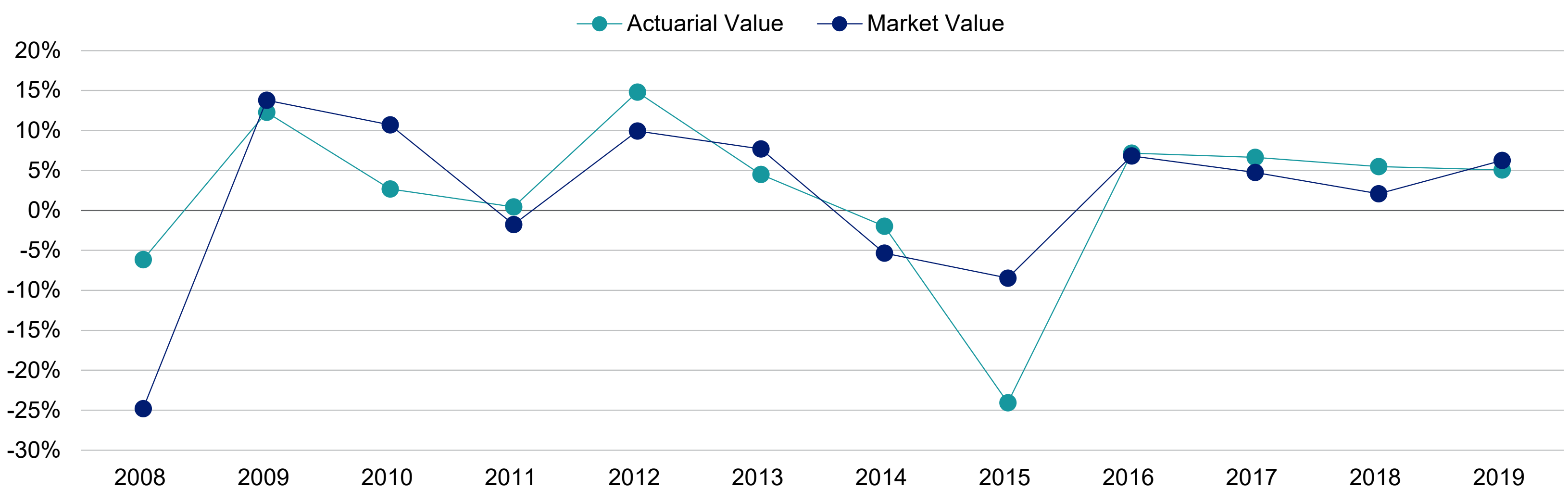
Summary of Data

	Year Ended December 31,		
	2019	2018	Change
Active members			
Number	5,121	5,012	2.2%
Average age	39.8	40.1	-0.3
Average service	12.3	12.8	-0.5
Average computation pay	$77,515	$72,450	7.0%
Number in DROP	383	483	-20.7%
Total DROP accounts	$154.2M	$192.4M	-19.8%
Retirees and beneficiaries			
Number[1]	4,956	4,849	2.2%
Average monthly payment[2]	$4,250	$4,217	0.8%
Inactive vested members			
Number	242	230	5.2%

[1] Excludes beneficiaries with DROP accounts only
[2] Includes benefit supplement, excludes annuitization of DROP balances

Historical Results

Asset Returns

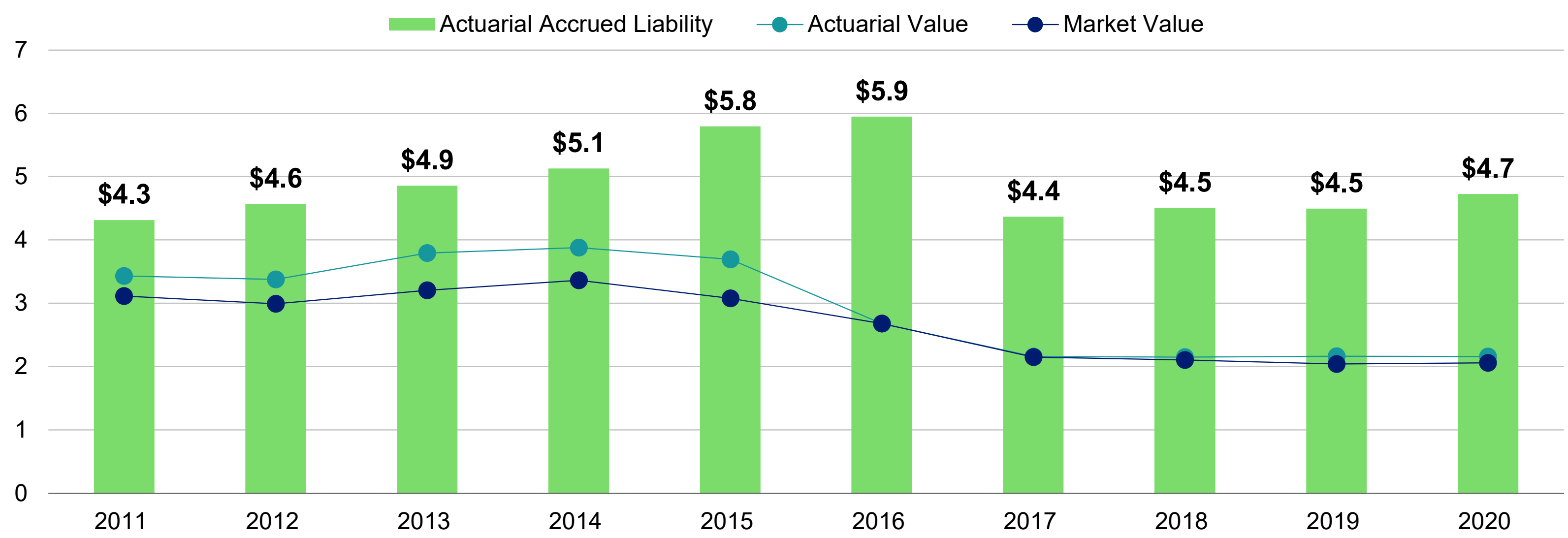


	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AVA	-6.14%	12.29%	2.69%	0.43%	14.79%	4.52%	-1.98%	-24.03%	7.16%	6.63%	5.48%	5.05%
MVA	-24.80%	13.78%	10.72%	-1.78%	9.92%	7.70%	-5.35%	-8.47%	6.82%	4.74%	2.09%	6.25%

Note: The actuarial returns for 2012 and 2015 include effects of changes in asset method.
The returns for 2014 and 2015 include significant write-downs of the Plan's assets.

Historical Results

Asset and Actuarial Accrued Liability Values as of January 1
($ billions)

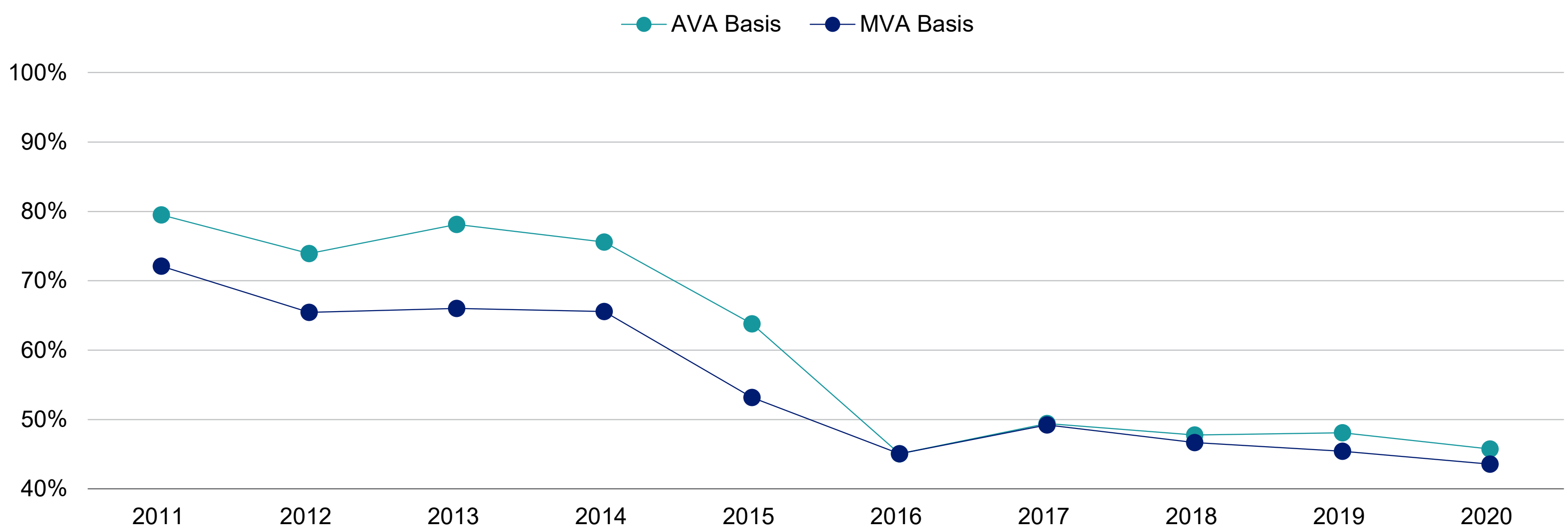


<u>Notes</u>: The significant increase in liability in 2015 is due to the change in discount rate, from 8.50% to 7.25%.
The liability decrease in 2017 is attributable to the plan changes implemented following the adoption of HB 3158.

As mentioned previously, the decline in assets from January 1, 2014 through January 1, 2016 is primarily the result of write-downs. The actuarial value of assets was set equal to market value as of January 1, 2016. The decline during 2016 reflects the unusually large number of DROP payments made in that year.

Historical Results

Funded Percentage as of January 1



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
AVA	79.5%	73.9%	78.1%	75.6%	63.8%	45.1%	49.4%	47.7%	48.1%	45.7%
MVA	72.1%	65.5%	66.0%	65.6%	53.2%	45.1%	49.2%	46.7%	45.4%	43.6%

Risk

Investment Risk

- The System's assets are expected to earn less than the assumed rate over the next few years as the investment portfolio is rebalanced
- Beyond that, the System could be at risk of not meeting its funding goals if asset returns are below the assumed long-term rate
- Benefit payments are higher than contribution income making the System reliant on investment income to cover the difference
  - For 2019, benefits and administrative expenses were $108.3 million more than contributions received

Longevity and Demographic Risk

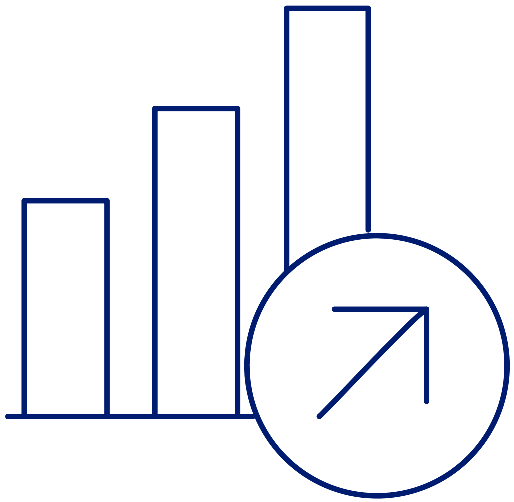
- If members live longer than expected, the benefit payouts will be higher than currently assumed, which will draw down the System's assets
- The plan's costs are also reliant on turnover and retirement patterns

Contribution Risk

- Plan contribution rates are set by statute, but the dollars of contributions depend on the computation payroll to which the rates are applied
- The following slides describe the importance of accurate payroll projections on the System's ability to improve its funding status

The Importance of Accurate Payroll Projections

- Segal strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability
- Payments should be enough to cover normal cost, interest on the unfunded actuarial accrued liability and, ultimately, the principal balance
- The funding policy adopted by the State in HB 3158 meets this standard, **<u>if</u>** the City's Hiring Plan payroll projections come to fruition
- Assuming the City's Hiring Plan payroll projection is met, the expected full-funding date is 2075, 18 years later than the expected full-funding date from the 2019 valuation
  - Full-funding date may vary on an annual basis due to demographic experience, economic experience, and contributions other than assumed



The Importance of Accurate Payroll Projections

- Through the first four years of the policy (2017-2020), valuation payroll based on participant data is cumulatively $51.5 million less than the City's projections
- City's long-term contribution rate is scheduled to be 34.50% of computation pay
  - Through 2024 there is a floor on the City's contribution levels
  - Beginning in 2025, City expected to contribute based solely on pay
  - City's plan reflects significant growth in payroll over 20 years, from $372 million in 2017 to $684 million in 2037 (average annual growth of 3.1%)
  - Differences between actual payroll and City's Hiring Plan payroll will have an impact on when the System is projected to become fully funded
  - If payroll growth is more modest, or if there is adverse experience in the System that leads to losses, the period required to achieve 100% funding could be significantly longer

If the City's Hiring Plan projections are not met and instead the current valuation payroll of $397.0 million increases by the assumed payroll growth of 2.50% each year ongoing, and if City and member contributions are based on this projected payroll beginning in 2025, the System is projected to be only 41% funded in 2075, rather than 100%.

City's Hiring Plan Payroll vs. Projected Valuation Payroll

Year	City's Hiring Plan Payroll	Projected Valuation Payroll[1]	$ Difference
2017	$372,000,000	$357,414,472	-$14,585,528
2018	364,000,000	346,036,690	-17,963,310
2019	383,000,000	363,117,415	-19,882,585
2020	396,000,000	396,954,743	954,743
2021	408,000,000	406,878,612	-1,121,388
2022	422,000,000	417,050,577	-4,949,423
2023	438,000,000	427,476,841	-10,523,159
2024	454,000,000	438,163,762	-15,836,238
2025	471,000,000	449,117,856	-21,882,144
2026	488,000,000	460,345,803	-27,654,197
2027	507,000,000	471,854,448	-35,145,552
2028	525,000,000	483,650,809	-41,349,191
2029	545,000,000	495,742,079	-49,257,921
2030	565,000,000	508,135,631	-56,864,369
2031	581,000,000	520,839,022	-60,160,978
2032	597,000,000	533,859,998	-63,140,002
2033	614,000,000	547,206,498	-66,793,502
2034	631,000,000	560,886,660	-70,113,340
2035	648,000,000	574,908,826	-73,091,174
2036	666,000,000	589,281,547	-76,718,453
2037	684,000,000	604,013,586	-79,986,414
			-$806,064,125

[1] Valuation payroll is the active members' actual payroll for the preceding year, increased by the salary scale applicable for each member to account for their anticipated salary increases in the upcoming year.

Assumptions

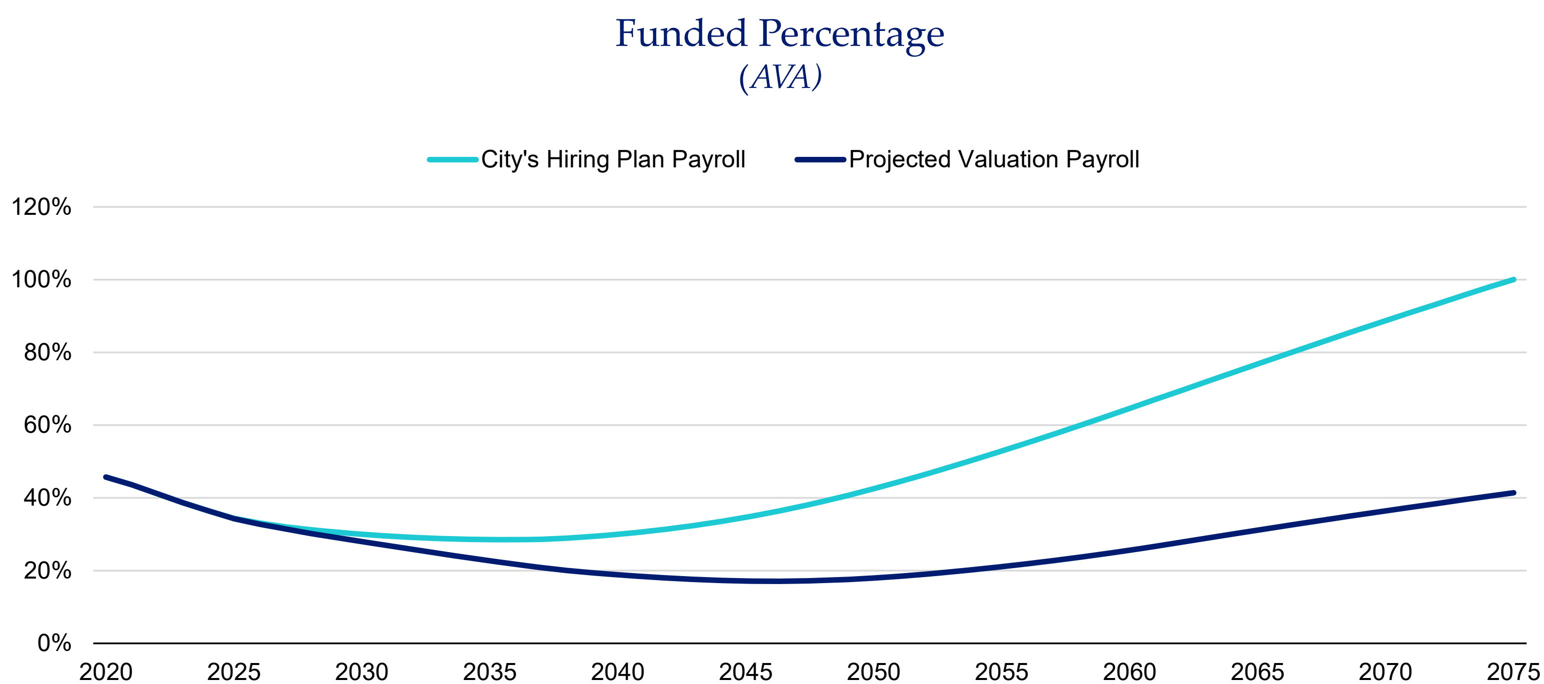
- Valuation payroll projected at 2.5% per year
- Beginning in 2025, the statutory contributions cease and City contributions equal 34.5% of actual computation pay
- Member contributions: 13.5% of computation pay

Findings

- Total City and Member contributions between 2025 and 2037, based on the City's Hiring Plan payroll projections: **$3.611 billion**
- Total City and Member contributions between 2025 and 2037, based on projected valuation payroll: **$3.264 billion**
- Difference in total contributions based on these two projections, just for the period of 2025 through 2037: **$347 million**
- The **$347 million** gap is down from **$457 million** last year, because the 2020 projected valuation payroll is about 9% higher than expected based on projecting the 2019 computation pay by the payroll growth assumption

Segal 16

Funded Percentage Projection



The projection above anticipates that all actuarial assumptions are met in the future and all contributions are made as expected. Projections are based on the City's Hiring Plan payroll projections through 2037 for the "City's Hiring Plan Payroll" projection. The "Projected Valuation Payroll" uses the actual January 1, 2020 payroll projected forward each year at the 2.50% growth assumption.

Based on the City's Hiring Plan payroll projections, 100% funding is projected by January 1, 2075. Based on the projected valuation payroll, the funded percent is projected to be 41% on January 1, 2075.

GASB 67 Accounting Disclosures – Net Pension Liability

- The Pension System is required to provide disclosures under GASB Statement 67. The components of the net pension liability are as follows:

	Year Ended December 31, 2019	Year Ended December 31, 2018
Total Pension Liability (TPL)	$4.73 billion	$4.50 billion
Plan's Fiduciary Net Position	$2.06 billion	$2.04 billion
City's Net Pension Liability (NPL)	$2.67 billion	$2.46 billion
Plan Fiduciary Net Position as a percentage of the TPL	43.49%	45.36%

- TPL as of December 31, 2018 includes the DROP revocations between September 1, 2017 and February 28, 2018
- In the event that a pension plan has a projected insolvency date, GASB requires that the unfunded benefits be discounted using a 20-year, tax-exempt general obligation bonds rate rather than the Plan's funding rate
- Based on HB 3158 contribution requirements and the City's Hiring Plan (90% of which was used for projecting computation pay for GASB purposes), City and member contributions are projected be able to pay the benefits of current members. Therefore, GASB liabilities are determined using the valuation discount rate.
  - 7.00% as of December 31, 2019
  - 7.25% as of December 31, 2018

Supplemental Plan Results

Segal 19

Supplemental Plan Results

- City of Dallas contributes to the Supplemental Plan each year based on the normal cost (net of member contributions), interest on the unfunded actuarial accrued liability and the principal balance
  - The funding policy was changed from an open, 10-year amortization period to a closed, 20-year amortization period with this year's valuation
  - Beginning in 2021, future gains or losses each year will be amortized over a closed, 10-year period
- Same assumption changes implemented for the Combined Pension Plan apply to the Supplemental Plan
- Total recommended contribution for the Supplemental Plan decreased from $1.97 million in 2019 to $1.86 million in 2020
  - City's portion decreased from $1.88 million to $1.78 million; the change in amortization methodology caused the ADC to decrease by $0.8 million
- Supplemental Plan net assets decreased from $18.3 million to $17.3 million
- Funded ratio decreased from 57.6% to 48.3%
- Number of active members increased from 39 to 41
- Number of annuitants increased from 138 to 139
- GASB net pension liability (NPL) is determined using the valuation discount rate of 7.00%
- NPL increased from $13.5 million to $18.5 million

Caveats

- This presentation is intended for the use of the Board of Trustees for the Dallas Police and Fire Pension System, and is a supplement to Segal's full valuation reports for the System as of January 1, 2020.
- Please refer to the full valuation reports for a description of assumptions and plan provisions reflected in the results shown in this presentation. The reports also include more comprehensive information regarding the System's membership, assets, and experience during the most recent plan year.
- Projections, by their nature, are not a guarantee of future results. They are intended to serve as estimates of future financial outcomes that are based on assumptions about future experience and the information available to us at the time the modeling is undertaken and completed. The projected future results included in this presentation show how the System would be affected if specific investment return, salary, mortality, turnover, disability and retirement assumptions are met. Actual results may differ due to such variables as demographic experience, the economy, contribution patterns, stock market performance and the regulatory environment.
- The calculations included in this presentation were completed under the supervision of Jeffrey S. Williams, FCA, ASA, MAAA, EA, and Deborah K. Brigham, FCA, ASA, MAAA, EA.

Questions?

Jeffrey S. Williams, FCA, ASA, MAAA, EA
Vice President and Consulting Actuary
jwilliams@segalco.com
678.306.3147

Caitlin Grice, FCA, ASA, MAAA, EA
Consulting Actuary
cgrice@segalco.com
410.336.2266

Dallas Police and Fire Pension System

Revised Actuarial Valuation and Review as of January 1, 2020

Segal

2727 Paces Ferry Road SE, Building One, Suite 1400
Atlanta, GA 30339-4053
segalco.com
T 678.306.3100

November 19, 2020

Board of Trustees
Dallas Police and Fire Pension System
4100 Harry Hines Blvd., Suite 100
Dallas, TX 75219-3207

Dear Board Members:

We are pleased to submit this Revised Actuarial Valuation and Review as of January 1, 2020. This report has been updated from the valuation dated November 6, 2020 to reflect July 2020 amendments to the Board's funding policy . It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and calculates the funding requirements for fiscal 2020; actual funding is determined by State law.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Pension System. The census information on which our calculations were based was provided by the System's IT Department, under the supervision of John Holt, and the financial information on which our calculations were based was prepared by the System's Finance Department. That assistance is gratefully acknowledged.

The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the System.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,
Segal

Jeffrey S. Williams, FCA, ASA, MAAA, EA
Vice President and Consulting Actuary

Deborah K. Brigham, FCA, ASA, MAAA, EA
Senior Vice President and Consulting Actuary

Table of Contents

Table of Contents

Actuarial Valuation Summary

Purpose and basis

This report was prepared by Segal to present a valuation of the Plan as of January 1, 2020. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and to provide information for required disclosures under Governmental Accounting Standards Board (GASB) Statement No. 67. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Pension Plan, as administered by the Board;
- The characteristics of covered active members, inactive members, and retired members and beneficiaries as of December 31, 2019, provided by the System's IT Department;
- The assets of the Plan as of December 31, 2019, provided by the System's Finance Department;
- Economic assumptions regarding future salary increases and investment earnings;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc.;
- The requirements of House Bill 3158 (HB 3158), signed into law by the Governor of Texas on May 31, 2017 and
- The funding policy adopted by the Board of Trustees of the Pension System on December 12, 2019, as amended through July 9, 2020.

The majority of assumptions and methods used to value the Plan were set by the Board based on recommendations made by Segal following a five-year experience study for the period ended December 31, 2019.

Certain disclosure information required by GASB Statement No 68 as of September 30, 2020 for the City will be provided in a separate report.

Valuation highlights

This actuarial valuation is based on plan assets as of December 31, 2019. Due to the COVID-19 pandemic, market conditions have changed significantly since the valuation date. The Fund's actuarial status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the Plan Year. While it is impossible to determine how the market will perform over the next several months, and how that will affect the results of next year's valuation, Segal is available to prepare projections of potential outcomes upon request.

1. Segal strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability (UAL), and the principal UAL balance. The funding policy adopted by the Texas Legislature in HB 3158 meets this standard, if future payroll matches the City's Hiring Plan payroll projection. The Board of the Pension System also has a funding policy. This policy was adopted in December 2019 and amended in July 2020. In the Board's amended policy, the provisions of which are reflected for the first time in this valuation, the amortization period was changed from 30 years to a closed, 25-year period. Beginning in 2021, future gains or losses each year will be amortized over separate, closed, 20-year periods. Amortization will remain on a level percentage of pay basis. If the City's actual contributions differ from the actuarially determined contribution (ADC) by more than 2%, the Board can recommend a change in the City's contribution rate. The Board's funding policy also meets the standard of targeting 100% funding of the actuarial accrued liability.
2. The City's ADC for the 2020 plan year, based on a 25-year amortization of the UAL, is $185.4 million, an increase of $33.3 million from last year. The ADC as a percentage of computation pay increased from 41.88% to 46.71%. The increase is mainly the result of shortening the amortization period and implementing actuarial assumption changes, and to a lesser extent, losses from investment and demographic experience.
3. The funded ratio (the ratio of the actuarial value of assets to actuarial accrued liability) is 45.73%, compared to the prior year funded ratio of 48.10%. This ratio is one measure of funding status, and its history is a measure of funding progress. Using the market value of assets, the funded ratio is 43.56%, compared to 45.43% as of the prior valuation date. As with the change in ADC, experience losses and assumption changes caused this decline.
4. Actual contributions made by the City during the plan year ending December 31, 2019 were $155.7 million, 102.4% of the 2019 ADC. In 2018, actual contributions were $149.4 million, 95.1% of the prior year ADC. The total contributions made during the plan year ending December 31, 2019 were insufficient to reduce the UAL. The Board was advised previously that because the funding policy contributions as outlined in HB 3158 result in a long effective amortization period, it will likely be 20 years or more before the UAL starts to decline.
5. The rate of return on the market value of assets, as calculated by the actuary, was 6.25% for the 2019 plan year. This return was on target with short-term expectations as the System continues to rebalance its investment portfolio. As shown in Section 3, Exhibit E, the System reduced the percentage of the invested portfolio exposed to real assets from 35% to 29%. The reduction in

real assets led to an increase in the equity exposure, from 22% to 28%, and an increase in the fixed income exposure, from 26% to 28%.

6. The return on the actuarial value of assets was 5.05% for the 2019 plan year. This resulted in an actuarial loss when measured against the assumed rate of return of 7.25%. This actuarial investment loss increased the ADC by $2.8 million. Given the low fixed income interest rate environment, target asset allocation and expectations of future investment returns for various classes, the Board lowered the assumed long-term rate of return on investments from 7.25% to 7.00% with this year's valuation.
7. There was a net experience loss for the year of $59.9 million, or 1.3% of the actuarial accrued liability. This loss was primarily due to the investment loss mentioned above and, to a lesser extent, salary increases greater than expected. The investment loss was equivalent to 1.0% of actuarial accrued liability, and net losses due to demographic and other factors were 0.3% of liability. The non-investment loss is not significant for actuarial valuation purposes.
8. The actuarial value of assets as of the valuation date is 105.0% of the market value of assets. The investment experience in recent years has only been partially recognized in the actuarial value of assets. As the deferred net loss of $102.3 million is recognized in future years, the System's ADC is likely to increase unless the net loss is offset by future experience. The recognition of these market losses will also have an impact on the future funded ratio. If the net deferred loss were recognized immediately in the actuarial value of assets, the ADC would increase from 46.71% to 48.42% of computation pay.
9. Included in this valuation for the first time are a variety of assumption changes, as recommended in the January 1, 2015 – December 31, 2019 experience study for the System. The study was presented to the Board in May 2020. Changes were made to the net investment return rate, salary scale, payroll growth rate, mortality tables, retirement rates, DROP annuitization rates, and withdrawal (or turnover) rates. In addition, the System has provided revised short-term market rates of return to be assumed for projecting assets and funding status. The assumption for ad-hoc COLA timing was updated to reflect all of these assumption changes. Details of the new assumptions are summarized in Section 4, Exhibit I. Overall, the assumption changes increased the total normal cost by $3.5 million and the actuarial accrued liability by $152.3 million. The total impact was an increase in the ADC of $12.4 million.
10. Lowering the amortization period for the UAL from 30 years to 25 years, in accordance with the Board's amended funding policy, increased the ADC by $15.4 million.
11. Assuming the City's Hiring Plan payroll projection materializes, the System's expected full-funding date is 2075. The City's Hiring Plan payroll projection is shown in Section 4, Exhibit I. From 2017 through 2020, valuation payroll based on participant data was cumulatively $51.5 million less than the City's projection, or 3.40% lower. Even though valuation payroll for 2020 exceeds the City's payroll projection for the first time, this remains an area of concern that needs to be carefully monitored.
12. With 100% funding projected in 2075, the effective amortization period for the UAL is 55 years. This period can vary on an annual basis due to actuarial experience, changes in assumptions, contributions higher or lower than expected, and assumed short-term market value asset returns provided by System staff. In the 2019 actuarial valuation, the projected full funding year

was 2057, and the effective period was 38 years. Through 2024 there is a floor on the City's contribution levels, which is expected to override the long-term contribution rate of 34.50% of computation pay. Beginning in 2025, when the City is expected to contribute based solely on computation pay, differences between actual payroll and the City's Hiring Plan payroll will have an impact on when the System is projected to become fully funded.

13. The City's plan reflects significant growth in payroll over 20 years, from $372 million in 2017 to $684 million in 2037. The average annual growth in the City's Hiring Plan payroll projections is 3.09%, compared to the valuation assumption of 2.50%. If payroll growth is more modest, or if there is adverse actuarial experience, it will significantly impact the progress towards improved funding. For instance, if the City's Hiring Plan projections are not met and instead the current valuation payroll of $397.0 million increases by the assumed payroll growth of 2.50% each year, and City and member contributions are based on this level of payroll beginning in 2025, the System is projected to be only 41% funded in 2075, rather than 100%.
14. The System's normal cost (for benefits accruing each year) plus expenses is 17.40% of computation pay. Members contribute 13.50% of computation pay, and the City covers the balance. All remaining City contributions pay down the UAL. Although it is important for the System to meet its 7.00% annual rate of return assumption, the assets currently cover a relatively low percentage of the liabilities and investment returns alone cannot close the funding gap. It is therefore vital that the City's payroll projections are accurate, or that the long-term level of contributions is at least 34.50% of those payroll projections, for the System to achieve full funding.
15. Since the actuarial valuation results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience proves to be different from the assumptions. Segal has not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the System's future financial condition, but have included a brief discussion of some risks that may affect the System in Section 2. A more detailed assessment would provide the Board with a better understanding of the inherent risks. This could be important because:
    - The outlook for financial markets is uncertain due to COVID-19.
    - The Plan's asset allocation has potential for a significant amount of investment return volatility, particularly as rebalancing occurs.
    - Retired participants account for most of the System's liabilities, leaving limited options for reducing costs in the event of adverse experience.
    - Actual payroll has been less than the City's Hiring Plan payroll projections in recent years, and potential future shortfalls could result in additional funding challenges in the future.
    - The current political and social environment could impact the turnover and retirement patterns of public safety employees, as well as the availability of new hires.

Section 1: Actuarial Valuation Summary

16. This report constitutes an actuarial valuation for the purpose of determining the ADC under the Plan's funding policy. The information contained in Section 5 provides the accounting information for Governmental Accounting Standards Board (GASB) Statement No. 67, for inclusion in the plan and employer's financial statements as of December 31, 2019. The Net Pension Liability (NPL) and Pension Expense under GASB Statement No. 68 for inclusion in the plan and employer's financial statements as of September 30, 2020 will be provided separately.
17. The Net Pension Liability (NPL) is equal to the difference between the Total Pension Liability (TPL) and the Plan's fiduciary net position (equal to the market value of assets). The NPL as of December 31, 2019 is $2.7 billion, an increase from $2.5 billion as of December 31, 2018.

Summary of key valuation results

		2020	2019
Contributions for plan year beginning January 1, adjusted for timing:	• Total actuarially determined contribution (City and member)	$240,861,543	$202,851,063
	• Expected member contributions	55,432,779	50,766,766
	• City's actuarially determined contribution (ADC)	185,428,764	152,084,297
	• City's ADC as a percent of computation pay	46.71%	41.88%
	• Actual City contributions	--	$155,721,087
	• Amortization period for determination of ADC	25 years	30 years
Actuarial accrued liability for plan year beginning January 1:	• Retired members and beneficiaries	$3,268,076,451	$3,098,053,613
	• Inactive vested members	32,099,477	30,007,756
	• Active members	1,422,388,061	1,365,339,051
	• Inactive members due a refund of employee contributions	1,408,491	1,422,084
	• Total actuarial accrued liability	4,723,972,480	4,494,822,504
	• Employer normal cost including administrative expenses	15,495,082	11,579,396
Assets for plan year beginning January 1:	• Market value of assets (MVA)	$2,057,857,317	$2,041,914,130
	• Actuarial value of assets (AVA)	2,160,125,611	2,161,899,662
	• Actuarial value of assets as a percentage of market value of assets	104.97%	105.88%
Funded status for plan year beginning January 1:	• Unfunded actuarial accrued liability on market value of assets	$2,666,115,163	$2,452,908,374
	• Funded percentage on MVA basis	43.56%	45.43%
	• Unfunded actuarial accrued liability on actuarial value of assets	$2,563,846,869	$2,332,922,842
	• Funded percentage on AVA basis	45.73%	48.10%
	• Projected year of full funding based on City's Hiring Plan payroll projections	2075	2057
Key assumptions	• Net investment return	7.00%	7.25%
	• Inflation rate	2.50%	2.75%
GASB information	• Discount rate	7.00%	7.25%
	• Total pension liability	$4,731,959,822	$4,501,670,375
	• Plan fiduciary net position	2,057,857,317	2,041,914,130
	• Net pension liability	2,674,102,505	2,459,756,245
	• Plan fiduciary net position as a percentage of total pension liability	43.49%	45.36%
Demographic data for plan year beginning January 1:	• Number of retired members and beneficiaries	5,039	4,919
	• Number of inactive vested members	242	230
	• Number of active members	5,121	5,012
	• Number of inactive members due a refund of employee contributions	434	431
	• Total computation pay[1]	$396,954,743	$363,117,415
	• Average computation pay	77,515	72,450

[1] Total computation pay, or valuation pay, is the active members' actual payroll for the preceding year, increased by the salary scale applicable for each member to account for their anticipated salary increases in the upcoming year.

Important information about actuarial valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the market value of assets as of the valuation date, as provided by the System. The System uses an "actuarial value of assets" that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan's assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results that does not mean that the previous assumptions were unreasonable.

Section 1: Actuarial Valuation Summary

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

The actuarial valuation is prepared at the request of the Board. Segal is not responsible for the use or misuse of its report, particularly by any other party.
An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
Actuarial results in this report are not rounded, but that does not imply precision.
If the Board is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.

As Segal has no discretionary authority with respect to the management or assets of the System, it is not a fiduciary in its capacity as actuaries and consultants with respect to the System.

Actuarial Valuation Results

Member data

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, inactive vested members, retired members and beneficiaries. This section presents a summary of significant statistical data on these member groups.

The average number of active members in the most recent four years is 7% less than the average for the preceding six years, and the number of retirees and beneficiaries has climbed by over 19% in the last four years. The number of active participants does appear to be climbing again, however, after the significant decline in 2016-2017.

More detailed information for this valuation year and the preceding valuation can be found in *Section 3, Exhibits A, B,* and *C*.

Member Population: 2010 – 2019

Year Ended December 31	Active Members	Inactive Vested Members[1]	Retired Members and Beneficiaries	Total Non-Actives	Ratio of Non-Actives to Actives
2010	5,482	135	3,535	3,670	0.67
2011	5,376	128	3,669	3,797	0.71
2012	5,400	96	3,783	3,879	0.72
2013	5,397	122	3,890	4,012	0.74
2014	5,487	157	4,069	4,226	0.77
2015	5,415	200	4,230	4,430	0.82
2016	5,104	215	4,456	4,671	0.92
2017	4,952	226	4,756	4,982	1.01
2018	5,012	230	4,919	5,149	1.03
2019	5,121	242	5,039	5,281	1.03

[1] Excludes non-vested terminated members due a refund of employee contributions

Active members

Plan costs are affected by the age, years of service and pay of active members. In this year's valuation, there were 5,121 active members with an average age of 39.8, average years of service of 12.3 years and average computation pay of $77,515. The 5,012 active members in the prior valuation had an average age of 40.1, average service of 12.8 years and average computation pay of $72,450.

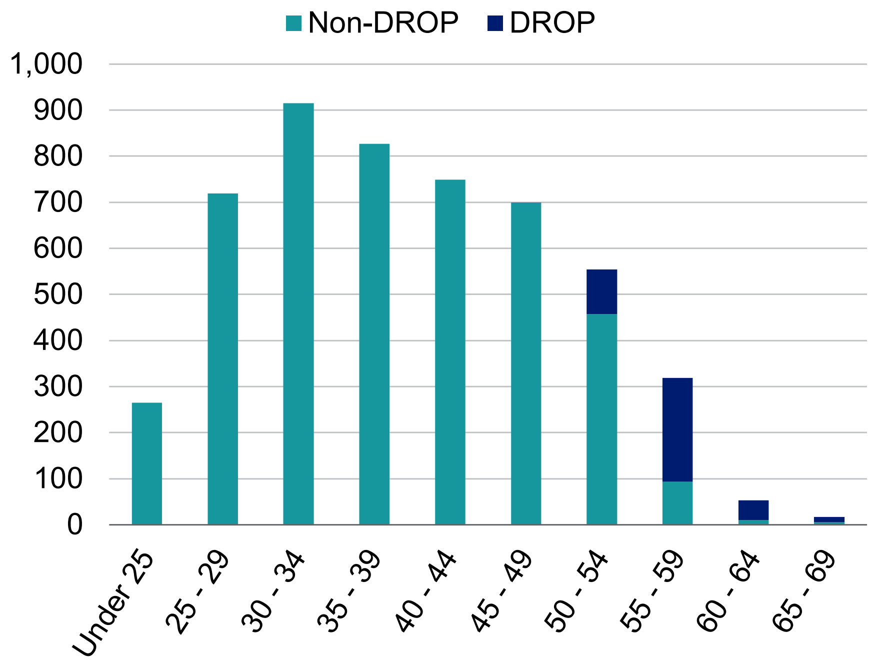
The number of Firefighters increased from 1,996 to 2,013 as of December 31, 2019. The average age of this group is 39.6, the average years of service is 11.3 and the average computation pay is $78,301. Last year these averages were 39.5, 11.9 and $71,424, respectively.

The number of Police Officers increased from 3,016 to 3,108 as of December 31, 2019. The average age of this group is 39.9, the average years of service is 12.2 and the average computation pay is $77,006. Last year these average were 40.5, 13.3 and $73,128, respectively.

The number of active participants in DROP decreased from 483 at the end of 2018 to 383 at the end of 2019.

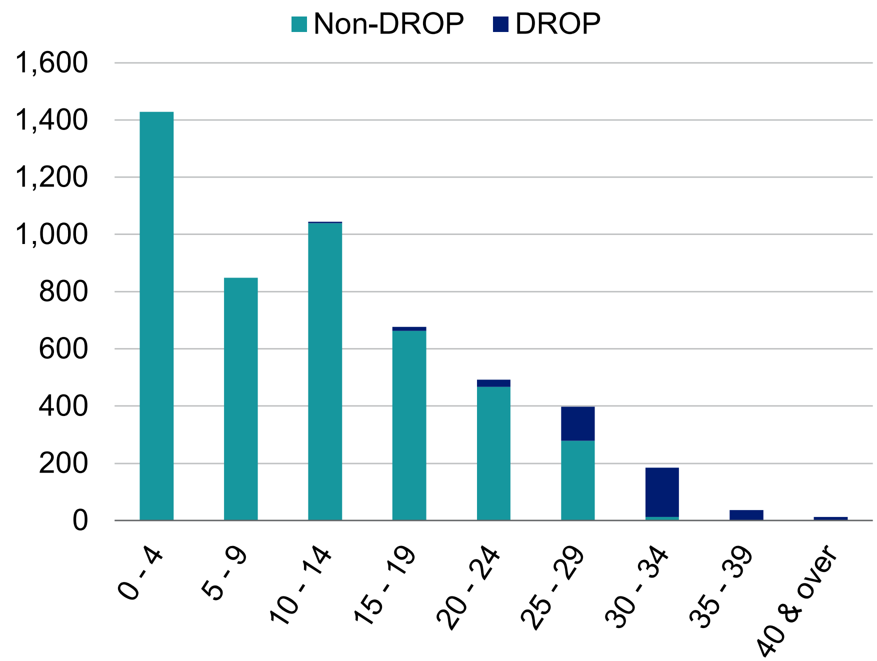
Distribution of Active Members as of December 31, 2019

Actives by Age



Average age	39.8
Prior year average age	40.1
Difference	-0.3

Actives by Years of Service



Average years of service	12.3
Prior year average years of service	12.8
Difference	-0.5

Inactive members

In this year's valuation, there were 242 members with a vested right to a deferred or immediate vested benefit. In addition, there were 434 members entitled to a return of their member contributions.

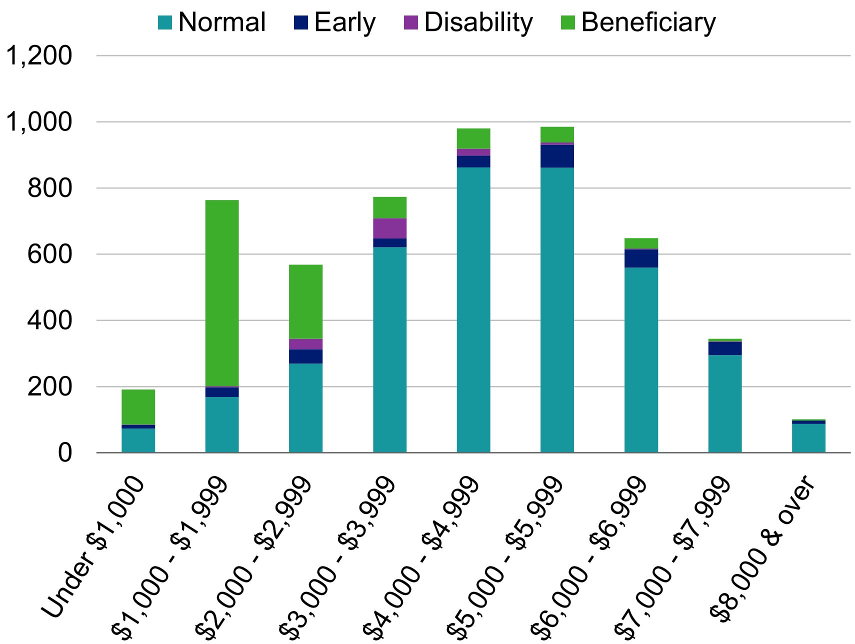
Retired members and beneficiaries

As of December 31, 2019, 3,803 retired members and 1,153 beneficiaries were receiving total monthly benefits of $21,064,497. For comparison, in the previous valuation, there were 3,717 retired members and 1,132 beneficiaries receiving monthly benefits of $20,449,452. These amounts do not include 83 beneficiaries with annuitized DROP accounts only and no lifetime annuity; there were 70 last year.

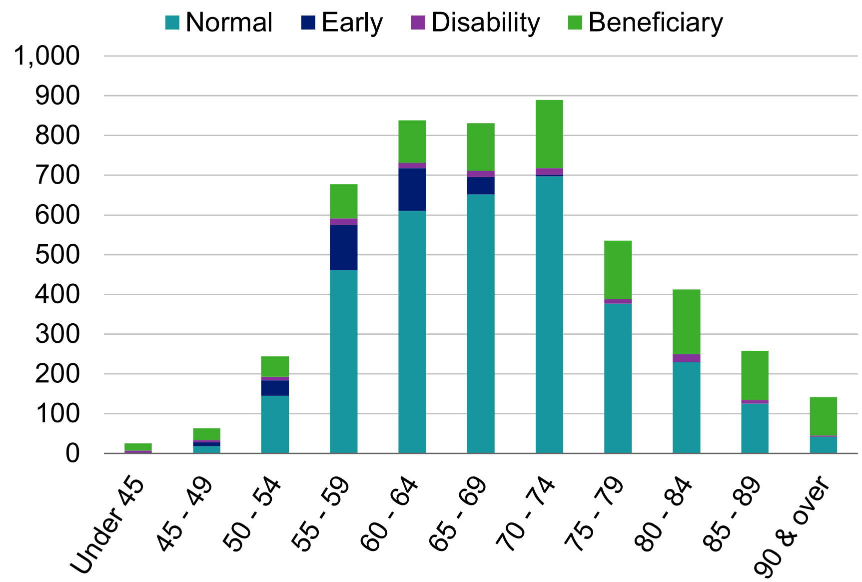
As of December 31, 2019, the average monthly benefit for retired members is $4,250, compared to $4,217 in the previous valuation. The average age for retired members is 68.7 in the current valuation, compared with 68.4 in the prior valuation.

Distribution of Pensioners as of December 31, 2019

Pensioners by Type and Monthly Amount



Pensioners by Type and Age



Historical plan population

The chart below demonstrates the progression of the active population over the last ten years. The chart also shows the growth among the retired population over the same time period.

Member Data Statistics: 2010 – 2019

	Active Members			Retired Members and Beneficiaries[1]		
Year Ended December 31	Count	Average Age	Average Service	Count	Average Age[2]	Average Monthly Amount[3]
2010	5,482	41.1	14.4	3,535	--	$3,251
2011	5,376	41.3	14.5	3,669	--	3,380
2012	5,400	41.3	14.5	3,783	--	3,429
2013	5,397	41.3	14.4	3,890	--	3,543
2014	5,487	41.2	14.2	4,069	68.8	3,699
2015	5,415	41.4	14.3	4,182	69.0	3,826
2016	5,104	41.4	13.0	4,414	68.7	4,102
2017	4,952	40.6	13.4	4,706	67.7	4,171
2018	5,012	40.1	12.8	4,849	68.4	4,217
2019	5,121	39.8	12.3	4,956	68.7	4,250

[1] Does not include DROP only beneficiaries
[2] Information for December 31, 2013 and earlier is not available.
[3] Average benefits for December 31, 2013 and earlier include terminated vested members; average benefits for December 31, 2014 and later include the benefit supplement.

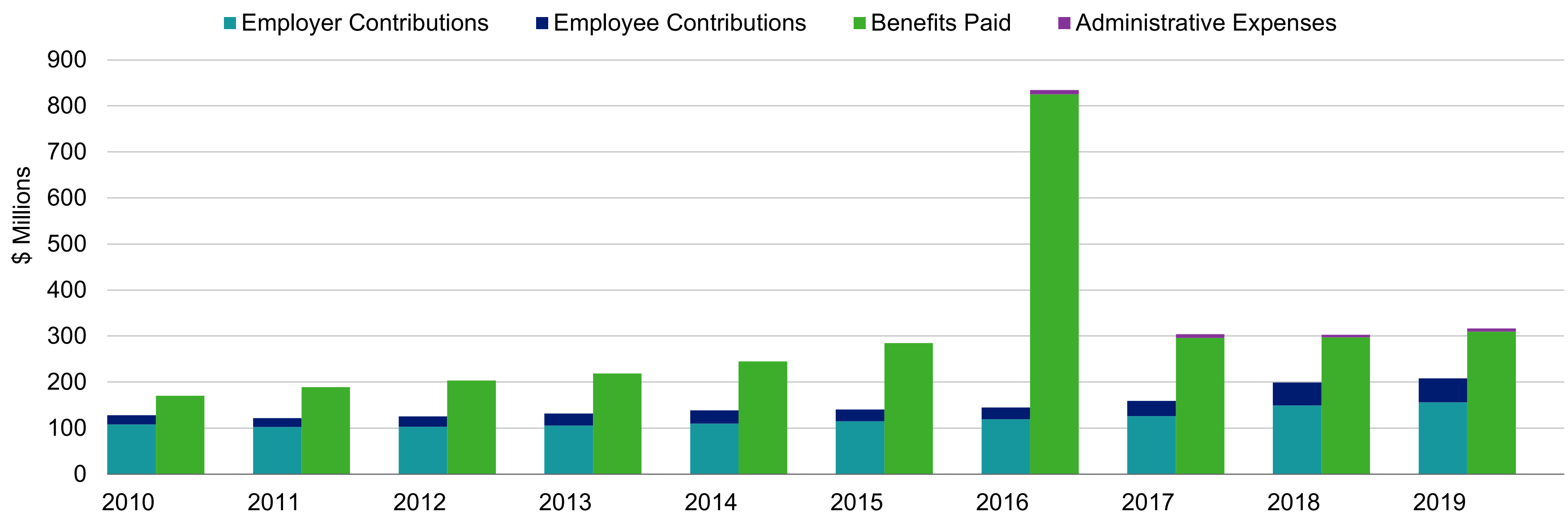
Financial information

Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and investment earnings (less investment fees) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components.

Benefit payments in 2016 totaled $825.1 million, of which $606.3 million were DROP lump-sum payments. This was a one-time event, as members reacted to pending changes in the plan provisions. DROP balances have been annuitized, resulting in more stable projected benefit payment levels in the future.

Additional financial information, including a summary of transactions for the valuation year, is presented in *Section 3, Exhibits D, E* and *F*.

Comparison of Contributions Made with Benefits and Expenses Paid for Years Ended December 31, 2010 – 2019



Section 2: Actuarial Valuation Results

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

Determination of Actuarial Value of Assets for Year Ended December 31, 2019

			Original Amount[1]	Percent Deferred	Unrecognized Amount[2]	
1	Market value of assets, December 31, 2019					$2,057,857,317
2	Calculation of unrecognized return					
	(a)	Year ended December 31, 2019	-$19,852,697	80%	-$15,882,158	
	(b)	Year ended December 31, 2018	-105,891,055	60%	-63,534,633	
	(c)	Year ended December 31, 2017	-52,151,589	40%	-20,860,636	
	(d)	Year ended December 31, 2016	-9,954,337	20%	-1,990,867	
	(e)	Total unrecognized return				-$102,268,294
3	Preliminary actuarial value: **(1) - (2e)**					2,160,125,611
4	Adjustment to be within 20% corridor					0
5	Final actuarial value of assets as of December 31, 2019: **(3) + (4)**					2,160,125,611
6	Actuarial value as a percentage of market value: **(5) ÷ (1)**					105.0%
7	Amount deferred for future recognition[3]: **(1) - (5)**					-$102,268,294

[1] Total return minus expected return on a market value basis

[2] Percent deferred applies to the current valuation year

[3] Deferred return as of December 31, 2019 recognized in each of the next four years:

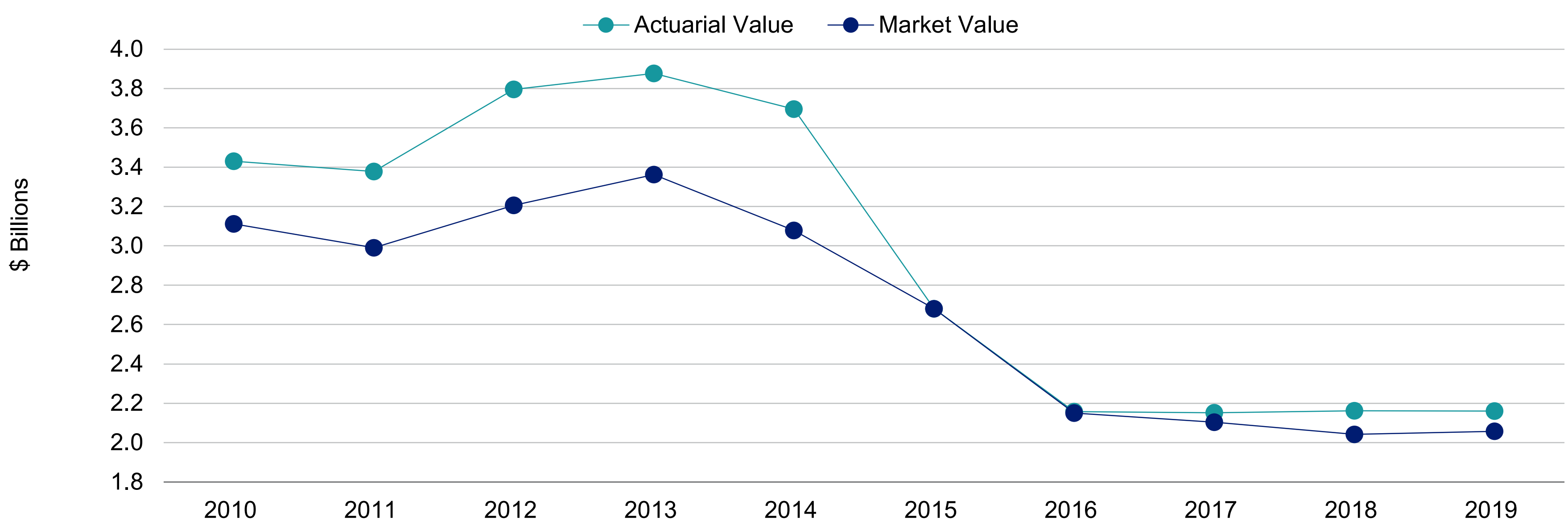
(a) Amount recognized on December 31, 2020	-$37,569,935
(b) Amount recognized on December 31, 2021	-35,579,068
(c) Amount recognized on December 31, 2022	-25,148,751
(d) Amount recognized on December 31, 2023	-3,970,540

Section 2: Actuarial Valuation Results

Both the actuarial value and market value of assets are representations of the Plan's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the Plan's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

The decline in asset values from 2013 to 2015 was primarily the result of significant write-downs in the System's asset holdings. The decline from 2015 to 2016 reflects the unusually large number of DROP payments made in 2016.

Actuarial Value of Assets vs. Market Value of Assets as of December 31, 2010 – 2019



Actuarial experience

To calculate any actuarially determined contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), any contribution requirement will decrease from the previous year. On the other hand, any contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total loss is $59,891,559, which includes $46,268,886 from investment losses and $13,622,673 in net losses from all other sources. The net experience variation from individual sources other than investments was 0.3% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

Actuarial Experience for Year Ended December 31, 2019

1	Net loss from investments[1]	-$46,268,886
2	Net gain from administrative expenses	2,127,930
3	Net loss from other experience	-15,750,603
4	Net experience loss: **1 + 2 + 3**	-$59,891,559

[1] Details on next page

Investment experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Plan's investment policy. The rate of return on the market value of assets was 6.25% for the year ended December 31, 2019.

For valuation purposes, the assumed rate of return on the actuarial value of assets was 7.25% for the year ended December 31, 2019. The actual rate of return on an actuarial basis for the 2019 plan year was 5.05%. Since the actual return for the year was less than the assumed return, the Plan experienced an actuarial loss during the year ended December 31, 2019 with regard to its investments. The Board lowered the assumed rate of return from 7.25% to 7.00% for the plan year beginning January 1, 2020.

Investment Experience

		Year Ended December 31, 2019		Year Ended December 31, 2018	
		Market Value	**Actuarial Value**	**Market Value**	**Actuarial Value**
1	Net investment income	$124,259,607	$106,542,369	$42,822,297	$115,113,957
2	Average value of assets	1,987,755,920	2,107,741,452	2,051,218,652	2,098,912,524
3	Rate of return: **1 ÷ 2**	6.25%	5.05%	2.09%	5.48%
4	Assumed rate of return	7.25%	7.25%	7.25%	7.25%
5	Expected investment income: **2 x 4**	144,112,304	152,811,255	148,713,352	152,171,158
6	Actuarial gain/(loss): **1 - 5**	-$19,852,697	-$46,268,886	-$105,891,055	-$37,057,201

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis compared to the actual market value investment return for the last 12 years, including averages over select time periods.

Investment Return – Actuarial Value vs. Market Value: 2008 - 2019

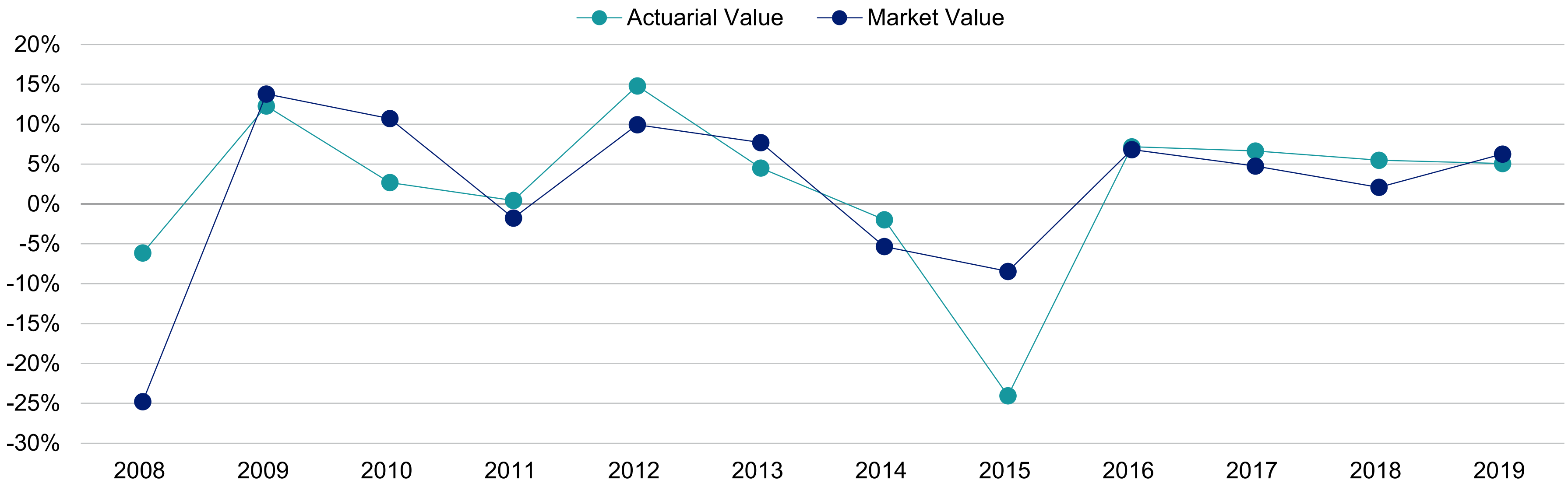
	Actuarial Value Investment Return		Market Value Investment Return	
Year Ended December 31	Amount[1]	Percent	Amount[2]	Percent
2008	-$199,538,242	-6.14%	-$838,497,127	-24.80%
2009	371,704,709	12.29	347,054,071	13.78
2010	90,332,398	2.69	303,461,949	10.72
2011	14,561,313	0.43	-54,844,275	-1.78
2012	493,841,725	14.79	292,719,981	9.92
2013	169,425,156	4.52	243,514,011	7.70
2014	-75,632,075	-1.98	-176,940,296	-5.35
2015	-1,406,733,309	-24.03	-254,829,470	-8.47
2016	167,318,581	7.16	159,355,111	6.82
2017	138,187,578	6.63	98,457,176	4.74
2018	115,113,957	5.48	42,822,297	2.09
2019	106,542,369	5.05	124,259,607	6.25
Most recent five-year average return		-7.18%		1.48%
Most recent ten-year average return		-0.67%		2.90%
Most recent 12-year average return		-0.04%		0.88%

Note: Each year’s yield is weighted by the average asset value in that year.

[1] Includes a change in asset method for plan years 2012 and 2015.
[2] Returns for years 2014 and 2015 include significant write-downs in the Plan’s assets.

As described earlier in this section, the actuarial asset valuation method gradually recognizes fluctuations in the market value rate of return. The goal of this is to stabilize the actuarial rate of return and to produce more level pension plan costs.

Market and Actuarial Rates of Return for Years Ended December 31, 2008 - 2019



Non-investment experience

Administrative expenses

- Administrative expenses for the year ended December 31, 2019 totaled $6,445,251, as compared to the assumption of $8,500,000. This resulted in a gain of $2,127,930 for the year, when adjusted for timing. Because it is expected that these expenses will increase, we have maintained the $8,500,000 assumption for the current year.

Mortality experience

- Mortality experience (more or fewer than expected deaths) yields actuarial gains or losses.
- The average number of deaths for nondisabled pensioners over the past five years was 73.6 per year compared to 73.5 projected deaths per year. The assumed mortality table for that five-year period was the RP-2014 Blue Collar Healthy Annuitant Table, set forward two years for females. The assumption has been updated in this valuation to the Pub-2010 Public Safety Retiree Amount-Weighted Table, set back one year for females. The Pub-2010 family of tables were published by the Society of Actuaries in 2019, and the public sector tables are appropriate for the valuation of this plan.

Other experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among members,
- retirement experience (earlier or later than projected),
- the number of disability retirements (more or fewer than projected), and
- salary increases (greater or smaller than projected).

The net loss from this other experience for the year ended December 31, 2019 amounted to $15,750,603, which is 0.3% of the actuarial accrued liability.

Actuarial assumptions and methods

- The following actuarial assumptions were approved by the Board and changed with this valuation, following the completion of a five-year experience study for the period ended December 31, 2019:
  - The net investment return assumption was lowered from 7.25% to 7.00%
  - The salary scale assumption was updated based on the 2019 Meet and Confer agreement, with a new ultimate rate of 2.50%.
  - The payroll growth assumption was lowered from 2.75% to 2.50%.
  - The mortality rates were updated to the Pub-2010 Public Safety Amount-weighted Mortality Tables, with varying adjustments by status and sex, projected generationally with Scale MP-2019.
  - The withdrawal rates were updated and the ultimate 0% rate was moved up from 38 to 25 years of service.
  - The DROP retirement rates were increased at most ages and the ultimate 100% retirement was updated from the earlier of age 67 or 8 years in the DROP to the earlier of age 65 or 10 years in the DROP.
  - The non-DROP retirement rates were lowered at most ages and simplified from three sets to two sets of rates.
  - The retirement assumption for inactive vested participants was updated to include an assumption that 75% of those who terminate with a vested benefit prior to age 40 will take a cash out at age 40.
  - The DROP annuitization interest rate for account balances as of September 1, 2017 was lowered from 3.00% to 2.75%.
- Based on a projection of the System's funded ratio, taking into account 2020 data, new long-term assumptions, and the System's near-term asset expectations, the ad-hoc COLA assumption was updated to begin October 1, 2063. Last year, the COLA was assumed to begin October 1, 2050.
- The System's expectations for near-term market returns were lowered to -6.00% for 2020, +5.25% for 2021, +5.75% for 2022, and +6.25% for 2023. For valuation purposes, these return assumptions are used for determining the projected full-funding date and the projected COLA start date.
- These changes increased the actuarial accrued liability by 3.33% and increased the total normal cost by 6.08%.
- The Board adopted a new funding policy in December 2019 and it was amended in July 2020. In the Board's amended policy, the provisions of which are reflected for the first time in this valuation, the amortization period was changed from 30 years to a closed, 25-year period. Beginning in 2021, future gains or losses each year will be amortized over separate, closed, 20-year periods. Amortization will remain on a level percentage of pay basis. If the City's actual contributions differ from the actuarially determined contribution (ADC) by more than 2%, the Board can recommend a change in the City's contribution rate.
- Details on actuarial assumptions and methods are in Section 4, Exhibit I.

Plan provisions

- There were no changes in plan provisions since the prior valuation.
- A summary of plan provisions is in Section 4, Exhibit II.

Development of Unfunded Actuarial Accrued Liability for Year Ended December 31, 2019

1	Unfunded actuarial accrued liability at beginning of year		$2,332,922,842
2	Normal cost at beginning of year		60,600,247
3	Total expected contributions		-207,989,380
4	Interest		
	• For whole year on **1 + 2**	$173,530,424	
	• For full year on **3**	-7,451,364	
	Total interest		166,079,060
5	Expected unfunded actuarial accrued liability		$2,351,612,769
6	Changes due to:		
	• Net experience loss	$59,891,559	
	• Assumptions	152,342,541	
	Total changes		212,234,100
7	Unfunded actuarial accrued liability at end of year		$2,563,846,869

Actuarially determined contribution

The actuarially determined contribution is equal to the employer normal cost payment and a payment on the unfunded actuarial accrued liability. As of January 1, 2020, the actuarially determined contribution is $185,428,764, or 46.71% of computation pay. The funding policy used to calculate the actuarially determined contribution as of January 1, 2020 is based on a closed amortization period of 25 years, established as of January 1, 2020. For prior years, including 2019, an open amortization period of 30 years was used. Amortization is on a level-percentage-of-pay basis.

Under the provisions of HB 3158, the City contributes mandated biweekly amounts through 2024 (but no less than 34.50% of computation pay), plus $13 million per year. Beginning January 1, 2025, the City will contribute 34.50% of computation pay. The effective amortization period, based on the City's Hiring Plan payroll projections, is 55 years. This is a significant increase from last year's effective period of 38 years, primarily due to two factors: (1) the System's staff anticipates lower asset returns in the next few years than were assumed previously, including a -6.00% return for 2020, and (2) the actuarial assumptions have been updated.

The contribution requirement as of January 1, 2020 are based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

Actuarially Determined Contribution for Year Beginning January 1

		2020		2019	
		Amount	% of Projected Pay	Amount	% of Projected Pay
1.	Total normal cost	$60,866,712	15.33%	$52,392,570	14.43%
2.	Administrative expenses	8,217,260	2.07%	8,207,677	2.26%
3.	Expected member contributions	-53,588,890	-13.50%	-49,020,851	-13.50%
4.	Employer normal cost: (1) + (2) + (3)	$15,495,082	3.90%	$11,579,396	3.19%
5.	Actuarial accrued liability	$4,723,972,480		$4,494,822,504	
6.	Actuarial value of assets	2,160,125,611		2,161,899,662	
7.	Unfunded actuarial accrued liability: (5) - (6)	$2,563,846,869		$2,332,922,842	
8.	Payment on unfunded actuarial accrued liability[1]	163,765,670	41.26%	135,274,585	37.25%
9.	Adjustment for timing[2]	6,168,012	1.55%	5,230,316	1.44%
10.	Actuarially determined contribution: (4) + (8) + (9)	$185,428,764	46.71%	$152,084,297	41.88%
11	Total computation pay[3]	$396,954,743		$363,117,415	

[1] The 2020 payment was calculated using a 25-year amortization period and the 2019 payment was calculated using a 30-year amortization period.
[2] Actuarially determined contributions are assumed to be paid at the middle of every year.
[3] Total computation pay, or valuation pay, is the active members' actual payroll for the preceding year, increased by the salary scale applicable for each member to account for their anticipated salary increases in the upcoming year.

Reconciliation of actuarially determined contribution

The chart below details the changes in the actuarially determined contribution from the prior valuation to the current year's valuation.

Reconciliation of Actuarially Determined Contribution from January 1, 2019 to January 1, 2020

	Amount
Actuarially Determined Contribution as of January 1, 2019	$152,084,297
• Effect of expected change in amortization payment due to payroll growth	3,852,543
• Effect of maintaining 30-year amortization period under Board's prior funding policy	-2,463,749
• Effect of shortening amortization period from 30 years to 25 years under amended funding policy	15,441,508
• Effect of changes in actuarial assumptions, including COLA timing	12,369,202
• Effect of contributions more than actuarially determined contribution	-327,650
• Effect of investment loss	2,825,727
• Effect of other gains and losses on accrued liability	831,962
• Net effect of other changes, including composition and number of members	$814,924
Total change	$33,344,467
Actuarially Determined Contribution as of January 1, 2020	$185,428,764

History of employer contributions

A history of the most recent years of contributions is shown below.

History of Employer Contributions: 2016 – 2020

Fiscal Year Ended December 31	Actuarially Determined Employer Contribution (ADEC)		Actual Employer Contribution		Percent Contributed
	Amount	Percentage of Pay	Amount	Percentage of Pay	
2016	$261,859,079	71.70%	$119,423,106	32.70%	45.61%
2017	168,865,484	47.25%	126,318,005	35.34%	74.80%
2018	157,100,128	45.40%	149,356,565	43.16%	95.07%
2019	152,084,297	41.88%	155,721,087	42.88%	102.39%
2020	185,428,764	46.71%	N/A	N/A	N/A

Risk

Since the actuarial valuation results are dependent on a given set of assumptions and data as of a specific date, there is a risk that emerging results may differ significantly as actual experience differs from the assumptions.

This report does not contain a detailed analysis of the potential range of future measurements, but does include a brief discussion of some risks that may affect the System. Upon request, a more detailed assessment can provide a better understanding of the risks inherent in the Plan. This assessment may include scenario testing, sensitivity testing, stress testing and stochastic modeling.

- **Investment Risk** (the risk that returns will be different than expected)

  The System has experienced some of the challenges associated with investment risk, and has had to write down the value of its assets significantly in recent years. Recognized market returns have been well below the long-term assumption as the System rebalances the investment portfolio, and are expected to continue to be below average in the short-term.

  The market value rate of return over the last ten years has ranged from a low of -8.47% to a high of 10.72%.

- **Contribution Risk** (the risk that actual contributions will be different from expected)

  Plan contributions are set by statute. Periodic projections are prepared by the actuary to determine if expected statutory contributions are sufficient to fund the System and to ensure the payment of promised benefits.

  Although State law establishes minimums on the City contributions through 2024, the contribution is scheduled to be a flat 34.50% of computation pay beginning in 2025. If the payroll growth matches the City's Hiring Plan projections, and if all other assumptions are met, the System is projected to be fully funded by 2075. The City's plan reflects significant growth in payroll over 20 years, from $372 million in 2017 to $684 million in 2037. The annual average growth in the City's Hiring Plan is 3.09%, compared to the valuation assumption of 2.50%. If payroll growth is more modest, or if there is adverse experience in the System that leads to losses, the period required to achieve 100% funding could be significantly longer.

  Through the first four years of the policy (2017 through 2020), valuation payroll based on the participant data is cumulatively $51.5 million less than the City's projections. Valuation payroll for 2020 is projected to exceed the City's payroll projection for the first time. If the City's Hiring Plan projections are not met and instead the current valuation payroll of $397.0 million increases by the assumed payroll growth of 2.50% each year, and City and member contributions are based on this projected payroll beginning in 2025, the System is projected to be only 41% funded in 2075, rather than 100% funded.

- **Longevity Risk** (the risk that mortality experience will be different than expected)

  The actuarial valuation includes an expectation of future improvement in life expectancy. Emerging plan experience that does not match these expectations will result in either an increase or decrease in the actuarially determined contribution.

- **Demographic Risk** (the risk that participant experience will be different than assumed)

  Examples of this risk include:
  - Actual retirements occurring earlier or later than assumed. The value of retirement plan benefits is sensitive to the rate of benefit accruals and any early retirement subsidies that apply.
  - More or less active participant turnover than assumed.

- Actual Experience Over the Last Ten years and Implications for the Future

  Past experience can help demonstrate the sensitivity of key results to the Plan's actual experience. Over the past ten years:
  - The annual market value investment experience has ranged from a loss of $473 million (including write-downs) to a gain of $63 million. If all investment returns were equal to the assumed rates of return over the last ten years, the market value of assets as of the current valuation date would be approximately $4.5 billion as opposed to the actual value of $2.1 billion.
  - The funded percentage on the actuarial value of assets has ranged from a low of 45.1% to a high of 79.5% since 2011.

- **Maturity Measures**

  As pension plans mature, the cash need to fulfill benefit obligations will increase over time. Therefore, cash flow projections and analysis should be performed to assure that the Plan's asset allocation is aligned to meet emerging pension liabilities.

  Currently the Plan has a non-active to active participant ratio of 1.03. For the prior year benefits and administrative expenses paid were $108.3 million more than contributions received. As the Plan matures, more cash will be needed from the investment portfolio to meet benefit payments.

GFOA funded liability by type

The Actuarial Accrued Liability represents the present value of benefits earned, calculated using the plan's actuarial cost method. The Actuarial Value of Assets reflects the financial resources available to liquidate the liability. The portion of the liability covered by assets reflects the extent to which accumulated plan assets are sufficient to pay future benefits, and is shown for liabilities associated with employee contributions, pensioner liabilities, and other liabilities.

The Government Finance Officers Association (GFOA) recommends that the funding policy aim to achieve a funded ratio of 100%. As noted previously, the funding policy adopted by the State in HB 3158 meets this standard, with full funding projected in 2075, if the City's Hiring Plan payroll projections come to fruition. City and member contributions as well as investment returns will be necessary to increase the assets sufficiently to cover the System's liabilities.

GFOA Solvency Test as of December 31

	2020	2019
Actuarial accrued liability (AAL)		
• Active member contributions	$317,953,770	$292,370,335
• Retirees and beneficiaries	3,268,076,451	3,098,053,613
• Active and inactive members (employer-financed)	1,137,942,259	1,104,398,556
Total	$4,723,972,480	$4,494,822,504
Actuarial value of assets	$2,160,125,611	$2,161,899,662
Cumulative portion of AAL covered		
• Active member contributions	100.00%	100.00%
• Retirees and beneficiaries	56.37%	60.35%
• Active and inactive members (employer-financed)	0.00%	0.00%

Actuarial balance sheet

An overview of the Plan's funding is given by an Actuarial Balance Sheet. In this approach, first the amount and timing of all future payments that will be made by the Plan for current members is determined. Then these payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value, referred to as the "liability" of the Plan.

Second, this liability is compared to the assets. The "assets" for this purpose include the net amount of assets already accumulated by the Plan, the present value of future member contributions, the present value of future employer normal cost contributions, and the present value of future employer amortization payments for the unfunded actuarial accrued liability.

Actuarial Balance Sheet

	Year Ended	
	December 31, 2019	**December 31, 2018**
Liabilities		
• Present value of benefits for retired members and beneficiaries (non-DROP)	$2,387,770,133	$2,269,533,590
• Present value of benefits for retired members and beneficiaries (DROP)	880,306,318	828,520,023
• Present value of benefits for inactive vested members	33,507,968	31,429,840
• Present value of benefits for active members	1,964,594,153	1,805,794,095
Total liabilities	**$5,266,178,572**	**$4,935,277,548**
Assets		
• Total valuation value of assets	$2,160,125,611	$2,161,899,662
• Present value of future contributions by members	490,778,245	408,403,137
• Present value of future employer contributions for:		
• Entry age cost	51,427,847	32,051,907
• Unfunded actuarial accrued liability	2,563,846,869	2,332,922,842
Total of current and future assets	**$5,266,178,572**	**$4,935,277,548**

Supplemental Information

Exhibit A: Table of Plan Coverage

Category	Year Ended December 31 2019	Year Ended December 31 2018	Change From Prior Year
Active members in valuation:			
• Number	5,121	5,012	2.2%
• Average age	39.8	40.1	-0.3
• Average years of service	12.3	12.8	-0.5
• Total computation pay	$396,954,743	$363,117,415	9.3%
• Average computation pay	77,515	72,450	7.0%
• Accumulated contribution balances	317,953,770	292,370,335	8.8%
• Total active vested members	3,692	3,677	0.4%
Active members (excluding DROP):			
• Number	4,738	4,529	4.6%
• Average age	38.4	38.3	0.1
• Average years of service	10.9	10.9	0.0
• Total computation pay	$361,290,222	$319,138,812	13.2%
• Average computation pay	76,254	70,476	8.2%
Active members (DROP only):			
• Number	383	483	-20.7%
• Average age	57.3	56.8	0.5
• Average years of service	30.6	30.1	0.5
• Total computation pay	$35,664,520	$43,933,603	-18.8%
• Average computation pay	93,119	90,960	2.4%
• DROP account balances	154,232,068	192,374,548	-19.8%
Inactive vested members			
• Number	242	230	5.2%
• Average age	40.8	40.6	0.2
• Average monthly benefit	$1,232	$1,247	-1.2%
Terminated members due a refund of contributions:			
• Number	434	431	0.7%
• Accumulated contribution balance	$1,408,491	$1,422,084	-1.0%

Retired members:			
• Number in pay status	3,676	3,583	2.6%
• Average age	67.4	67.2	0.2
• Average monthly benefit	$4,886	$4,862	0.5%
Disabled members:			
• Number in pay status	127	134	-5.2%
• Average age	68.1	67.6	0.5
• Average monthly benefit	$3,605	$3,591	0.4%
Beneficiaries:			
• Number in pay status	1,153	1,132	1.9%
• Average age	72.9	72.4	0.5
• Average monthly benefit	$2,294	$2,250	2.0%
Beneficiaries with DROP only:			
• Number	83	70	18.6%

Exhibit B-1: Total Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Pay

		Years of Service								
Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 & over
Under 25	265	265	- -	- -	- -	- -	- -	- -	- -	- -
	$59,695	$59,695	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	719	608	111	- -	- -	- -	- -	- -	- -	- -
	62,826	62,062	$67,012	- -	- -	- -	- -	- -	- -	- -
30 - 34	915	373	375	167	- -	- -	- -	- -	- -	- -
	67,781	61,641	69,750	$77,074	- -	- -	- -	- -	- -	- -
35 - 39	827	133	216	414	64	- -	- -	- -	- -	- -
	74,097	61,553	70,329	77,839	$88,674	- -	- -	- -	- -	- -
40 - 44	749	38	100	265	263	83	- -	- -	- -	- -
	83,071	57,986	69,631	79,321	91,708	$95,355	- -	- -	- -	- -
45 - 49	699	10	28	138	210	258	83	- -	- -	- -
	90,175	81,104	70,373	77,523	90,732	96,961	$95,335	- -	- -	- -
50 - 54	554	1	13	36	95	118	258	55	- -	- -
	91,265	63,463	69,725	78,022	90,207	93,633	96,961	$85,160	- -	- -
55 - 59	319	2	4	16	37	28	95	117	20	- -
	93,847	75,130	74,940	77,463	89,074	92,517	96,147	96,029	$99,617	- -
60 - 64	53	- -	2	1	7	5	11	11	13	3
	91,582	- -	70,467	74,694	88,699	97,970	91,987	92,660	95,031	$86,984
65 - 69	17	- -	- -	6	- -	- -	1	1	3	6
	93,233	- -	- -	84,418	- -	- -	85,428	93,472	103,015	98,418
70 & over	4	- -	- -	- -	- -	- -	- -	- -	- -	4
	119,404	- -	- -	- -	- -	- -	- -	- -	- -	119,403
Total	5,121	1,430	849	1,043	676	492	398	184	36	13
	$77,515	$61,510	$69,572	$78,087	$90,731	$95,646	$95,966	$92,565	$98,244	$102,236

Exhibit B-2: Police Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Pay

		Years of Service								
Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 & over
Under 25	194	194	- -	- -	- -	- -	- -	- -	- -	- -
	$59,374	$59,374	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	430	347	83	- -	- -	- -	- -	- -	- -	- -
	62,813	61,912	$66,578	- -	- -	- -	- -	- -	- -	- -
30 - 34	497	157	228	112	- -	- -	- -	- -	- -	- -
	67,700	60,880	68,287	$75,852	- -	- -	- -	- -	- -	- -
35 - 39	491	60	101	279	51	- -	- -	- -	- -	- -
	74,183	59,637	68,287	76,840	$88,439	- -	- -	- -	- -	- -
40 - 44	435	30	49	165	144	47	- -	- -	- -	- -
	81,161	58,121	68,494	78,229	89,655	$93,340	- -	- -	- -	- -
45 - 49	456	7	22	102	128	159	38	- -	- -	- -
	88,443	88,055	70,317	76,822	89,198	95,475	$98,238	- -	- -	- -
50 - 54	389	- -	11	30	63	71	183	31	- -	- -
	90,183	- -	70,398	76,579	89,129	92,483	94,407	$82,304	- -	- -
55 - 59	174	- -	2	12	21	19	56	58	6	- -
	92,738	- -	82,086	75,356	87,516	91,913	96,507	94,385	$100,847	- -
60 - 64	32	- -	1	1	6	4	7	9	4	- -
	91,947	- -	73,055	74,694	89,615	94,384	92,370	92,711	99,586	- -
65 - 69	9	- -	- -	4	- -	- -	- -	- -	2	3
	90,781	- -	- -	85,629	- -	- -	- -	- -	93,295	$95,973
70 & over	1	- -	- -	- -	- -	- -	- -	- -	- -	1
	123,319	- -	- -	- -	- -	- -	- -	- -	- -	123,319
Total	3,108	795	497	705	413	300	284	98	12	4
	$77,006	$61,004	$68,272	$77,016	$89,174	$94,192	$95,284	$90,410	$99,168	$102,810

Exhibit B-3: Fire Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Pay

		Years of Service								
Age	**Total**	**0 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40 & over**
Under 25	71	71	- -	- -	- -	- -	- -	- -	- -	- -
	$60,571	$60,571	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	289	261	28	- -	- -	- -	- -	- -	- -	- -
	62,847	62,262	$68,300	- -	- -	- -	- -	- -	- -	- -
30 - 34	418	216	147	55	- -	- -	- -	- -	- -	- -
	67,877	62,193	71,856	$79,562	- -	- -	- -	- -	- -	- -
35 - 39	336	73	115	135	13	- -	- -	- -	- -	- -
	67,877	63,128	72,122	79,905	$89,594	- -	- -	- -	- -	- -
40 - 44	314	8	51	100	119	36	- -	- -	- -	- -
	73,971	57,480	70,724	81,123	94,192	$97,939	- -	- -	- -	- -
45 - 49	243	3	6	36	82	99	17	- -	- -	- -
	85,712	64,885	70,578	79,508	93,126	99,349	$102,961	- -	- -	- -
50 - 54	165	1	2	6	32	47	53	24	- -	- -
	93,427	63,463	66,024	85,237	92,329	95,370	98,177	$88,849	- -	- -
55 - 59	145	2	2	4	16	9	39	59	14	- -
	93,816	75,130	67,793	83,782	91,119	93,793	95,630	97,644	$99,090	- -
60 - 64	21	- -	1	- -	1	1	4	2	9	3
	95,178	- -	67,878	- -	83,205	112,314	91,318	92,429	93,007	$86,984
65 - 69	8	- -	- -	2	- -	- -	1	1	1	3
	91,26	- -	- -	81,995	- -	- -	85,428	93,472	122,455	100,862
70 & over	3	- -	- -	- -	- -	- -	- -	- -	- -	3
	95,991	- -	- -	- -	- -	- -	- -	- -	- -	118,098
Total	2,013	635	352	338	263	192	114	86	24	9
	$78,301	$62,144	$71,407	$80,320	$93,177	$97,918	$97,666	$95,020	$97,782	$101,981

Exhibit C: Reconciliation of Member Data

	Active Members	Inactive Vested Members[1]	Disableds	Retired Members	Beneficiaries[2]	Total
Number as of January 1, 2019	**5,012**	**230**	**134**	**3,583**	**1,132**	**10,091**
• New members	396	N/A	N/A	N/A	N/A	396
• Terminations – with vested rights	-38	38	0	0	0	0
• Terminations – without vested rights	-18	N/A	N/A	N/A	N/A	-18
• Retirements	-158	-10	N/A	168	N/A	0
• New disabilities	0	0	0	N/A	N/A	0
• Return to work	4	-4	0	0	N/A	0
• Deceased	-6	0	-7	-75	-44	-132
• New beneficiaries	N/A	N/A	N/A	N/A	70	70
• Lump sum payouts[3]	-71	-12	0	0	0	-83
• Certain period expired	N/A	N/A	0	0	-5	-5
Number as of January 1, 2020	**5,121**	**242**	**127**	**3,676**	**1,153**	**10,319**

[1] Excludes terminated members due a refund of contributions.
[2] Excludes beneficiaries with a DROP only.
[3] Members who terminated and requested a refund of member contributions.

Exhibit D: Summary Statement of Income and Expenses on a Market Value Basis

	Year Ended December 31, 2019		Year Ended December 31, 2018	
Net assets at market value at the beginning of the year		$2,041,914,130		$2,103,345,471
Contribution income:				
• Employer contributions	$155,721,087		$149,356,565	
• Member contributions	52,268,293		49,332,262	
• Less administrative expenses	-6,445,251		-5,861,410	
Net contribution income		*$201,544,129*		*$192,827,417*
Investment income:				
• Interest, dividends and other income	$38,127,259		$45,250,992	
• Recognition of capital appreciation	94,213,367		5,588,891	
• Less investment fees	-8,081,019		-8,017,586	
Net investment income		*$124,259,607*		*$42,822,297*
Total income available for benefits		**$325,803,736**		**$235,649,714**
Less benefit payments:				
• Benefit Payments	-$307,243,319		-$294,447,006	
• Refunds	-2,617,230		-2,634,049	
Net benefit payments		*-$309,860,549*		*-$297,081,055*
Change in market value of assets		**$15,943,187**		**-$61,431,341**
Net assets at market value at the end of the year		**$2,057,857,317**		**$2,041,914,130**

Exhibit E: Summary Statement of Plan Assets

	December 31, 2019		December 31, 2018	
Cash equivalents and prepaid expenses		$89,113,933		$50,053,963
Invested securities lending collateral		12,916,355		20,376,453
Capital assets		12,225,827		12,377,791
Total accounts receivable		60,827,238		42,282,571
Investments:				
• Real assets	$562,450,805		$695,162,373	
• Fixed income securities	550,746,613		511,184,404	
• Equity securities	550,594,317		432,055,193	
• Private equity	265,352,308		310,090,215	
• Other	25,746,727		40,680,894	
Total investments at market value		$1,954,890,770		$1,989,173,079
Total assets		$2,129,974,123		$2,114,263,857
Total accounts payable		-72,116,806		-72,349,727
Net assets at market value		**$2,057,857,317**		**$2,041,914,130**
Net assets at actuarial value		**$2,160,125,611**		**$2,161,899,662**

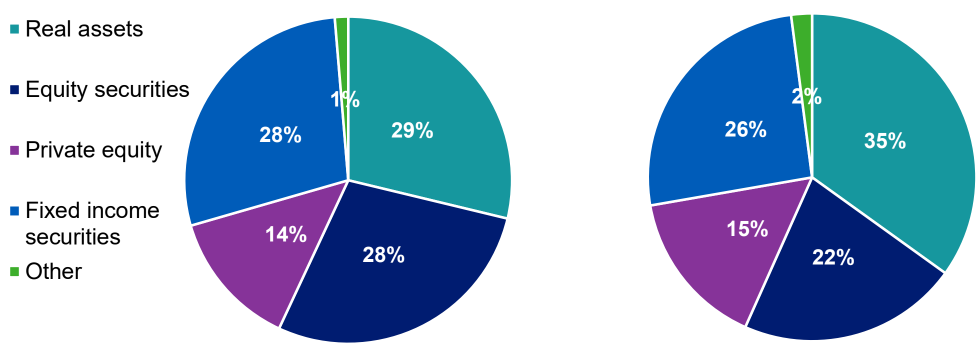


Exhibit F: Development of the Fund through December 31, 2019

Year Ended December 31	Employer Contributions	Member Contributions	Net Investment Return[1]	Admin. Expenses[2]	Benefit Payments	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2010	$108,060,956	$19,790,189	$303,461,949	$0	$170,272,496	$3,112,686,542	$3,430,818,823	110.2%
2011	102,437,115	19,493,460	-54,844,275	0	188,829,489	2,990,943,353	3,378,481,222	113.0%
2012	103,310,264	22,490,884	292,719,981	0	203,099,511	3,206,364,971	3,795,024,584	118.4%
2013	105,711,435	26,044,579	243,514,011	0	218,884,493	3,362,750,503	3,877,321,261	115.3%
2014	109,791,512	28,969,429	-176,940,296	0	245,176,251	3,079,394,897	3,695,273,876	120.0%
2015	114,885,723	25,676,327	-254,829,470	0	285,003,174	2,680,124,303	2,680,124,303	100.0%
2016[3]	119,423,106	25,518,317	159,355,111	9,492,445	825,092,132	2,149,836,260	2,157,799,730	100.4%
2017	126,318,005	32,977,425	98,457,176	8,089,584	296,153,811	2,103,345,471	2,151,039,343	102.3%
2018	149,356,565	49,332,262	42,822,297	5,861,410	297,081,055	2,041,914,130	2,161,899,662	105.9%
2019	155,721,087	52,268,293	124,259,607	6,445,251	309,860,549	2,057,857,317	2,160,125,611	105.0%

[1] On a market basis, net of investment fees and administrative expenses
[2] Administrative expenses were subtracted from net investment return prior to the 2016 valuation.
[3] Unaudited assets were used for the January 1, 2017 actuarial valuation. When the audited financial statements were completed, there were updates to the employer contributions and investment return amounts, resulting in a revision to the market value of assets. Thus, the amounts shown above as of December 31, 2016 differ from the System's and City's Comprehensive Annual Financial Reports. The difference are immaterial to the System's actuarial results.

Exhibit G: Definition of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Actuarial Accrued Liability for Actives:	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial Accrued Liability for Pensioners and Beneficiaries:	Actuarial Present Value of lifetime benefits to existing pensioners and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial Cost Method:	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the actuarially determined contribution.
Actuarial Gain or Loss:	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield actuarial liabilities that are larger than projected.
Actuarially Equivalent:	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV):	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is: Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.) Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and Discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Benefits:	The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund of member contributions or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation:	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan, as well as Actuarially Determined Contributions.
Actuarial Value of Assets (AVA):	The value of the Plan's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the Actuarially Determined Contribution.
Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the Plan.
Actuarially Determined Contribution (ADC):	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization Method:	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the Unfunded Actuarial Accrued Liability. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the Unfunded Actuarial Accrued Liability. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is intended to pay off the Unfunded Actuarial Accrued Liability.

Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Plan is calculated, including: Investment return - the rate of investment yield that the Plan will earn over the long-term future; Mortality rates - the rate or probability of death at a given age for employees and pensioners; Retirement rates - the rate or probability of retirement at a given age or service; Disability rates - the rate or probability of disability retirement at a given age; Withdrawal rates - the rate or probability at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; Salary increase rates - the rates of salary increase due to inflation, real wage growth and merit and promotion increases.
Closed Amortization Period:	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 20 years, it is 19 years at the end of one year, 18 years at the end of two years, etc. See Open Amortization Period.
Decrements:	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.
Defined Benefit Plan:	A retirement plan in which benefits are defined by a formula based on the member's compensation, age and/or years of service.
Defined Contribution Plan:	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer Normal Cost:	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Experience Study:	A periodic review and analysis of the actual experience of the Plan that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified based on recommendations from the Actuary.
Funded Ratio:	The ratio of the Actuarial Value of Assets (AVA) to the Actuarial Accrued Liability (AAL). Plans sometimes also calculate a market funded ratio, using the Market Value of Assets (MVA), rather than the AVA.

GASB 67 and GASB 68:	Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.
Investment Return:	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Net Pension Liability (NPL):	The Net Pension Liability is equal to the Total Pension Liability minus the Plan Fiduciary Net Position.
Normal Cost:	The portion of the Actuarial Present Value of Future Benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment with respect to an Unfunded Actuarial Accrued Liability is not part of the Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of member contributions and employer Normal Cost unless otherwise specifically stated.
Open Amortization Period:	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in each future year in determining the Amortization Period.
Plan Fiduciary Net Position:	Market value of assets.
Total Pension Liability (TPL):	The actuarial accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 68.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus or an Overfunded Actuarial Accrued Liability.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

Actuarial Valuation Basis

Exhibit I: Actuarial Assumptions, Actuarial Cost Method and Models

Rationale for Assumptions:

The information and analysis used by the Board in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Experience Study Report for the five-year period ended December 31, 2019.

Net Investment Return:

7.00%

The net investment return assumption was chosen by the System's Board of Trustees, with input from the actuary. This assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the System's target asset allocation.

Salary Scale:

	Rate (%)		
Year	**Officers**	**Corporals, Drivers, Senior Officers & Chiefs**	**Sergeants, Lieutenants, Captains, Majors, Deputy Chiefs & Assistant Chiefs**
2020 – 2022	3.25	3.00	2.50
2023+	2.50	2.50	2.50

The salary scale assumption is based on the City's pay plan, along with analysis completed in conjunction with an Experience Study Report for the five-year period ended December 31, 2019 and the 2019 Meet and Confer Agreement.

Payroll Growth:

2.50%, used to amortize the unfunded actuarial accrued liability as a level percentage of payroll.

Cost-of-Living Adjustments:

Prior to October 1, 2063: 0.00%

Beginning October 1, 2063: 2.00%, on original benefit

The assumption for the year the COLA begins will be updated on an annual basis and set equal to the year the System is projected to be 70% funded on a market value basis after the COLA is reflected.

Section 4: Actuarial Valuation Basis

Funding Projections:	*Payroll Growth:* For purposes of projecting the System's funded status to project when the System will reach 70% funded on a market value basis (and therefore meet COLA requirements), City contributions beginning January 1, 2025 are assumed to be 34.50% of the City's Hiring Plan projections. Beginning in 2038, after the end of the City's Hiring Plan projection, payroll is assumed to increase by 2.50%.

City's Hiring Plan Payroll Projection (in millions)

Year	Payroll	Year	Payroll
2017	$372	2028	$525
2018	364	2029	545
2019	383	2030	565
2020	396	2031	581
2021	408	2032	597
2022	422	2033	614
2023	438	2034	631
2024	454	2035	648
2025	471	2036	666
2026	488	2037	684
2027	507		

Market Value Asset Returns: -6.00% in 2020, 5.25% in 2021, 5.75% in 2022, 6.25% in 2023, and 7.00% annually thereafter

Administrative Expenses:	$8,500,000 per year, payable monthly (equivalent to $8,207,677 at the beginning of the year) or 1% of computation pay, if greater

Mortality Rates:

Healthy pre-retirement: Pub-2010 Public Safety Employee Amount-Weighted Mortality Table, set forward five years for males, projected generationally using Scale MP-2019

Healthy annuitants and dependent spouses: Pub-2010 Public Safety Retiree Amount-Weighted Mortality Table, set back one year for females, projected generationally using Scale MP-2019

Healthy contingent beneficiaries: Pub-2010 Public Safety Contingent Survivor Amount-Weighted Mortality Table, set back one year for females, projected generationally using Scale MP-2019

Disabled annuitants: Pub-2010 Public Safety Disabled Retiree Amount-Weighted Mortality Table, set forward four years for males and females, projected generationally using Scale MP-2019

The tables above, with adjustments as shown and projected to the measurement date, reasonably reflect the mortality experience of the System as of the measurement date. The mortality tables are then generationally projected using Scale MP-2019 to anticipate future mortality improvement.

Annuitant Mortality Rates:

	Rate (%)[1]			
	Healthy		Disabled	
Age	Male	Female	Male	Female
55	0.306	0.231	0.670	0.643
60	0.508	0.399	1.078	0.976
65	0.881	0.690	1.732	1.481
70	1.568	1.191	2.893	2.248
75	2.826	2.057	5.057	3.552
80	5.103	3.552	8.308	6.134
85	9.135	6.134	14.238	10.592
90	15.860	10.592	22.306	17.403

[1] Mortality rates shown for base table.

Mortality and Disability Rates Before Retirement:

	Rate (%)			
	Mortality[1]		Disabled[2]	
Age	Male	Female	Male	Female
20	0.037	0.016	0.010	0.010
25	0.041	0.020	0.015	0.015
30	0.047	0.027	0.020	0.020
35	0.059	0.036	0.025	0.025
40	0.082	0.049	0.030	0.030
45	0.120	0.067	0.035	0.035
50	0.175	0.091	0.040	0.040
55	0.264	0.123	--	--
60	0.410	0.168	--	--

[1] Mortality rates shown for base table

[2] 100% of disabilities are assumed to be service-related

Withdrawal Rates Before Retirement:

Years of Service	Rate (%) Police	Rate (%) Fire
0	20.0	10.0
1	5.5	5.5
2	5.5	5.5
3	5.5	5.5
4	5.5	5.5
5	5.5	5.5
6	3.5	5.5
7	3.5	1.0
8	3.5	1.0
9	3.5	1.0
10	3.5	1.0
11-14	2.0	1.0
15-24	1.0	1.0
25 & over	0.0	0.0

Retirement Rates:

DROP Active Members

	Rate (%)	
Age	**Police**	**Fire**
Under 50	1.00	0.75
50	10.00	0.75
51	15.00	0.75
52-53	15.00	10.00
54	25.00	10.00
55-57	25.00	15.00
58-62	30.00	40.00
63	40.00	50.00
64	50.00	50.00
65 & over	100.00	100.00

100% retirement rate after ten years in DROP.

Retirement Rates (continued):	*Non-DROP Active Members*

Age	Rate (%) Member hired prior to March 1, 2011 with at least 20 years of service as of September 1, 2017	Rate (%) Member hired prior to March 1, 2011 with less than 20 years of service as of September 1, 2017 & Members hired on or after March 1, 2011
Under 50	1.0	1.0
50-51	8.0	2.0
52	10.0	2.0
53	15.0	2.0
54	20.0	2.0
55	35.0	2.0
56-57	40.0	2.0
58-60	75.0	25.0
61	75.0	50.0
62	100.0	100.0

100% retirement rate once benefit multiplier hits 90% maximum.

Weighted Average Retirement Age:	Age 58, determined as follows: The weighted average retirement age for each participant is calculated as the sum of the product of each potential current or future retirement age times the probability of surviving from current age to that age and then retiring at that age, assuming no other decrements. The overall weighted retirement age is the average of the individual retirement ages based on all the active participants included in the January 1, 2020 actuarial valuation.
Retirement Rates for Inactive Vested Participants:	Terminated vested members who terminated prior to September 1, 2017 are assumed to retire at age 50 Terminated vested members who terminated on or after September 1, 2017 are assumed to retire at age 58 75% of members who terminated prior to age 40 are assumed to take a lump sum cash out at age 40
DROP Utilization:	No members are assumed to elect to enter the DROP
Interest on DROP Accounts:	2.75% on account balances as of September 1, 2017, payable upon retirement 0.00% on account balances accrued after September 1, 2017
DROP Payment Period:	Based on expected lifetime as of the later of September 1, 2017 or retirement date. Expected lifetime determined based on an 85% male/15% female blend of the current healthy annuitant mortality tables.

Section 4: Actuarial Valuation Basis

DROP Annuitization Interest:	2.75%. Based on United States Department of Commerce Daily Treasury Yield Curve Rates for durations between 5 and 30 years.
Actuarial Equivalence:	Actuarial equivalence for optional forms of benefit payments are based on an 85% male/15% female blend of the current healthy annuitant mortality tables, along with an interest rate of 7.00%
Unknown Data for Participants:	Same age and service as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Family Composition:	75% of participants are assumed to be married. Females are assumed to be three years younger than males. The youngest child is assumed to be ten years old.
Benefit Election:	Married participants are assumed to receive the Joint and Survivor annuity form of payment and non-married participants are assumed to receive a Life Only annuity.
Actuarial Value of Assets:	Set to market value of assets as of December 31, 2015. Thereafter, market value of assets less unrecognized returns in each of the last five years beginning with 2016. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a five-year period, further adjusted, if necessary, to be within 20% of the market value.
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age at the time the member commenced employment. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis, with Normal Cost determined using the plan of benefits applicable to each participant. Actuarial Liability is allocated by salary.
Amortization Methodology:	The actuarially determined contribution is calculated using a 25-year level-percentage-of-pay amortization of unfunded actuarially accrued liability. Beginning January 1, 2021, each year's gains and losses will be amortized over a closed 20-year period.

Justification for Change in Actuarial Assumptions and Methods:	Based on past experience and future expectations, the following actuarial assumptions were changed: • The net investment return assumption was lowered from 7.25% to 7.00% • The salary scale assumption was updated based on the 2019 Meet and Confer agreement, with a new ultimate rate of 2.50%. • The payroll growth assumption was lowered from 2.75% to 2.50%. • The mortality rates were updated to the Pub-2010 Public Safety Amount-weighted Mortality Tables, with varying adjustments by status and sex, projected generationally with Scale MP-2019. • The withdrawal rates were updated and the ultimate 0% rate was moved up from 38 to 25 years of service. • The DROP retirement rates were increased at most ages and the ultimate 100% retirement was updated from the earlier of age 67 or 8 years in the DROP to the earlier of age 65 or 10 years in the DROP. • The non-DROP retirement rates were lowered at most ages and simplified from three sets to two sets of rates. • The retirement assumption for inactive vested participants was updated to include an assumption that 75% of those who terminate with a vested benefit prior to age 40 will take a cash out at age 40. • The DROP annuitization interest rate for account balances as of September 1, 2017 was lowered from 3.00% to 2.75%. • The ad-hoc COLA assumption was updated to begin October 1, 2063 based on the updated projection of the unfunded actuarial accrued liability; last year, the COLA was assumed to begin October 1, 2050. • The System's expectations for near-term market returns were lowered from +5.75% for 2020, +6.25% for 2021, +6.75% for 2022, and +7.25% thereafter to -6.00% for 2020, +5.25% for 2021, +5.75% for 2022, +6.25% for 2023, and 7.00% thereafter. For valuation purposes, these return assumptions are used for determining the projected full-funding date and the projected COLA start date. As a result of an amendment to the System's funding policy, the amortization methodology was changed as follows: Effective with the January 1, 2020 actuarial valuation, the amortization period was changed from an open, 30-year period to a closed, 25-year period. Effective with the January 1, 2021 actuarial valuation, future gains and losses, along with assumption, plan, and method changes, will be amortized over closed, 20-year periods.

Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Deterministic cost projections are based on a proprietary forecasting model. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

Exhibit II: Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan Year:	January 1 through December 31
Plan Status:	Ongoing

Members whose Participation Began Before March 1, 2011

Normal Retirement:	**Benefit Earned Prior to September 1, 2017:** • *Age Requirement:* 50 • *Service Requirement:* 5 • *Amount:* Greater of 3.0% of Average Computation Pay times years of Pension Service (maximum 96.0%) and $2,200 per month. The $2,200 per month minimum benefit is prorated if the Member retires with less than 20 years of service. • *Average Computation Pay:* 36 consecutive months that reflect the highest civil service rank held by a member, plus Educational Incentive Pay, Longevity Pay and City Service Incentive Pay **Benefit Earned Beginning September 1, 2017:** • *Age Requirement:* 58 • *Service Requirement:* 5 • *Amount:* Greater of 2.5% of Average Computation Pay times years of Pension Service (maximum 90.0%) and $2,200 per month. The $2,200 per month minimum benefit is prorated if the Member retires with less than 20 years of service. • *Average Computation Pay:* 60 consecutive months that reflect the highest civil service rank held by a member, plus Educational Incentive Pay, Longevity Pay and City Service Incentive Pay

20 and Out Reduced Retirement:

If Eligible as of September 1, 2017:

- *Age Requirement:* None
- *Service Requirement* 20 years
- *Amount:* 20 & Out Multiplier times 36-month (Table 1 Benefit) or 60-month (Table 2 Benefit) Average Computation Pay times years of Pension Service

Benefit Accrued Before September 1, 2017

20 & Out Table 1

Age	20 & Multiplier
45 & under	2.00%
46	2.25%
47	2.50%
48	2.75%
49	2.75%
50 & above	3.00%

Benefit Accrued Beginning September 1, 2017

20 & Out Table 2

Age	20 & Multiplier
53 & under	2.00%
54	2.10%
55	2.20%
56	2.30%
57	2.40%
58 & above	2.50%

If Not Eligible as of September 1, 2017:

- *Age Requirement:* None
- *Service Requirement* 20 years
- *Amount:* 20 & Out Multiplier times 60-month Average Computation Pay times years of Pension Service

20 & Out Table 2

Age	20 & Multiplier
53 & under	2.00%
54	2.10%
55	2.20%
56	2.30%
57	2.40%
58 & above	2.50%

Section 4: Actuarial Valuation Basis

Early Retirement:	If at least age 45 as of September 1, 2017 and less than age 50 • *Age Requirement:* 45 • *Service Requirement:* 5 • *Amount:* Normal pension accrued prior to September 1, 2017 plus the benefit accrued based on the 20 & Out Table 2 for service beginning September 1, 2017, reduced by 2/3 of 1% for each whole month by which the benefit commencement date precedes age 50.
Non-Service Connected Disability:	• *Eligibility:* Injury or illness (lasting more than 90 days) not related to or incurred while in the performance of the member's job, preventing the member from performing their departmental duties. • *Amount:* 3% of Average Computation Pay for service earned prior to September 1, 2017 and the applicable benefit multiplier from 20 & Out Table 2 times Average Computation Pay for service earned beginning September 1, 2017
Service Connected Disability:	• *Eligibility:* Injury or illness (lasting more than 90 days) obtained while on duty in the performance of the member's job. • *Amount:* 3% of Average Computation Pay for service earned prior to September 1, 2017 and the applicable benefit multiplier from 20 & Out Table 2 times Average Computation Pay for service earned beginning September 1, 2017; if the member has less than 20 years of service, the benefit will be calculated as if they had 20 years at the time of disability.
Benefit Supplement:	• *Age Requirement:* 55 • *Service Requirement:* 20 years, waived if member is receiving a service-connected disability • *Amount:* 3% of the total monthly benefit (including any applicable COLA's) payable to the Member when the Member attains age 55. The benefit supplement shall not be less than $75 per month. Beginning September 1, 2017, only those annuitants already receiving the supplement will be eligible to maintain their current supplement, which will not change ongoing; no additional retirees will be eligible for the supplement.
Termination Benefit:	• *With less than five years of pension service:* Upon request, the member's contributions will be returned without interest • *With at least five years of pension service:* The member may either withdraw contributions or leave contributions in the Plan and receive a monthly benefit to commence no earlier than the member's earliest eligibility for retirement benefits. Retirement benefit is equal to the accrued benefit as of the date of termination.

Pre-Retirement Death Benefit:	• *While in active service:* The greater of 50% of the Member's accrued benefit or a benefit based on 20 years of service. The benefit may not exceed 45% of Average Computation Pay. • *After leaving active service, with fewer than five years:* A lump sum benefit equal to the return of member contributions without interest • *After leaving active service, with at least five years:* 50% of the Member's accrued benefit, with no early retirement reduction, or a refund of member contributions
Post-Retirement Death Benefit:	50% or 100% of the pension the Member was receiving at the time of their death, depending on the form of joint and survivor annuity chosen; if a life only annuity was chosen, no further benefits will be paid
Qualified Surviving Children Benefit:	50% of the pension the Member was receiving at the time of their death, divided equally among the children, paid until the youngest child is 19 years old or for life if the child becomes handicapped prior to age 23
Minimum Survivor Benefit:	$1,100 per month, not to exceed the actual amount the Member was receiving upon their death. If there are no Qualified Surviving Children, the minimum benefit to a spouse who is a Qualified Survivor shall be $1,200 per month. If the Member had less than 20 years of Pension Service, the minimum benefit will be prorated based on actual years of Pension Service.
Special Survivor Benefit	• *Eligibility:* Upon leaving active service or joining DROP: a) the Member was at least 55 years old with at least 20 years of pension service, or b) the sum of the Member's age plus Pension Service was at least 78; **and** Has no Qualified Surviving Children or handicapped children currently eligible for survivor benefits; **and** Whose Qualified Surviving Spouse is at least 55 years old. The Qualified Surviving Spouse does not have to be 55 years old at the time of the Member's death. • *Amount:* Once all the eligibility conditions are met, the amount the Qualified Surviving Spouse will receive increases from 50% of the Member's pension benefit to a percentage of the Member's pension benefit based on the Member's applicable benefit multiplier times the number of years of Pension Service the Member worked.
Survivor Benefit if No Qualified Surviving Spouse:	A lump sum that is the actuarial equivalent of 120 monthly payments of the greater of: 50% of the Member's pension benefit at the time of their death, or a benefit based on 20 years of the Member's service.
DROP:	• *Eligibility:* Members in active service who are retirement eligible may elect to enter the Deferred Retirement Option Plan (DROP). • *Distribution:* The DROP account balance will be paid over the expected future lifetime of annuitants. • *Interest:* Based on United States Department of Commerce Daily Treasury Yield Curve Rates for durations between 5 and 30 years; interest rate is based on the expected lifetime of the members at the time they retire. Interest is only paid on DROP account balances as of September 1, 2017.

Members whose Participation Began On or After March 1, 2011

Normal Retirement:

- *Age Requirement:* 58
- *Service Requirement:* 5
- *Amount:* 2.5% of Average Computation Pay for each year of Pension Service, maximum 90%
  The minimum monthly benefit is $110 times the number of years of Pension Service at retirement, but not greater than $2,200.
- *Average Computation Pay:* Average Computation Pay uses the 60 consecutive months that reflects the highest civil service rank held by a member plus Educational Incentive Pay plus Longevity Pay plus City Service Incentive Pay.

Early Retirement:

- *Age Requirement:* 53
- *Service Requirement:* 5
- *Amount:* Normal pension accrued, reduced by 2/3 of 1% for each whole month by which the benefit commencement date precedes the normal retirement date.

20 and Out Reduced Retirement:

- *Age Requirement:* None
- *Service Requirement:* 20 years
- *Amount:* 20 & Out Multiplier times Average Computation Pay times years of Pension Service

20 & Out Table 2

Age	20 & Multiplier
53 & under	2.00%
54	2.10%
55	2.20%
56	2.30%
57	2.40%
58 & above	2.50%

Non-Service Connected Disability:

- *Eligibility:* Injury or illness (lasting more than 90 days) not related to or incurred while in the performance of the member’s job, preventing the member from performing their departmental duties.
- *Amount:* The Member’s accrued benefit, but not less than a pro-rated minimum benefit.

Service Connected Disability:

- *Eligibility:* Injury or illness (lasting more than 90 days) obtained while on duty in the performance of the member’s job.
- *Amount:* The greater of 50% of Average Computation Pay and the Member’s accrued benefit.

Section 4: Actuarial Valuation Basis

Termination Benefit:	• *With less than five years of pension service:* Upon request, the member's contributions will be returned without interest • *With at least five years of pension service:* The member may either withdraw contributions or leave contributions in the Plan and receive a monthly benefit to commence no earlier than the member's earliest eligibility for retirement benefits. Retirement benefit is equal to the accrued benefit as of the date of termination.
Pre-Retirement Death Benefit:	• *While in active service:* The greater of 50% of the Member's accrued benefit or a benefit based on 20 years of service. The benefit may not exceed 45% of Average Computation Pay. • *After leaving active service, with fewer than five years:* A lump sum benefit equal to the return of member contributions without interest • *After leaving active service, with at least five years:* 50% of the Member's accrued benefit, with no early retirement reduction, or a refund of member contributions
Post-Retirement Death Benefit:	50% or 100% of the pension the Member was receiving at the time of their death, depending on the form of joint and survivor annuity chosen; if a life only annuity was chosen, no further benefits will be paid
Qualified Surviving Children Benefit:	50% of the pension the Member was receiving at the time of their death, divided equally among the children, paid until the youngest child is 19 years old or for life if the child becomes handicapped prior to age 23
Minimum Survivor Benefit:	$1,100 per month, not to exceed the actual amount the Member was receiving upon their death. If there are no Qualified Surviving Children, the minimum benefit to a spouse who is a Qualified Survivor shall be $1,200 per month. If the Member had less than 20 years of Pension Service, the minimum benefit will be prorated based on actual years of Pension Service.
Special Survivor Benefit	• *Eligibility:* Upon leaving active service or joining DROP: a) the Member was at least 55 years old with at least 20 years of pension service, or b) the sum of the Member's age plus Pension Service was at least 78; **and** Has no Qualified Surviving Children or handicapped children currently eligible for survivor benefits; **and** Whose Qualified Surviving Spouse is at least 55 years old. The Qualified Surviving Spouse does not have to be 55 years old at the time of the Member's death. • *Amount:* Once all the eligibility conditions are met, the amount the Qualified Surviving Spouse will receive increases from 50% of the Member's pension benefit to a percentage of the Member's pension benefit based on the Member's applicable benefit multiplier times the number of years of Pension Service the Member worked.
Survivor Benefit if No Qualified Surviving Spouse:	A lump sum that is the actuarial equivalent of 120 monthly payments of the greater of: 50% of the Member's pension benefit at the time of their death, or a benefit based on 20 years of the Member's service.

DROP:	• *Eligibility:* Members in active service who are retirement eligible may elect to enter the Deferred Retirement Option Plan (DROP). • *Distribution:* The DROP account balance will be paid over the expected future lifetime of annuitants. • *Interest:* Based on United States Department of Commerce Daily Treasury Yield Curve Rates for durations between 5 and 30 years; interest rate is based on the expected lifetime of the members at the time they retire. Interest is only paid on DROP account balances as of September 1, 2017.

All Members

Cost of Living:	The Board may grant an ad hoc COLA based on the actual market return over the prior five years less 5%, not to exceed 4% of the base benefit, if, after granting a COLA, the funded ratio on a market value of assets basis is no less than 70%.
Member Contributions:	13.5% of computation pay for all members
City Contributions:	The City will contribute 34.5% of computation payroll each year. However, in no case shall the City's total contribution amount be less than: $5,173,000 for the biweekly pay periods beginning with the first biweekly pay period that begins after September 1, 2017 and ends on the last day of the first biweekly pay period that ends after December 31, 2017; $5,344,000 for the following 26 pay periods; $5,571,000 for the following 26 pay periods; $5,724,000 for the following 26 pay periods; $5,882,000 for the following 26 pay periods; $6,043,000 for the following 26 pay periods; $5,812,000 for the following 26 pay periods; and $6,024,000 for the following 26 pay periods. An additional 1/26th of $13 Million will be paid biweekly beginning with the first biweekly pay period that begins after September 1, 2017 and ending with the last biweekly pay period that ends after December 31, 2024.
Optional Forms of Benefits:	Life Only Annuity, 50% or 100% Joint and Survivor Pension
Changes in Plan Provisions:	None

GASB Information

Exhibit 1: Net Pension Liability

The components of the net pension liability at December 31, 2019 were as follows:

Total pension liability	$4,731,959,822
Plan fiduciary net position	2,057,857,317
Net pension liability	2,674,102,505
Plan fiduciary net position as a percentage of the total pension liability	43.49%

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

Inflation	2.50%
Real rate of return	4.50%
Investment rate of return	7.00%, net of pension plan investment expense, including inflation

The actuarial assumptions used in the January 1, 2020 valuation were based on the results of an experience study for the period January 1, 2015 to December 31, 2019. Assumptions are detailed in Section 4, Exhibit I of this report.

Section 5: GASB Information

The long-term expected rate of return on pension plan 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 December 31, 2019 are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return[1]
Global Equity	40%	5.29%
Emerging Market Equity	10%	6.47%
Private Equity	5%	8.19%
Short-Term Investment Grade Bonds	12%	0.71%
Investment Grade Bonds	4%	1.00%
High Yield Bonds	4%	3.18%
Bank Loans	4%	2.85%
Global Bonds	4%	0.97%
Emerging Markets Debt	4%	3.58%
Real Estate	5%	3.85%
Natural Resources	5%	5.54%
Cash	3%	0.62%
Total	100%	

[1] The real rates of return are provided by Segal Marco Advisors, and are net of inflation.

Discount rate: The discount rate used to measure the total pension liability was 7.00%. The projection of cash flows used to determine the discount rate assumed City contributions will be made in accordance with the provisions of House Bill 3158, including statutory minimums through 2024 and 34.50% of computation pay thereafter. Members are expected to contribute 13.50% of computation pay. For cash flow purposes, projected payroll is based on 90% of the City's Hiring Plan payroll projections through 2037, increasing by 2.50% per year thereafter. This payroll projection is used for cash flow purposes only and does not impact the Total Pension Liability. The normal cost rate for future members is assumed to be 13.83% for all years. Based on these assumptions, the System's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

With this year's valuation, the long-term expected rate of return on investments was lowered from 7.25% to 7.00%.

Actuarial cost method: In accordance with GASB 67, the Total Pension Liability for active members is valued as the total present value of benefits once they enter the DROP. For the funding valuation, the liability for these members accumulates from their entry age until they are assumed to leave active service.

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability, 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 one percentage-point lower (6.00%) or one percentage-point higher (8.00%) than the current rate:

	1% Decrease (6.00%)	**Current Discount (7.00%)**	**1% Increase (8.00%)**
Net pension liability	$3,212,525,680	$2,674,102,505	$2,224,767,375

Exhibit 2: Schedule of Changes in Net Pension Liability

	2019	2018
Total pension liability		
• Service cost	$49,154,908	$44,792,454
• Interest	318,702,388	318,535,923
• Change of benefit terms	0	16,091,390
• Differences between expected and actual experience	16,723,223	-46,555,548
• Changes of assumptions	155,569,477	-31,459,806
• Benefit payments, including refunds of employee contributions	-309,860,549	-297,081,055
Net change in total pension liability	**$230,289,447**	**$4,323,358**
Total pension liability – beginning	**4,501,670,375**	**4,497,347,017**
Total pension liability – ending (a)	**$4,731,959,822**	**$4,501,670,375**
Plan fiduciary net position		
• Contributions – employer	$155,721,087	$149,356,565
• Contributions – employee	52,268,293	49,332,262
• Net investment income	124,259,607	42,822,297
• Benefit payments, including refunds of employee contributions	-309,860,549	-297,081,055
• Administrative expense	-6,445,251	-5,861,410
Net change in plan fiduciary net position	**$15,943,187**	**-$61,431,341**
Plan fiduciary net position – beginning	**2,041,914,130**	**2,103,345,471**
Plan fiduciary net position – ending (b)	**$2,057,857,317**	**$2,041,914,130**
Net pension liability – ending (a) – (b)	**$2,674,102,505**	**$2,459,756,245**
Plan fiduciary net position as a percentage of the total pension liability	**43.49%**	**45.36%**
Covered employee payroll	**$396,954,743**	**$363,117,415**
Net pension liability as percentage of covered employee payroll	**673.65%**	**677.40%**

Notes to Schedule:

Benefit changes: The provision of HB 3158 that allows members who entered DROP before June 1, 2017 to revoke the DROP election during a window from September 1, 2017 through February 28, 2018 was reflected in the December 31, 2018 total pension liability.

Change of Assumptions: The assumption changes in 2018 include updates to the salary scale to reflect the 2016 Meet and Confer Agreement, as amended in 2018, and a change in the expected COLA date from October 1, 2053 to October 1, 2050. The assumption changes in 2019 were based on the recommendations in the experience study for the period January 1, 2015 to December 31, 2019 and included lowering the discount rate from 7.25% to 7.00% and changes to the salary scale, mortality rates, withdrawal rates, retirement rates, and DROP annuitization rates. The expected COLA start date was also updated from October 1, 2050 to October 1, 2063.

Exhibit 3: Schedule of Employer Contributions

Year Ended December 31	Actuarially Determined Contributions[1]	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency/ (Excess)	Covered-Employee Payroll	Contributions as a Percentage of Covered Employee Payroll
2015[2]	--	$114,885,723	--	$383,006,330	30.00%
2016	$261,859,079	119,345,000	$142,514,079	365,210,426	32.68%
2017	168,865,484	126,318,005	42,547,479	357,414,472	35.34%
2018	157,100,128	149,356,565	7,743,563	346,036,690	43.16%
2019	152,084,297	155,721,087	-3,636,790	363,117,415	42.88%

[1] The City's contributions are based on statutory rates set by State law and not Actuarially Determined Contributions.
[2] The Actuarially Determined Contribution was not directly calculated as a dollar amount by the prior actuary for the year ended 2015.

Notes to Schedule:

Methods and assumptions used to determine contribution rates for the year ended December 31, 2019:

Valuation date	Actuarially determined contribution is calculated using a January 1, 2019 valuation date as of the beginning of the year in which contributions are reported
Actuarial cost method	Entry age
Amortization method	30-year level percent of payroll, using 2.75% annual increases
Remaining amortization period	38 years as of January 1, 2019
Asset valuation method	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a five-year period, further adjusted, if necessary, to be within 20% of the market value.
Investment rate of return	7.25%, including inflation, net of pension plan investment expense
Inflation rate	2.75%
Projected salary increases	Inflation plus merit increases, varying by group and service
Retirement rates	Group-specific rates based on age
Cost-of-living adjustments	2.00% simple increases starting October 1, 2050

Mortality:	
Pre-retirement	Sex-distinct RP-2014 Employee Mortality Table, set back two years for males, projected generationally using Scale MP-2015
Healthy annuitant	Sex-distinct RP-2014 Healthy Annuitant Mortality Table, set forward two years for females, projected generationally using Scale MP-2015
Disabled	Sex-distinct RP-2014 Disabled Retiree Mortality Table, set back three years for males and females, projected generationally using Scale MP-2015
Other information:	See Section 4 of the January 1, 2019 actuarial valuation for a full outline of assumptions. See Exhibit 2 of this section for the history of changes to plan provisions and assumptions over the last two years.
DROP utilization	0% of Police and Fire members are assumed to elect to enter DROP
Interest on DROP Accounts	Beginning January 1, 2018, 3.00% payable upon retirement on active account balances as of September 1, 2017

DISCUSSION SHEET

ITEM #C2

Topic: **Financial Audit Status**

Discussion: The Chief Financial Officer will provide a status update on the annual financial audit.

Regular Board Meeting – Thursday, November 12, 2020

DISCUSSION SHEET

ITEM #C3

Topic: **Second reading and discussion of the 2021 Budget**

Discussion: Attached is the budget proposal for Calendar Year 2021.

The budget has been prepared in total for both the Combined Pension Plan and the Supplemental Plan. Total expenses are then allocated to the Supplemental Plan based upon the Group Trust allocation reported by JPMorgan.

Significant changes from the prior year budget and/or projected 2020 actual expenses are explained in the comments accompanying the proposed budget.

The first reading of the proposed budget was at the October 10, 2020 Board meeting and there are no changes to the proposed budget from the first reading of the budget.

Staff Recommendation: **Approve** the proposed 2021 budget.

Regular Board Meeting – Tuesday, November 12, 2020

DALLAS POLICE AND FIRE PENSION SYSTEM
PROPOSED OPERATING BUDGET SUMMARY
FOR THE YEAR 2021
SECOND READING AT THE NOVEMBER 12, 2020 BOARD MEETING

				Variances		Variances	
				2021 Prop. Bud. vs	2020 Budget	2021 Prop. Bud. vs	2020 Proj. Act.
Expense Type	**2020 Budget**	**2020 Projected Actual**	**2021 Proposed Budget**	**$**	**%**	**$**	**%**
Administrative Expenses	5,797,866	5,541,519	5,973,808	175,942	3.0%	432,289	7.8%
Investment Expenses	16,285,551	15,445,222	16,036,610	(248,941)	-1.5%	591,388	3.8%
Professional Expenses	1,496,520	1,472,915	1,609,120	112,600	7.5%	136,205	9.2%
Total	$ 23,579,937	$ 22,459,656	$ 23,619,538	$ 39,601	0.2%	$ 1,159,882	5.2%

Dallas Police & Fire Pension System
Proposed Operating Budget
Calendar Year 2021

	Description	2020 Budget	2020 Projected Actual*	2021 Proposed Budget	$ Change 2021 Prop. Bud. vs. 2020 Bud.	% Change 2021 Prop. Bud. vs. 2020 Bud.	$ Change 2021 Prop. Bud. vs. 2020 Proj. Actual	% Change 2021 Prop. Bud. vs. 2020 Proj. Actual
Administrative Expenses								
1	Salaries and benefits	3,653,766	3,746,274	3,775,241	121,475	3.3%	28,967	0.8%
2	Employment Expense	15,000	17,165	25,110	10,110	67.4%	7,945	46.3%
3	Memberships and dues	19,706	17,240	19,917	211	1.1%	2,677	15.5%
4	Staff meetings	1,000	-	1,000	-	0.0%	1,000	100.0%
5	Employee service recognition	5,000	288	5,030	30	0.6%	4,742	1646.5%
6	Member educational programs	2,750	-	3,250	500	18.2%	3,250	100.0%
7	Board meetings	6,420	2,594	6,420	-	0.0%	3,826	147.5%
8	Conference registration/materials - Board	11,650	-	11,650	-	0.0%	11,650	100.0%
9	Travel - Board	21,500	-	21,500	-	0.0%	21,500	100.0%
10	Conference/training registration/materials - Staff	34,800	6,110	36,300	1,500	4.3%	30,190	494.1%
11	Travel - Staff	44,500	3,516	43,200	(1,300)	(2.9%)	39,684	1128.7%
12	Liability insurance	640,571	608,941	727,147	86,576	13.5%	118,206	19.4%
13	Communications (phone/internet)	56,300	67,816	70,800	14,500	25.8%	2,984	4.4%
14	Information technology projects	140,000	110,728	190,000	50,000	35.7%	79,272	71.6%
15	IT subscriptions/services/licenses	153,100	150,544	182,715	29,615	19.3%	32,171	21.4%
16	IT software/hardware	19,500	23,858	17,000	(2,500)	(12.8%)	(6,858)	(28.7%)
17	Building expenses	405,467	390,670	401,482	(3,985)	(1.0%)	10,812	2.8%
18	Repairs and maintenance	97,414	23,668	84,424	(12,990)	(13.3%)	60,756	256.7%
19	Office supplies	29,350	14,116	24,850	(4,500)	(15.3%)	10,734	76.0%
20	Leased equipment	24,000	23,686	24,000	-	0.0%	314	1.3%
21	Postage	28,200	23,628	21,700	(6,500)	(23.0%)	(1,928)	(8.2%)
22	Printing	14,000	-	14,000	-	0.0%	14,000	100.0%
23	Subscriptions	2,125	1,018	2,125	-	0.0%	1,107	108.7%
24	Records storage	1,400	1,392	1,400	-	0.0%	8	0.6%
25	Administrative contingency reserve	12,000	862	12,000	-	0.0%	11,138	1292.1%
26	COVID 19 Expense	-	19,367	7,500	7,500	100.0%	(11,867)	(61.3%)
27	Depreciation Expense	240,947	240,946	240,947	-	0.0%	1	0.0%
28	Bank fees	3,400	3,056	3,100	(300)	(8.8%)	44	1.4%
Investment Expenses								
29	Investment management fees	14,178,000	13,954,330	14,664,000	486,000	3.4%	709,670	5.1%
30	Investment consultant and reporting	365,000	362,084	340,000	(25,000)	(6.8%)	(22,084)	(6.1%)
31	Bank custodian services	222,000	216,974	220,000	(2,000)	(0.9%)	3,026	1.4%
32	Other portfolio operating expenses (legal, valuation, tax)	1,520,551	911,834	777,610	(742,941)	(48.9%)	(134,224)	(14.7%)
33	Investment due diligence	39,000	-	35,000	(4,000)	(10.3%)	35,000	100.0%
Professional Services Expenses								
34	Actuarial services	240,000	241,280	190,500	(49,500)	(20.6%)	(50,780)	(21.0%)

	Dallas Police & Fire Pension System Proposed Operating Budget Calendar Year 2021							
	Description	2020 Budget	2020 Projected Actual*	2021 Proposed Budget	$ Change 2021 Prop. Bud. vs. 2020 Bud.	% Change 2021 Prop. Bud. vs. 2020 Bud.	$ Change 2021 Prop. Bud. vs. 2020 Proj. Actual	% Change 2021 Prop. Bud. vs. 2020 Proj. Actual
35	Accounting services	60,770	59,000	60,770	-	0.0%	1,770	3.0%
36	Independent audit	165,000	162,977	166,000	1,000	0.6%	3,023	1.9%
37	Legal fees	550,000	577,752	562,500	12,500	2.3%	(15,252)	(2.6%)
38	Legislative consultants	126,000	126,000	159,000	33,000	26.2%	33,000	26.2%
39	Public relations	-	-	-	-	100.0%	-	100.0%
40	Pension administration software & WMS	283,000	263,616	302,000	19,000	6.7%	38,384	14.6%
41	Business continuity	17,000	16,224	18,300	1,300	7.6%	2,076	12.8%
42	Network security review	10,000	2,400	10,000	-	0.0%	7,600	316.7%
43	Network security monitoring	75,000	44,036	102,000	27,000	36.0%	57,964	131.6%
44	Disability medical evaluations	9,500	5,540	16,500	7,000	73.7%	10,960	197.8%
45	Elections	15,000	-	-	(15,000)	(100.0%)	-	100.0%
46	Miscellaneous professional services	20,250	18,126	21,550	1,300	6.4%	3,424	18.9%
	Total Budget	23,579,937	22,459,656	23,619,538	39,601	0.2%	1,159,882	5.2%
	Less: Investment management fees	14,178,000	13,954,330	14,664,000	486,000	3.4%	709,670	5.1%
	Adjusted Budget Total	9,401,937	8,505,326	8,955,538	(446,399)	(4.7%)	450,212	5.3%

SUPPLEMENTAL BUDGET

	Total Budget (from above)	23,579,937	22,459,656	23,619,538	39,601	0.2%	1,159,882	5.2%
	Less: Allocation to Supplemental Plan Budget*	207,503	199,891	210,214	2,711	1.3%	10,323	5.2%
	Total Combined Pension Plan Budget	**23,372,434**	**22,259,765**	**23,409,324**	**36,890**	**0.2%**	**1,149,559**	**5.2%**

** Projected based on 6/30/20 YTD annualized*
*** Allocation to Supplemental is based on JPM allocation between accounts as of 6/30/20 of .0089%*

0.89% per JPM Unitization report as of 6/30/20

Significant Budget Changes - 2021
Budget Changes (>5% and $10K)
SORTED BY THE $ CHANGE FROM 2020 BUDGET TO 2021 BUDGET

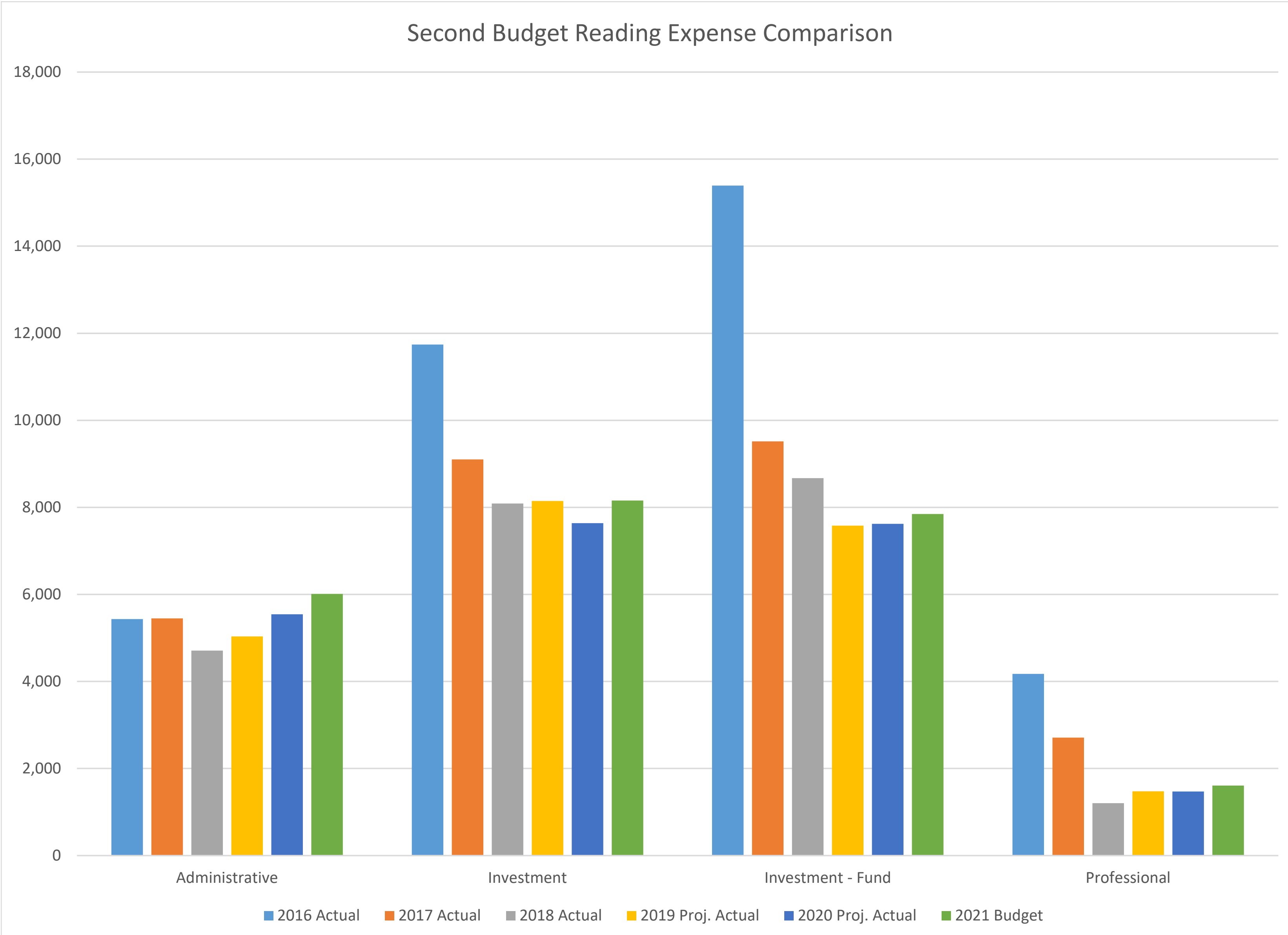
	Item	2020 Budget	2020 Projected Actual**	2021 Proposed Budget	$ Change 2021 Prop. Bud. vs. 2020 Bud.	% Change 2021 Prop. Bud. vs. 2020 Bud.	$ Change 2021 Prop. Bud. vs. 2020 Proj. Act.	% Change 2021 Prop. Bud. vs. 2020 Proj. Act.	Explanation
	INCREASES:								
1	Liability insurance	640,571	608,941	727,147	86,576	13.5%	118,206	19.4%	Projected renewal includes expected double digit increases across almost all lines of risk insurance. Fiduciary insurance is 80% of 2021 budget.
2	Information technology projects	140,000	110,728	190,000	50,000	35.7%	79,272	71.6%	Increase includes some projects deferred from 2020 to 2021 due to COVID-19.
3	Legislative consultants	126,000	126,000	159,000	33,000	26.2%	33,000	26.2%	Legislature is in session in 2021. Fees are higher for the periods when legislature is in session
4	IT subscriptions/services/licenses	153,100	150,544	182,715	29,615	19.3%	32,171	21.4%	Additional licenses and devices to be covered along with projected increases for renewals.
5	Network security monitoring	75,000	44,036	102,000	27,000	36.0%	57,964	131.6%	Additional items to be covered and expect full year of services in 2021.
6	Pension administration software & WMS	283,000	263,616	302,000	19,000	6.7%	38,384	14.6%	Enhancements for pension admin software and fee increases.
7	Communications (phone/internet)	56,300	67,816	70,800	14,500	25.8%	2,984	4.4%	Additional services like Zoom and Conference Calling added during COVID-19, combined with rate increases on contracts.
8	Employment Expense	15,000	17,165	25,110	10,110	67.4%	7,945	46.3%	Primarily agency fees for new staff.
	REDUCTIONS:								
9	Other portfolio operating expenses (legal, valuation, tax)	1,520,551	911,834	777,610	(742,941)	-48.9%	(134,224)	-14.7%	Significant reduction in legal and advisor fees for private equity investments expected in 2021.
10	Actuarial services	240,000	241,280	190,500	(49,500)	-20.6%	(50,780)	-21.0%	Experience study conducted in 2020 will not be repeated in 2021.
11	Investment consultant and reporting	365,000	362,084	340,000	(25,000)	-6.8%	(22,084)	-6.1%	HB 322 report costs of $30k were included in the 2020 budget partially offset by contractual price increase.
12	Elections	15,000	-	-	(15,000)	-100.0%	-	100.0%	No trustee election in 2021.
13	Repairs and maintenance	97,414	23,668	84,424	(12,990)	-13.3%	60,756	256.7%	Fewer maintenance projects planned for 2021.

*** Projected based on 8/31/19 Prelim YTD annualized*

Significant Budget Changes - 2021
Budget Changes (>5% and $10K)
SORTED BY THE $ CHANGE FROM 2020 PROJECTED ACTUAL TO 2021 BUDGET

	Item	2020 Budget	2020 Projected Actual**	2021 Proposed Budget	$ Change 2021 Prop. Bud. vs. 2020 Bud.	% Change 2021 Prop. Bud. vs. 2020 Bud.	$ Change 2021 Prop. Bud. vs. 2020 Proj. Act.	% Change 2021 Prop. Bud. vs. 2020 Proj. Act.	Explanation
	INCREASES:								
1	Investment management fees	14,178,000	13,954,330	14,664,000	486,000	3.4%	709,670	5.1%	Increased market value in equities expected to drive higher fees, which will be partially offset by declines in fees for fixed income and real assets.
2	Liability insurance	640,571	608,941	727,147	86,576	13.5%	118,206	19.4%	Projected renewal includes expected double digit increases across almost all lines of risk insurance. Fiduciary insurance is 80% of 2021 budget.
3	Information technology projects	140,000	110,728	190,000	50,000	35.7%	79,272	71.6%	Project start dates delayed due to COVID-19. At least one project may be delayed until 2021.
4	Repairs and maintenance	97,414	23,668	84,424	(12,990)	-13.3%	60,756	256.7%	Some maintenance being delayed or deferred during COVID-19. Expect to return to more normal levels in 2021.
5	Network security monitoring	75,000	44,036	102,000	27,000	36.0%	57,964	131.6%	Project implementation delayed due to COVID-19. Expect full year of monitoring in 2021.
6	Travel - Staff	44,500	3,516	43,200	(1,300)	-2.9%	39,684	1128.7%	Reduced staff travel in 2020 due to COVID-19. Expect to return to more normal levels in 2021.
7	Pension administration software & WMS	283,000	263,616	302,000	19,000	6.7%	38,384	14.6%	Some enhancements delayed due to COVID-19.
8	Investment due diligence	39,000	-	35,000	(4,000)	-10.3%	35,000	100.0%	Purchase of investment software currently deferred. No investment due diligence travel due to COVID-19. Expect to return to more normal levels in 2021.
9	Legislative consultants	126,000	126,000	159,000	33,000	26.2%	33,000	26.2%	Legislature is in session in 2021. Fees are higher for the periods when legislature is in session
10	IT subscriptions/services/licenses	153,100	150,544	182,715	29,615	19.3%	32,171	21.4%	Additional licenses and devices to be covered along with projected increases for renewals.
11	Conference/training registration/materials - Staff	34,800	6,110	36,300	1,500	4.3%	30,190	494.1%	Staff conference training significantly reduced due to COVID-19. Expect to return to more normal levels during 2021.
12	Travel - Board	21,500	-	21,500	-	0.0%	21,500	100.0%	No board travel in 2020 due to COVID-19. Expect to return to more normal level in 2021.
13	Printing	14,000	-	14,000	-	0.0%	14,000	100.0%	Updated member handbook printing not completed due to COVID-19.
14	Conference registration/materials - Board	11,650	-	11,650	-	0.0%	11,650	100.0%	No conferences attended by board members during COVID-19.
15	Administrative contingency reserve	12,000	862	12,000	-	0.0%	11,138	1292.1%	Contingency reserve.
16	Disability medical evaluations	9,500	5,540	16,500	7,000	73.7%	10,960	197.8%	Only one disability evaluation in 2020 so far. 2020 projected actual allows for two in total and 2021 projects for five in total.
17	Office supplies	29,350	14,116	24,850	(4,500)	-15.3%	10,734	76.0%	Office supplies usage down in 2020 due to COVID-19. Expect to return to more normal level in 2021.
	REDUCTIONS:								
18	Other portfolio operating expenses (legal, valuation, tax)	1,520,551	911,834	777,610	(742,941)	-48.9%	(134,224)	-14.7%	Reduction in appraisal, legal and advisor fees for private equity investments expected in 2021.
19	Actuarial services	240,000	241,280	190,500	(49,500)	-20.6%	(50,780)	-21.0%	Experience study conducted in 2020 will not be repeated in 2021.
20	Investment consultant and reporting	365,000	362,084	340,000	(25,000)	-6.8%	(22,084)	-6.1%	HB 322 report costs of $30k were incurred in 2020 budget and will not be repeated in 2021.
21	COVID 19 Expense	-	19,367	7,500	7,500	100.0%	(11,867)	-61.3%	Purchase of temperature scanners, plexiglass and other COVID-19 supplies in 2020.

*** Projected based on 6/30/20 Prelim YTD annualized*


Second Budget Reading Expense Comparison
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Administrative
Investment
Investment - Fund
Professional
2016 Actual
2017 Actual
2018 Actual
2019 Proj. Actual
2020 Proj. Actual
2021 Budget

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C4

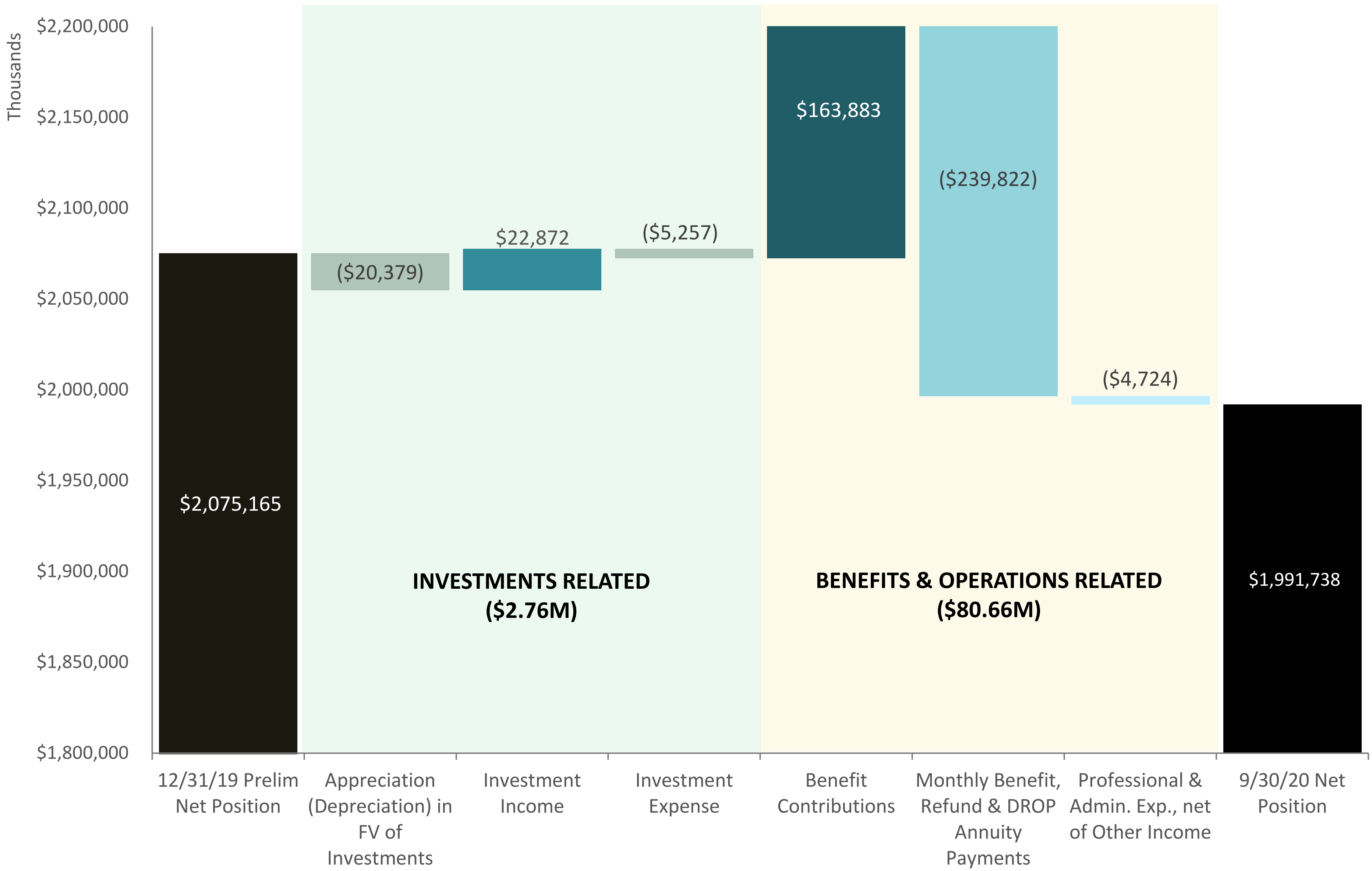
Topic: **Quarterly Financial Reports**

Discussion: The Chief Financial Officer will present the third quarter 2020 financial statements.

Regular Board Meeting – Thursday, November 12, 2020

Change in Net Fiduciary Position

December 31, 2019 – September 30, 2020



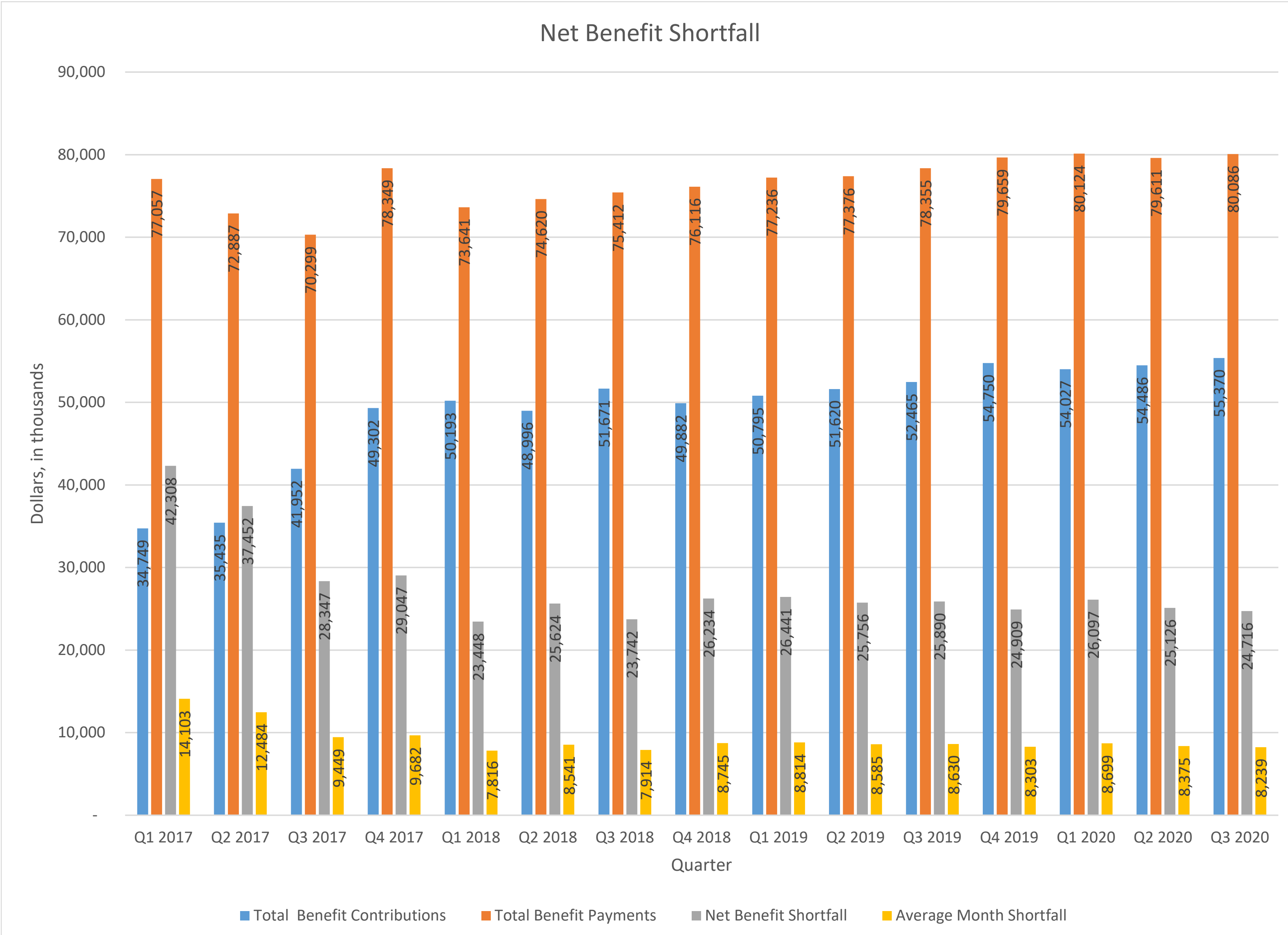
Components may not sum exactly due to rounding.

DALLAS POLICE & FIRE PENSION SYSTEM
Combined Statements of Fiduciary Net Position

	September 30, 2020	December 31, 2019 (unaudited)	$ Change	% Change
Assets				
Investments, at fair value				
Short-term investments	$ 24,419,758	$ 25,311,029	$ (891,271)	-4%
Fixed income securities	497,254,070	555,384,168	(58,130,098)	-10%
Equity securities	599,471,972	555,230,590	44,241,382	8%
Real assets	519,143,091	567,186,915	(48,043,824)	-8%
Private equity	265,217,476	267,586,704	(2,369,228)	-1%
Forward currency contracts	(522,107.76)	652,498	(1,174,606)	-180%
Total investments	1,904,984,260	1,971,351,904	(66,367,644)	-3%
Invested securities lending collateral	-	13,025,117	(13,025,117)	-100%
Receivables				
City	6,665,007	3,035,500	3,629,507	120%
Members	2,398,495	1,055,869	1,342,626	127%
Interest and dividends	4,750,194	4,459,663	290,531	7%
Investment sales proceeds	102,047,241	52,570,414	49,476,827	94%
Other receivables	189,829	186,104	3,725	2%
Total receivables	116,050,766	61,307,550	54,743,216	89%
Cash and cash equivalents	68,615,604	89,461,720	(20,846,116)	-23%
Prepaid expenses	558,392	402,596	155,796	39%
Capital assets, net	12,148,063	12,328,774	(180,711)	-1%
Total assets	$ 2,102,357,084	$ 2,147,877,661	$ (45,520,577)	-2%
Liabilities				
Payables				
Securities lending obligations	-	13,025,117	(13,025,117)	-100%
Securities purchased	106,722,690	54,957,185	51,765,505	94%
Accounts payable and other accrued liabilities	3,896,197	4,730,610	(834,413)	-18%
Total liabilities	110,618,887	72,712,912	37,905,975	52%
Net position				
Net investment in capital assets	12,148,063	12,328,774	(180,711)	-1%
Unrestricted	1,979,590,134	2,062,835,976	(83,245,842)	-4%
Net position held in trust - restricted for pension benefits	$ 1,991,738,197	2,075,164,750	$ (83,426,553)	-4%

DALLAS POLICE & FIRE PENSION SYSTEM
Combined Statements of Changes in Fiduciary Net Position

	9 Months Ended 9/30/2020	9 Months Ended 9/30/2019	$ Change	% Change
Contributions				
City	$ 121,192,801	$ 116,124,677	$ 5,068,124	4%
Members	42,690,176	38,755,631	3,934,545	10%
Total Contributions	163,882,977	154,880,308	9,002,669	6%
Investment income				
Net appreciation (depreciation) in fair value of investments	(20,379,301)	77,391,129	(97,770,430)	-126%
Interest and dividends	22,837,430	30,029,029	(7,191,599)	-24%
Total gross investment income	2,458,129	107,420,158	(104,962,029)	-98%
less: investment expense	(5,256,887)	(5,739,070)	482,183	8%
Net investment income	(2,798,758)	101,681,088	(104,479,846)	-103%
Securities lending income				
Securities lending income	89,355	738,598	(649,243)	-88%
Securities lending expense	(54,330)	(641,674)	587,344	-92%
Net securities lending income	35,025	96,924	(61,899)	-64%
Other income	258,338	270,866	(12,528)	-5%
Total additions	161,377,582	256,929,186	(95,551,604)	-37%
Deductions				
Benefits paid to members	238,373,140	231,019,688	7,353,452	3%
Refunds to members	1,448,367	1,948,102	(499,735)	-26%
Legal expense	291,568	415,894	(124,326)	-30%
Legal expense reimbursement	-	(58,584)	58,584	-100%
Legal expense, net of reimbursement	291,568	357,310	(65,742)	-18%
Staff Salaries and Benefits	2,760,754	2,518,643	242,111	10%
Professional and administrative expenses	1,930,306	1,876,174	54,132	3%
Total deductions	244,804,135	237,719,917	7,084,218	3%
Net increase (decrease) in net position	(83,426,553)	19,209,269		
Beginning of period	2,075,164,750	2,060,232,023		
End of period	$ 1,991,738,197	$ 2,079,441,292		


Net Benefit Shortfall
Dollars, in thousands
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
34,749
77,057
42,308
14,103
35,435
72,887
37,452
12,484
41,952
70,299
28,347
9,449
49,302
78,349
29,047
9,682
50,193
73,641
23,448
7,816
48,996
74,620
25,624
8,541
51,671
75,412
23,742
7,914
49,882
76,116
26,234
8,745
50,795
77,236
26,441
8,814
51,620
77,376
25,756
8,585
52,465
78,355
25,890
8,630
54,750
79,659
24,909
8,303
54,027
80,124
26,097
8,699
54,486
79,611
25,126
8,375
55,370
80,086
24,716
8,239
Q1 2017
Q2 2017
Q3 2017
Q4 2017
Q1 2018
Q2 2018
Q3 2018
Q4 2018
Q1 2019
Q2 2019
Q3 2019
Q4 2019
Q1 2020
Q2 2020
Q3 2020
Quarter
Total Benefit Contributions
Total Benefit Payments
Net Benefit Shortfall
Average Month Shortfall

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C5

Topic: **Investment Policy Statement**

a. Investment Advisory Committee
b. Policy Benchmark Change

Discussion:

a. The Investment Advisory Committee is limited to six members in the Investment Policy Statement. This modification would increase the maximum number of members on the Investment Advisory Committee from six to seven.

b. The Policy Benchmark for the High Yield Bonds asset class in the Investment Policy Statement is Bloomberg Barclays Global High Yield Total Return. Based on information provided in the Loomis Sayles High Yield Bonds item on this agenda, the staff recommends changing the High Yield Policy Benchmark in the Investment Policy Statement from the Bloomberg Barclays Global High Yield Total Return to the Bloomberg Barclays US Corp HY Total Return.

Staff Recommendation: **Approve** the proposed Investment Policy Statement revisions.

Regular Board Meeting – Thursday, November 12, 2020

INVESTMENT POLICY STATEMENT

As Amended Through November 12~~July 9~~, 2020

INVESTMENT POLICY STATEMENT

Adopted April 14, 2016
As Amended Through July 9, 2020

Table of Contents

DALLAS POLICE & FIRE PENSION SYSTEM

INVESTMENT POLICY STATEMENT

Adopted April 14, 2016
As Amended Through November 12~~July 9~~, 2020

Section 1 Introduction and Purpose

This policy statement shall guide investment of the assets of the Dallas Police and Fire Pension System (DPFP). This investment policy statement (IPS) is issued for the guidance of the Dallas Police and Fire Pension System Board of Trustees (Board), Investment Advisory Committee (IAC), Executive Director, Staff, Consultant(s), Custodian, and Investment Managers. This IPS is intended to set forth an appropriate set of goals and objectives for DPFP. It will define guidelines to assist fiduciaries and Staff in the supervision of the investments of DPFP. The investment program processes and procedures are defined in the various sections of the IPS by:

A. Stating in a written document DPFP's expectations, objectives and guidelines for the investment of assets;

B. Setting forth an investment structure for managing the portfolio. This structure includes assigning various asset classes, investment management styles, asset allocation and acceptable ranges that, in total, are expected to produce an appropriate level of overall diversification and total investment return over the investment time horizon;

C. Encouraging effective communications between the Board, IAC, Executive Director, Staff, Consultant(s), Investment Managers and Custodian(s);

D. Setting forth policy that will consider various factors, including inflation, global economic growth, liquidity and expenses, that will affect the portfolio's short and long-term total expected returns and risk;

E. Establishing criteria to select and evaluate Investment Managers; and

F. Complying with applicable fiduciary and due diligence requirements experienced investment professionals would utilize, and with laws, rules and regulations applicable to DPFP.

Section 2 Goals, Objectives, and Constraints

A. Goals

1. Ensure funds are available to meet current and future obligations of the plan when due.
2. Earn a long-term, net of fees, investment return greater than the actuarial return assumption.
3. Rank in the top half of the public fund universe over the rolling five-year period, net of fees.

B. Objectives

1. Maintain a diversified asset allocation.
2. Accept the minimum level of risk required to achieve the return objective.

B. Objectives (continued)

3. Outperform the Policy Benchmark[1] over rolling five-year periods.

4. Control and monitor the costs of administering and managing the investments.

C. Constraints

1. DPFP will be managed on a going-concern basis. The assets of the Fund will be invested with a long-term time horizon, while being cognizant of the weak actuarial funded ratio and ongoing liquidity needs.

2. The Board intends to maintain sufficient liquidity in either cash equivalents or short-term investment grade bonds to meet two to three years of anticipated benefit payments and expenses (net of contributions).

3. DPFP is a tax-exempt entity. Therefore, investments and strategies will be evaluated on a basis that is generally indifferent to taxable status.

Section 3 Ethics, Standards of Conduct, and Fiduciary Responsibility

The following are standards of conduct for the Board, Investment Advisory Committee, Staff, Investment Managers, Consultant(s), and all other investment related service providers of DPFP.[2]

A. Place the interest of DPFP above personal interests.

B. Act with integrity, competence, diligence, respect, and in an ethical manner.

C. Use reasonable care, diligence, and exercise independent professional judgment when conducting analysis, making recommendations, and taking actions.

D. Promote the integrity of and uphold the rules governing DPFP.

E. Comply with all applicable laws, rules, and regulations of any government agency, regulatory organization, licensing agency, or professional association governing their professional activities.

F. Adhere to applicable policies relating to ethics, standard of conduct and fiduciary responsibility including the:

   1. Board of Trustees and Employees Ethics and Code of Conduct Policy;

   2. Board of Trustees Governance and Conduct Policy; and the

   3. Contractor's Statement of Ethics.

---

[1] The Policy Benchmark represents the return of the investable and non-investable indices as defined in Appendix B, at the target allocation for each asset class.

[2] These are informed by the CFA Institute and the Center for Fiduciary Studies.

Section 4 Core Beliefs and Long-Term Acknowledgements

This section outlines the core beliefs and long-term acknowledgements for the overall governance of DPFP. These beliefs and acknowledgements will serve as guiding principles in the decision making and implementation of DPFP's investment mandate.

A. A well-defined governance structure with clearly delineated responsibilities is critical in achieving consistent, long-term performance objectives.

B. The strategic asset allocation determines the risk reward profile of the portfolio and thus drives overall portfolio performance and volatility.

   1. Asset allocation has a greater effect on return variability than asset class investment structure or manager selection.
   2. It is essential to account for liabilities in setting long-term investment strategy.
   3. Rebalancing the portfolio is a key aspect of prudent long-term asset allocation policy.

C. Investment costs will be monitored and minimized within the context of maximizing net return. The goal is not low fees, but rather maximum returns, net of fees.

   1. The opportunity for active manager risk-adjusted outperformance (alpha) is not uniformly distributed across asset classes or Investment Managers' strategies.
   2. Active strategies are preferred when there is strong conviction that they can be expected to add alpha, net of fees.
   3. Passive strategies should be considered if alpha expectations are unattractive.
   4. Professional fees will be negotiated when feasible.

D. Risk is multifaceted and will be evaluated holistically, incorporating quantitative measures and qualitative assessments.

   1. Global investment reduces risk through diversification.
   2. Diversification across different risk factors reduces risk.
   3. The pattern of returns matters because volatility levels and the sequence of gains and losses can impact funded status.
   4. Risk that is not expected to be rewarded over the long-term, or mitigated through diversification, will be minimized.
   5. Generating positive investment return requires recognizing and accepting non-diversifiable risk. Not taking enough risk is risky; therefore, DPFP will accept a prudent amount of risk to achieve its long-term target returns.

Section 5 Roles and Responsibilities

A. Board of Trustees

The Board of Trustees (Board) has a fiduciary responsibility to ensure prudent management of the plan and compliance with all state and federal laws. Additionally, the Board:

1. Establishes investment objectives consistent with the needs of DPFP and approves the IPS of DPFP;
2. Approves strategic asset allocation targets and ranges, and asset class structures;
3. Prudently hires, monitors, and terminates key investment service providers including: Consultant(s), Investment Managers and Custodian;
4. Appoints members to the Investment Advisory Committee (IAC);
5. Reviews investment related expenses;
6. Approves Board travel related to investments; and
7. Reviews the IPS annually and revises as needed.

B. Investment Advisory Committee (IAC)

1. IAC Composition, Selection and Criteria
   a. The requirement and general composition of the IAC is defined by statute.
   b. The IAC serves at the discretion of the Board of Trustees.
   c. IAC recommendations are not binding on the Board, provided however the Board may in the exercise of its fiduciary discretion grant decision-making authority to the IAC.
   d. The IAC is composed of up to seven~~six~~ members including one to ~~or two~~ three current Board members and a majority of outside investment professionals.
   e. IAC members will serve two-year terms.
   f. The Board will appoint members of IAC members by vote.
   g. IAC meetings require a quorum of at least three IAC members, a majority of whom must not be current Trustees. Any vote by the IAC which is reported to the Board must also advise the Board as to how each member of the IAC voted who was present for such vote. IAC members shall be provided reasonable notice of upcoming meetings, but this shall not prevent the IAC from meeting on short notice for an urgent item requiring immediate attention.
   h. One IAC member who is also a member of the Board will function as Chair of the IAC. The Chair shall serve as liaison to the Board and preside over IAC meetings.
   i. The Board of Trustees may elect to dismiss a member of the IAC for any reason.

2. IAC Roles and Responsibilities:
   a. A key role of the IAC is to ensure that DPFP investments are prudently managed.
   b. The IAC will advise regarding the search and selection process for investment managers and other matters that the Board may request.
   c. All investment related agenda materials for the Board will be made available to the IAC.
   d. The IAC will meet as needed, but at least quarterly, to discuss the investment program and provide insight and recommendations to Staff and Consultant.
   e. The IAC Chair will report to the Board regarding IAC activity as well as investment-related concerns and recommendations.
   f. Any IAC member may address the Board to communicate investment related concerns.
   g. IAC members are fiduciaries to DPFP.

C. Executive Director

1. The Executive Director is authorized to administer the operations and investment activities of DPFP under policy guidance from the Board;
2. Is authorized to manage investments approved by the Board including authority to enter into contract amendments including fund extensions, act with regard to investment governance issues and engagement of advisors as needed;
3. Manages the day to day operations of DPFP;
4. Oversees and reports to the Board on investment and due diligence processes and procedures;
5. Approves/declines all Staff travel related to investment manager on-site due diligence; and
6. Approves Investment Staff recommendations for presentation to the IAC and Board.
7. The Executive Director is a fiduciary to DPFP when exercising discretion in the performance of their duties.

D. Investment Staff

1. The Investment Staff (Staff) has primary responsibility for oversight and management of the investment portfolio. Staff is responsible for investment manager due diligence and recommendations, portfolio implementation consistent with the Board approved asset allocation, and assessment of the Consultant(s);
2. Helps the Board and the IAC to oversee Investment Managers, Consultant(s), Custodian, and vendors;

D. Investment Staff (continued)

3. Reports to Executive Director through the Chief Investment Officer;
4. Works closely with the Investment Consultant(s);
5. Notifies Consultant in writing of rebalancing needs and recommended implementation;
6. Coordinates the preparation and annual review of the IPS;
7. Prepares Staff Investment Manager recommendations, submits Staff and Consultant(s) recommendations to Executive Director for review;
8. After Board approval of investment, Staff approves Investment Manager Strategy guidelines which will be outlined in the Investment Manager agreements, as applicable;
9. Monitors all investments, Investment Managers and investment-related vendors;
10. Accounts for and reviews all external management fees and investment expenses; and
11. Ensures all investment fiduciaries to DPFP are aware of their fiduciary obligations annually.[3]

E. Consultant(s)

1. The Consultant(s) provides independent investment expertise to the Board, IAC, and Staff;
2. Reports to the Board and works closely with Staff;
3. Monitors and reports qualitative and quantitative criteria related to Investment Managers and aggregate portfolio activity and performance;
4. Reviews strategic asset allocation targets, ranges, and benchmarks for asset classes as required by the IPS and recommends improvements to the Board;
5. Documents asset allocation recommendations with asset class performance expectations including standard deviation, expected return and correlations for each asset class used by DPFP;
6. Reviews asset class structures periodically as required by the IPS and recommends improvements to the Board.
7. Assists in the selection process and monitoring of Investment Managers;
8. Documents and delivers to Staff written recommendations on Investment Manager new hire, hold and termination reviews;
9. Recommends benchmark and appropriate asset class and sub-allocation for investment managers;
10. Approves and verifies in writing each of Staff's rebalancing recommendations and implementation;

[3] Verification of this may be through contract, agreement, or annual fiduciary acknowledgement letter.

E. Consultant(s) (continued)

11. Monitors the diversification, quality, duration, and risk of holdings as applicable;
12. Assists Staff in negotiation of terms of vendor contracts; and
13. Prepares quarterly investment reports, which include the information outlined in Appendix C.
14. An Investment Consultant is normally a fiduciary to DPFP and this responsibility must be acknowledged in writing. DPFP may engage subject matter advisors that, while acting in DPFP's interest, may not be a contractual or statutory fiduciary to DPFP.

F. Investment Managers

1. Public Investment Managers
   a. Acknowledge in writing acceptance of the objectives, guidelines, and standards of performance;
   b. Invest the assets of DPFP in accordance with its objectives, guidelines and standards;
   c. Exercise full discretionary authority as to all buy, hold and sell decisions for each security under management, subject to the guidelines established in the Investment Management Agreement or applicable contract;
   d. Send trade confirmations to the Custodian;
   e. Deliver monthly report to Consultant(s)/Staff describing portfolio asset class weights, investment performance, security positions, and transactions;
   f. Adhere to best execution and valuation policies;
   g. Inform Staff and Consultant, as soon as practical, in writing of any breach of investment guidelines, ethics violations or violations of self-dealing;
   h. Inform Staff and Consultant as soon as practical, in writing, of any significant changes in the ownership, organizational structure, financial condition, personnel staffing, or other material changes at the firm; and
   i. Act as a fiduciary to DPFP. All separate account investment managers are fiduciaries to DPFP and this responsibility must be acknowledged in the contract for services.
2. Commingled Fund Investment Managers
   a. Provide the objectives, guidelines, and standards of performance of the fund;
   b. Provide a report detailing fund performance and holding on a monthly basis or as agreed by DPFP;
   c. Prices and fair market valuations will be based on reference to liquid markets, or obtained from an independent service provider if the assets held by the fund cannot be reasonably valued by reference to liquid markets;

F. Investment Managers (continued)

2. Commingled Fund Investment Managers

   d. The investment manager of the commingled fund must act as a Fiduciary to the commingled fund.

   e. Mutual funds where the investment advisor or manager of the mutual fund is subject to the Investment Company Act of 1940 meet the requirements of this subsection 2.

3. Private Investment Managers

   a. Provide objectives, strategy guidelines, and standards of performance as evidenced in investment manager, operating, or partnership agreement;

   b. Ensure that financials statements undergo annual audits and that investments are reported at fair market value, as outlined in the Investment Management, Partnership, or Operating Agreement(s);

   c. Communicate to Staff any material changes in the ownership or management of the firm, and or the stability of the organization;

   d. Inform Staff, as soon as practical, in writing of any breach of investment guidelines, ethics violations or violations of self-dealing.

G. Custodian

1. Safe keep and hold all DPFP's assets in the appropriate domestic accounts and provide highly secure storage of physical stock certificates and bonds such that there is no risk of loss due to theft, fire, or accident;[4]
2. Maintain separate accounts by legal registration;
3. Arrange for timely execution and settlement of Investment Manager securities transactions made for DPFP;
4. Proactively reconcile transactions and reported values to Investment Manager statements;
5. Provide for receipt and prompt crediting of all dividend, interest and principal payments received as a result of DPFP portfolio holdings or securities lending activities;
6. Monitor income receipts to ensure that income is received when due and institute investigative process to track and correct late or insufficient payments, including reimbursement for any interest lost due to tardiness or shortfall;
7. At the direction of the Staff, expeditiously transfer funds into and out of specified accounts;
8. Timely collection of income, including tax reclaim;
9. Prompt and accurate administration of corporate actions, including proxy issues; and
10. Manage securities lending.

[4] Electronic transfer records at the Depository Trust Company ("DTC'') are preferred.

Section 6 Strategic Asset Allocation and Rebalancing

Note: The investment portfolio is undergoing a transition from a legacy allocation with substantial exposure to illiquid private market assets to a more traditional allocation profile. In October 2018, the Board approved a new long-term asset allocation, recognizing that implementation would be subject to the gradual unwinding of private market assets. In November 2018, the Board approved an asset allocation implementation plan to prioritize the reallocation of cash distributions from private market assets. Initial variances to long-term allocation targets may be quite large but are expected to gradually diminish. Rebalancing ranges have been established to accommodate current variances to target and will be tightened over time as appropriate.

A. Asset Allocation

1. The strategic asset allocation establishes target weights and rebalancing ranges for each asset class and is designed to maximize the long-term expected return of the Fund within an acceptable risk tolerance while providing liquidity to meet cash flow needs.
2. A formal asset allocation study will be conducted as directed by the Board, but at least every three years.
3. Asset allocation targets will be reviewed annually for reasonableness in relation to significant economic and market changes or to changes to the investment objectives.
4. Asset class descriptions are provided in Appendix A.
5. The approved asset allocation is included in Appendix B.

B. Asset Class Structure

1. The asset class structure establishes the investment manager roles that will be used to implement the asset allocation.
2. The asset class structure will emphasize simplicity and cost control and toward that end will employ the minimum number of managers necessary to assure appropriate diversification within each asset class.
3. Asset class structures will be reviewed periodically, approximately every two years.
4. Any changes to the asset class structure must be approved by the Board.

C. Rebalancing

1. In general, cash flows will be allocated to move asset classes toward target weights and shall be prioritized according to the Asset Allocation Implementation Plan detailed in Appendix B1.
2. Staff shall submit a rebalancing recommendation to the Consultant at least annually based on consideration of the entire portfolio, and additionally as soon as practicable when an asset class breaches an established rebalancing range or when deemed prudent by Staff or Consultant.

C. Rebalancing (continued)

3. The allocations to Cash and Short-Term Investment Grade bonds (the "Safety Reserve") are designed to cover approximately 2.5 years of projected net cash outflows. Per the current policy targets approved by the Board, the Safety Reserve target allocation is 15% of the Fund. Staff and Consultant will evaluate the size of the Safety Reserve in both dollar terms and percentage terms when making rebalancing recommendations. The purpose of the Safety Reserve is to be the primary source of meeting any liquidity needs, particularly during a prolonged period of investment market stress. While the projected net cash outflows are effectively known in advance, the market value of the Pension Fund's assets will fluctuate with market activity. Consequently, the size of the Safety Reserve, as a percentage of Pension Fund assets, will fluctuate. The Safety Reserve is not required to be rebalanced to target if deemed prudent by Staff and Consultant.

4. Rebalancing recommendations should consider expected future cash flows, investment liquidity, market volatility, and costs.

5. Transition management shall be used when prudent to minimize transition costs.

6. Staff is responsible for implementing the rebalancing plan following Consultant approval.

7. Rebalancing recommendations and activity shall be reported to the Board and the IAC.

D. Private Market Provisions

1. DPFP will not commit capital to any direct private market investments or co-investments that are tied to a single company. This restriction does not prevent DPFP from holding direct investments that result from the dissolution of a private market fund

2. DPFP will not commit capital to any private market fund if such commitment would likely result in DPFP holding greater than a 10% interest in the fund.

3. DPFP will not commit capital to any private market fund if such commitment exceeds 2% of the total market value of the DPFP investment portfolio.

4. DPFP will not commit to any private market fund if the current value plus total unfunded commitments to related funds (e.g. fund family) exceeds 5% of the total market value of the DPFP investment portfolio.

5. The Board and Staff may consider and approve sales of private assets for less than the current net asset value of the asset reported to the Board. Factors affecting such a decision would include prices obtained after marketing the asset, liquidity, or overallocation to the relevant asset class.

Section 7 Investment Manager Search, Selection, and Monitoring

A. Investment Manager Search and Selection

1. The selection of investment managers will utilize a robust process to ensure an open and competitive universe, proper evaluation and due diligence, and selection of candidates that are best able to demonstrate the characteristics sought in a specific search.
2. Investment manager searches shall be based on one or more of the following reasons:
   a. Changes to the approved asset allocation;
   b. Changes to the approved asset class structure; or
   c. Replacement for terminated manager or manager of concern.
3. The IAC will advise regarding the search and selection process for investment managers
4. Staff and Consultant shall define and document the search process, including evaluation criteria, prior to initiating the search process.
5. Each investment manager hiring recommendation shall be supported by a rationale that is consistent with the pre-established evaluation criteria.
6. Each hiring recommendation will generally include the following information:
   a. A description of the organization and key people:
   b. A description of the investment process and philosophy;
   c. A description of historical performance and future expectations;
   d. The risks inherent in the investment and the manager's approach;
   e. The proper time horizon for evaluation of results;
   f. Identification of relevant comparative measures such as benchmarks and/or peer samples;
   g. The suitability of the investment within the relevant asset class; and
   h. The expected cost of the investment.
7. Alternative Investments

   The Board has adopted the definition of "Alternative Investments" as outlined in Appendix D, which will be reviewed as part of the due diligence process for any new investment. Pursuant to Section 4.07 of Article 6243a-1, the vote of eight trustees is required to approve any Alternative Investment.

B. Investment Monitoring

1. Staff and Consultant(s) are responsible for ongoing monitoring of all Investment Managers using qualitative and quantitative factors as appropriate.
2. Qualitative factors may include:
   a. Consistent implementation of philosophy and process;
   b. Ownership changes or departure of key personnel;
   c. Assets under management at the firm and product level;
   d. Conflicts of interest;
   e. Material litigation or regulatory challenges involving the investment manager;
   f. Adequate reporting and transparency; and
   g. Material client-servicing problems.
3. Quantitative factors may include:
   a. Long-term (3-5 years) performance relative to assigned benchmarks;
   b. Unusually large short-term performance variance (over or under); and
   c. Risk metrics such as volatility, drawdown, and tracking error.
4. Staff and the Consultant will highlight Investment Manager concerns to the IAC and the Board and recommend an appropriate course of action.

Section 8 Risk Management

Staff will work within the parameters of this Investment Policy Statement to mitigate the risk of capital loss. By implementing this Policy, the Board has addressed:

A. Custodial Risk for both public and private holdings;[5]

B. Interest Rate Risk through fixed income duration and credit monitoring;[6]

C. Concentration and Credit Risk through asset allocation targets and ranges, rebalancing, and the monitoring of investment guidelines.

Furthermore, through this Policy, Staff has established the necessary criteria to monitor the Custodian, Consultant(s), and Investment Managers, such that DPFP controls and manages interest rate, custody, concentration, and credit risks.

[5] Please review Custodian responsibilities in Section 5.
[6] Please review Annual Review of IPS and Investment Manager strategy guidelines reviewed and approved by Staff.

Section 9 Approval and Effective Date

The Investment Policy Statement was originally adopted by the Board on April 14, 2016 and was subsequently amended and adopted on the following dates.

December 14, 2017
January 10, 2019
March 14, 2019
February 13, 2020
July 9, 2020

APPROVED on November 12~~July 9~~, 2020 by the Board of Trustees of the Dallas Police and Fire Pension System.

____
William Quinn
Chairman

Attested:

____
Kelly Gottschalk
Secretary

Appendix A – Asset Class Descriptions

DPFP investment assets are prudently diversified to optimize expected returns and control risks. Assets can generally be categorized into four functional categories of Growth, Income, Inflation Protection, and Risk Mitigation

A. Growth Assets

1. Role: Capital appreciation, primary driver of long-term total return

2. Investment Approach: Growth assets generally represent equity or equity-like interests in current and future income streams and capture long-term economic growth trends throughout the world.

3. Risk Factors: The cost of the high expected long-term returns is higher expected volatility. Growth assets are highly sensitive to economic conditions and are subject to potential loss during economic downturns, rising/unexpected inflation, and rising interest rates.

4. Asset Classes

   a. **Global Equity** represents publicly traded stock holdings of companies across the globe. Liquidity is a key benefit as stocks can be traded daily. Foreign currency volatility can be a source of risk and return.

   b. **Emerging Market Equity** represents publicly traded stock holdings of companies located in or highly dependent on developing (emerging) countries. Emerging market equity is expected to capture the higher economic growth of emerging economies and provide higher long-term returns than global equity coupled with higher volatility. Foreign currency volatility can be a source of risk and return.

   c. **Private Equity** refers to investments in private companies (direct investments) or funds that hold investments in private companies or securities that are not typically traded in the public markets. Frequently these investments need “patient” capital to allow time for growth potential to be realized through a combination of capital investment, management initiatives, or market development. Private equity is expected to provide higher long-term returns than global equity, but illiquidity is a key risk as investment contributions may be locked up for several years.

B. Income Assets

1. Role: Current income and moderate long-term appreciation

2. Investment Approach: Income assets are generally fixed claims on assets or income streams of an issuer (e.g. government, corporation, asset-backed securities).

3. Risk Factors: The primary risk for Income assets is the failure of the borrower to make timely payments of interest and principal (credit risk) and the price volatility related to credit risk. Bonds with greater credit risk (i.e., bonds with lower credit ratings) are typically less liquid than higher quality bonds. Income assets may also be susceptible to interest rate (duration) risk where higher market interest rates reduce their value. Longer maturities have relatively higher interest rate risk.

4. Asset Classes

   a. **Global Bonds** includes sovereign and corporate debt issued by countries and companies located throughout the world in local currency and U.S. dollars. Expanding the investable universe beyond the U.S. provides a diversified source of returns.

   b. **Bank Loans** are like high yield bonds in that both represent debt issuers with higher credit risk. Compared to high-yield bonds, bank loans typically have higher seniority in the capital structure, which has historically resulted in much higher recovery following default.

   c. **High Yield Debt** refers to bonds with higher credit risk and lower credit ratings than investment-grade corporate bonds, Treasury bonds and municipal bonds. Because of the higher risk of default, these bonds pay a higher yield than investment grade bonds.

   d. **Emerging Market Debt** (EMD) refers to bonds issued by developing countries or corporations based in developing countries. EMD bonds can be denominated in U.S. Dollars or local currency. The primary risk factor is credit quality, but interest rates and foreign currency are also factors.

   e. **Private Debt** refers to non-bank direct lending arrangements. Features are similar to bank loans with somewhat higher credit risk and yields. Investments are typically structured in a private market vehicle with limited liquidity. Private debt may be included within the private equity asset class in the strategic asset allocation.

C. Inflation Protection (Real Assets)

1. Role: Current income, inflation protection, diversification

2. Investment Approach: Generally, ownership in physical assets.

3. Risk Factors: Real Assets may not provide the desired inflation protection. Loss of principal is also a risk. Foreign assets are also subject to currency movements against the U.S. dollar.

4. Asset Classes

   a. **Real Estate** includes investments in office buildings, apartments, retail, raw land, and development projects.

   b. **Natural Resources** broadly refers to anything mined or collected in raw form but may include assets subject to further processing. Typical assets include permanent and row crops, timber, minerals, and metals.

   c. **Infrastructure** refers to investments in physical systems that support world economies. Typical investments include transportation, communication, utilities (electricity, gas, water, sewage).

D. Risk Mitigation

1. Role: Liquidity to fund benefit payments and other cash flow needs, capital preservation, modest current income, diversification to growth assets.

2. Investment Approach: Cash equivalents or high-quality domestic bonds.

3. Risk Factors: Risks are substantially lower for risk mitigation assets but may include modest exposure to credit or interest rates (duration).

4. Asset Classes

   a. **Cash Equivalents**

   b. **Short Term Investment Grade Bonds** have moderate interest rate risk.

   c. **Investment Grade Bonds** including bonds and notes issued by the U.S Treasury, U.S. Government Agencies, state and local municipalities, corporations, or other issuers with similar conservative risk profiles. Risk factors include duration and credit.

Appendix B – Strategic Asset Allocation and Rebalancing Ranges

Asset Class	Policy Benchmark	Target Weight[1]	Minimum Weight	Maximum Weight
Equity		55%		
Global Equity	MSCI ACWI IMI Net	40%	22%	48%
Emerging Markets Equity	MSCI Emerging Markets IMI Net	10%	2.5%	12%
Private Equity	Cambridge Associates U.S. Private Equity Index 1Q Lag	5%	N/A[2]	N/A[2]
Fixed Income		35%		
Cash	91 Day T-Bills	3%	0%	5%
Short Term Investment Grade Bonds	Bloomberg Barclays US Treasury 1-3 Year	12%	5%	15%
Investment Grade Bonds	Bloomberg Barclays U.S. Aggregate	4%	2%	6%
High Yield Bonds	Bloomberg Barclays ~~Global High Yield~~US Corp HY	4%	2%	6%
Bank Loans	Credit Suisse Leveraged Loan	4%	2%	6%
Global Bonds	Bloomberg Barclays Global Aggregate	4%	2%	6%
Emerging Market Debt	50% JPM EMBI/ 50% JPM GBI-EM	4%	0%	6%
Private Debt	Barclays Global HY + 2% (Rolling 3 Mo.)	0%	N/A[2]	N/A[2]
Real Assets		10%		
Real Estate	NCREIF Property Index 1Q Lag	5%	N/A[2]	N/A[2]
Natural Resources	NCREIF Farmland Total Return Index 1Q Lag	5%	N/A[2]	N/A[2]
Infrastructure	S&P Global Infrastructure (Rolling 3 Mo.)	0%	N/A[2]	N/A[2]
Total		100%		

1 – The investment portfolio is undergoing a transition from a legacy allocation with substantial exposure to illiquid private market assets to a more traditional allocation profile. In October 2018, the Board approved a new long-term asset allocation, recognizing that implementation would be subject to the gradual unwinding of private market assets. Appendix B1 reflects the Board-approved asset allocation implementation plan to prioritize the reallocation of cash distributions from private market assets. Initial variances to long-term allocation targets may be quite large but are expected to gradually diminish. Rebalancing ranges have been established to accommodate current variances to target and will be tightened over time as appropriate.
2 – Rebalancing Ranges are not established for illiquid asset classes.

Appendix B1 – Asset Allocation Implementation Plan

The investment portfolio is undergoing a transition from a legacy allocation with substantial exposure to illiquid private market assets to a more traditional allocation profile. In October 2018, the Board approved a new long-term asset allocation, recognizing that implementation would be subject to the gradual unwinding of private market assets. In November 2018, the Board approved the following implementation plan to prioritize the reallocation of cash distributions from private market assets.

Order of Reallocation

Allocate up to Target, then proceed to next asset class
1. Safety Reserve – Cash[1]
2. Safety Reserve – Short-Term Investment Grade Bonds[1]
3. Global Equity, only if current exposure is less than 22% of DPFP[2]
4. Emerging Market Equity, only if current exposure is less than 2.5% of DPFP[3]
5. Investment Grade Bonds
6. Global Bonds
7. Bank Loans
8. High Yield Bonds
9. Global Equity above 22%, contributions limited to 6% per year.
10. Emerging Markets Debt
11. Emerging Markets Equity above 2.5%, contributions limited to 2.5% per year
12. Private Real Estate (aggregate illiquid exposure must be under 20%)
13. Private Equity (aggregate illiquid exposure must be under 15%)

1 – The Safety Reserve is not required to be allocated to target if deemed prudent by Staff and Consultant.
2 – Global Equity target weight is 40%. If current exposure is more than 22% proceed to next asset class in the matrix. The reallocation framework is designed to maintain at least the mid-2018 exposure to public equity, prior to increasing fixed-income exposure.
3 – Emerging Market Equity Target weight is 10%. If current exposure is more than 2.5% proceed to next asset class in the matrix. The reallocation framework is designed to maintain at least the mid-2018 exposure to public equity, prior to increasing fixed-income exposure.

Appendix C – Investment Consultant Reporting Requirements

The investment consultant is required to provide the Board with quarterly investment information for portfolio monitoring purposes. Generally, these are as follows:

Quarterly (due in advance of the meeting)

1. DPFP's actual asset allocation relative to its target asset allocation as defined in Appendix B.
2. DPFP's return relative to its Policy Benchmark return and other public pension funds.
3. DPFP's risk adjusted returns relative to the policy and other public pension funds.
4. Asset class performance relative to the benchmarks as defined in Appendix B.
5. Individual Investment Manager returns relative to their stated benchmark.
6. Report will specifically acknowledge any underperforming Investment Managers.
7. Any reportable events affecting any of DPFP's Investment Managers.
8. Private Markets reports which covers Private Debt, Private Equity, Infrastructure, Real Assets and Real Estate.

Appendix D – Alternative Investments

Alternative Assets means any investment that is not a Traditional Asset.

Traditional Assets include:

1. Common Stocks: publicly traded securities representing ownership in a corporation; also known as publicly-traded equity. Examples include publicly traded equity shares of public companies, REITs, and ADRs. Regional examples include shares of companies domiciled in the US, non-US developed markets and emerging markets.

2. Bonds: publicly-traded securities, the holders of which serve as creditors to either governmental or corporate entities. Examples include government bonds and corporate bonds, including senior bank loans. Regional examples include US government issued bonds, non-US international developed market issued bonds, and emerging market issued bonds. Credit examples include investment grade bonds and non-investment grade bonds (e.g. high yield bonds and bank loans).

3. Cash Equivalents: short-term investments held in lieu of cash and readily convertible into cash within a short time span. Examples include CDs, commercial paper, and Treasury bills.

Though an exhaustive list is not included, some of the defining characteristics of Alternative Assets and their vehicles include:

1. Private ownership vehicles
2. Liquidity-constrained, and a lock-up of capital for extended time periods (one-year or longer)
3. Use of leverage
4. Ability to take short positions
5. Use of derivatives

The Board recognizes that certain investments may have characteristics and underlying securities that could be classified as both a Traditional and Alternative Investment. On any new investment recommendation, Staff and Consultant will propose a categorization for such investment as either Alternative or Traditional based on these criteria, with a focus on liquidity of the investment, for the Board's consideration.

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C6

Topic: **Board Committee Membership**

Discussion: The Chairman asked that the membership of the Board's committees be reviewed on an annual basis in November. The Board has three permanent committees, the Audit Committee, the Professional Services Committee, and the Investment Advisory Committee.

The structure of the Audit Committee and the Professional Services Committee is established in the Committee Policy and Procedure. Each committee is comprised of a minimum of three members and a maximum of five members. The committee must include one Mayoral appointed Board member, one Board member selected by the Members (Police, Fire or non-member Trustee) and either the Chair of the Board or a Board member selected by the Chair of the Board.

The structure of the Investment Advisory Committee is established in the Investment Policy Statement. The composition of the Investment Advisory Committee is being discussed under the Investment Policy Statement item on this agenda.

The current membership of the committees is on the attachment.

Recommendation: **Appoint** Trustees to serve on committees as nominated by the Chairman.

DALLAS POLICE & FIRE PENSION SYSTEM

Board Committee Assignments of the Board of Trustees

Audit Committee (AC)	Professional Services Committee (PSC)
Bill Quinn, Chair	**Bill Quinn, Chair**
Appointed members:	Appointed members:
Armando Garza	Rob French
Tina Hernandez Patterson	
Nick Merrick	

The structure of the Audit Committee and the Professional Services Committee is established in the Committee Policy and Procedure The Audit Committee and Professional Services Committee are composed of three members including one Mayoral appointed Board member, one Board member selected by the Members (Police, Fire or non-member Trustee) and either the Chair of the Board or a Board member selected by the Chair of the Board. An Audit Committee meeting and Professional Service Committee meeting requires a quorum of at least two members. There is no term set for the Audit Committee or Professional Service Committee.

* * * * * * * *

Investment Advisory Committee (IAC)	Terms Expire
Gilbert Garcia, Chair	Dec. 2020
Appointed members:	
Scott Freeman (external)	Dec. 2020
Robert Jones (external)	Dec. 2020
Rakesh Dahiya (external)	Dec. 2021
William Velasco, II (external)	Dec. 2021

The structure of the Investment Advisory Committee (IAC) is established in the Investment Policy Statement. The IAC is composed of up to six members including one or two current Board members and a majority of outside investment professionals. The Board will appoint members of IAC members by vote and IAC members will serve two-year terms. IAC meetings require a quorum of at least three IAC members, a majority of whom must not be current Trustees.

* * * * * * * *

Updated 11/06/2020

DISCUSSION SHEET

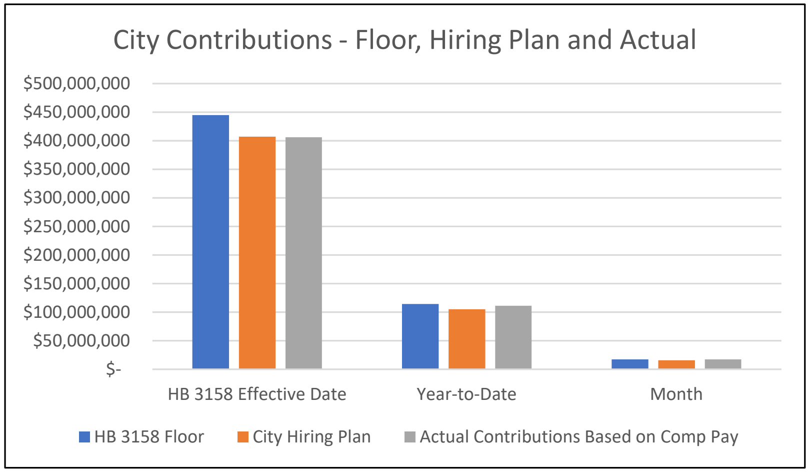
ITEM #C7

Topic: **Monthly Contribution Report**

Discussion: Staff will review the Monthly Contribution Report.

Regular Board Meeting – Thursday, November 12, 2020

Contribution Tracking Summary - November 2020 (September 2020 Data)



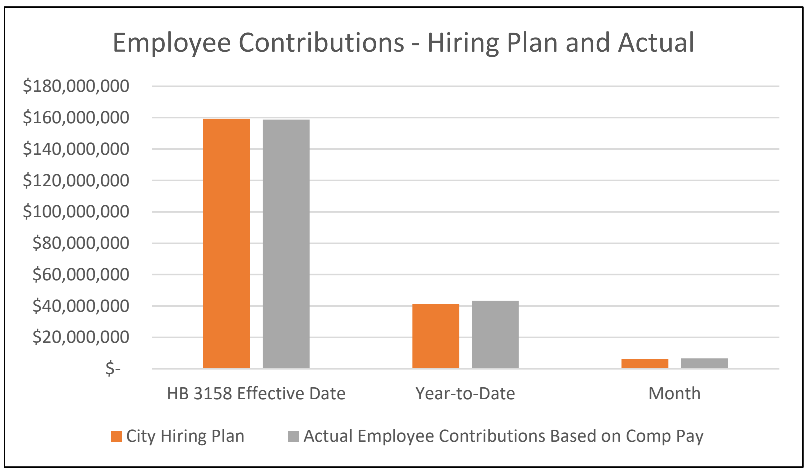
Actual Comp Pay was 100% of the Hiring Plan estimate since the effective date of HB 3158.

In the most recent month Actual Comp Pay was 109% of the Hiring Plan estimate and 100% of the Floor amount.

The Hiring Plan Comp Pay estimate increased by 3.39% in 2020. The Floor increased by 2.75%.

Through 2024 the HB 3158 Floor is in place so there is no City Contribution shortfall.

The combined actual hiring was 62 lower than the Hiring Plan for the pay period ending October 13, 2020. Fire was over the estimate by 34 fire fighters and Police under by 96 officers.



Employee contributions exceeded the Hiring Plan estimate for the month and the year.

There is no Floor on employee contributions.

Contribution Summary Data

City Contributions

Sep-20	Number of Pay Periods Beginning in the Month	HB 3158 Floor	City Hiring Plan	Actual Contributions Based on Comp Pay	Additional Contributions to Meet Floor Minimum	Comp Pay Contributions as a % of Floor Contributions	Comp Pay Contributions as a % of Hiring Plan Contributions
Month	3	$ 17,172,000	$ 15,763,846	$ 17,175,476	$ 7,245	100%	109%
Year-to-Date		$ 114,480,000	$ 105,092,308	$ 111,077,158	$ 3,413,563	97%	106%
HB 3158 Effective Date		$ 444,827,000	$ 407,232,692	$ 406,134,367	$ 38,703,355	91%	100%

Due to the Floor through 2024, there is no cumulative shortfall in City Contributions
Does not include the flat $13 million annual City Contribution payable through 2024.
Does not include Supplemental Plan Contributions.

Employee Contributions

Sep-20	Number of Pay Periods Beginning in the Month	City Hiring Plan	Actual Employee Contributions Based on Comp Pay	Actual Contribution Shortfall Compared to Hiring Plan	Actuarial Valuation Contribution Assumption	Actual Contributions as a % of Hiring Plan Contributions	Actual Contributions as a % of Actuarial Val Assumption
Month	3	$ 6,168,462	$ 6,669,248	$ 6,068,482	$ 6,168,462	108%	108%
Year-to-Date		$ 41,123,077	$ 43,373,710	$ 2,250,633	$ 41,123,080	105%	105%
HB 3158 Effective Date		$ 159,351,923	$ 158,842,791	$ (509,132)	$ 154,242,718	100%	103%
Potential Earnings Loss from the Shortfall based on Assumed Rate of Return				$ (529,203)			

Does not include Supplemental Plan Contributions.

Reference Information

City Contributions: HB 3158 Bi-weekly Floor and the City Hiring Plan Converted to Bi-weekly Contributions

	HB 3158 Bi-weekly Floor	City Hiring Plan-Bi-weekly	HB 3158 Floor Compared to the Hiring Plan	Hiring Plan as a % of the Floor	% Increase/ (decrease) in the Floor	% Increase/ (decrease) in the Hiring Plan
2017	$ 5,173,000	$ 4,936,154	$ 236,846	95%		
2018	$ 5,344,000	$ 4,830,000	$ 514,000	90%	3.31%	-2.15%
2019	$ 5,571,000	$ 5,082,115	$ 488,885	91%	4.25%	5.22%
2020	$ 5,724,000	$ 5,254,615	$ 469,385	92%	2.75%	3.39%
2021	$ 5,882,000	$ 5,413,846	$ 468,154	92%	2.76%	3.03%
2022	$ 6,043,000	$ 5,599,615	$ 443,385	93%	2.74%	3.43%
2023	$ 5,812,000	$ 5,811,923	$ 77	100%	-3.82%	3.79%
2024	$ 6,024,000	$ 6,024,231	$ (231)	100%	3.65%	3.65%

The HB 3158 Bi-weekly Floor ends after 2024

Employee Contributions: City Hiring Plan and Actuarial Val. Converted to Bi-weekly Contributions

		City Hiring Plan Converted to Bi-weekly Employee Contributions	Actuarial Valuation Assumption Converted to Bi-weekly Employee contributions	Actuarial Valuation as a % of Hiring Plan
2017		$ 1,931,538	$ 1,931,538	100%
2018		$ 1,890,000	$ 1,796,729	95%
2019		$ 1,988,654	$ 1,885,417	95%
2020		$ 2,056,154	**$ 2,056,154**	100%
2021		$ 2,118,462	**$ 2,118,462**	100%
2022		$ 2,191,154	**$ 2,191,154**	100%
2023		$ 2,274,231	**$ 2,274,231**	100%
2024		$ 2,357,308	**$ 2,357,308**	100%

The information on this page is for reference. The only numbers on this page that may change before 2025 are the Actuarial Valuation Employee Contributions Assumptions for the years 2020-2024 and the associated percentage.

Reference Information - Actuarial Valuation and GASB 67/68 Contribution Assumptions

Actuarial Assumptions Used in the Most Recent Actuarial Valuation - These assumptions will be reevaluated annually & may change.

City Contributions are based on the Floor through 2024, the Hiring Plan from 2025 to 2037, after 2037 an annual growth rate of 2.75% is assumed

Employee Contributions for 2018 are based on the 2017 actual employee contributions inflated by the growth rate of 2.75% and the Hiring Plan for subsequent years until 2038, when the 2037 Hiring Plan is increased by the 2.75 growth rate for the next 10 years

Actuarial/GASB Contribution Assumption Changes Since the Passage of HB 3158

	Actuarial Valuation	GASB 67/68
YE 2017 (1/1/2018 Valuation)		
2018 Employee Contributions Assumption - based on 2017 actual plus growth rate not the Hiring Plan Payroll	$ (2,425,047)	*
2019 Estimate (1/1/2019 Valuation)		
2019 Employee Contribution Assumption	$ 9,278	*
**90% of Hiring Plan was used for the Cash Flow Projection for future years in the 12/31/2017 GASB 67/68 calculation. At 12-31-17 and 12-31-18 this did not impact the pension liability or the funded percentage.*		

The information on this page is for reference. It is intended to document contribution related assumptions used to prepare the Actuarial Valuation and changes to those assumptions over time, including the dollar impact of the changes. Contribution changes impacting the GASB 67/68 liability will also be included.

City Hiring Plan - Annual Computation Pay and Numbers of Employees						
	Computation Pay			**Number of Employees**		
Year	**Hiring Plan**	**Actual**	**Difference**	**Hiring Plan**	**Actual EOY**	**Difference**
2017	$ 372,000,000	Not Available	Not Available	5,240	4,935	(305)
2018	$ 364,000,000	$ 349,885,528	$ (14,114,472)	4,988	4,983	(5)
2019	$ 383,000,000	$ 386,017,378	$ 3,017,378	5,038	5,104	66
2020	$ 396,000,000			5,063		
2021	$ 408,000,000			5,088		
2022	$ 422,000,000			5,113		
2023	$ 438,000,000			5,163		
2024	$ 454,000,000			5,213		
2025	$ 471,000,000			5,263		
2026	$ 488,000,000			5,313		
2027	$ 507,000,000			5,363		
2028	$ 525,000,000			5,413		
2029	$ 545,000,000			5,463		
2030	$ 565,000,000			5,513		
2031	$ 581,000,000			5,523		
2032	$ 597,000,000			5,523		
2033	$ 614,000,000			5,523		
2034	$ 631,000,000			5,523		
2035	$ 648,000,000			5,523		
2036	$ 666,000,000			5,523		
2037	$ 684,000,000			5,523		

Comp Pay by Month - 2020	**Annual Divided by 26 Pay Periods**	**Actual**	**Difference**	**2020 Cumulative Difference**	**Number of Employees - EOM**	**Difference**
January	$ 30,461,538	$ 31,291,360	$ 829,821	$ 829,821	5136	73
February	$ 30,461,538	$ 31,414,646	$ 953,108	$ 1,782,929	5114	51
March	$ 30,461,538	$ 31,492,765	$ 1,031,226	$ 2,814,156	5093	30
April	$ 45,692,308	$ 47,775,422	$ 2,083,114	$ 4,897,270	5125	62
May	$ 30,461,538	$ 32,261,636	$ 1,800,098	$ 6,697,367	5113	50
June	$ 30,461,538	$ 32,512,380	$ 2,050,842	$ 8,748,209	5173	110
July	$ 30,461,538	$ 32,568,582	$ 2,107,043	$ 10,855,252	5175	112
August	$ 30,461,538	$ 32,861,998	$ 2,400,460	$ 13,255,712	5033	(30)
September	$ 45,692,308	$ 49,783,989	$ 4,091,681	$ 17,347,393	5001	(62)
October	$ 30,461,538					
November	$ 30,461,538					
December	$ 30,461,538					

DISCUSSION SHEET

ITEM #C8

Topic: **Staff Leave Accrual During COVID-19**

Discussion: The COVID-19 pandemic, along with the associated Stay at Home orders, has resulted in an unexpected increase in staff leave balances – Vacation, Attendance Incentive Leave and Sick Leave. During this period, staff has continued to earn or accrue leave balances without the normal use of their leaves. While existing policies allow for various levels of hours to be rolled over from one year to the next year, some of our staff have already exceeded those levels for 2020. This issue has come to the Board's attention through the budget review process. The Board has previously granted the Executive Director the authority to temporarily amend the DPFP personnel policy to deal with issues arising out of the pandemic.

The Executive Director will discuss the plan to address the employee leave balances in a manner that does not impact service delivery or increase costs for DPFP.

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C9

Topic: **Required Training Manual Delivery**

Discussion: Section 3.013(c) of Article 6243a-1 requires the Executive Director annually deliver a training manual covering certain subject areas set forth in Section 3.013(b). The Executive Director will provide an overview of the contents, address new items in the manual and answer any questions concerning the training manual.

Trustees can access the training manual electronically through Diligent under the Resource Center.

Staff Recommendation: **Acknowledge** receipt by each Trustee of the training manual by signing and submitting the Trustee acknowledgment form.

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C10

Topic: **Board approval of Trustee education and travel**

a. Future Education and Business-related Travel
b. Future Investment-related Travel

Discussion:

a. Per the Education and Travel Policy and Procedure, planned Trustee education and business-related travel and education which does not involve travel requires Board approval prior to attendance.

Attached is a listing of requested future education and travel noting approval status.

b. Per the Investment Policy Statement, planned Trustee travel related to investment monitoring, and in exceptional cases due diligence, requires Board approval prior to attendance.

There is no future investment-related travel for Trustees at this time.

Future Education and Business Related Travel & Webinars
Regular Board Meeting – November 12, 2020

ATTENDING APPROVED

1. **Conference:** **TEXPERS Webinar**
   Global Macroeconomic Outlook: The Pandemic, Politics, and Policy Spur a Macro Reset
   Dates: November 10, 2020
   10:00 - 11:00 am
   Location: Virtual Event
   Cost: None

2. **Conference:** **TEXPERS Annual Conference**
   Dates: March 28, 2021
   Location: Austin, TX
   Cost: TBD

3. **Conference:** **TEXPERS Summer Conference**
   Dates: August 29-31, 2021
   Location: San Antonio, TX
   Cost: TBD

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C11

Topic: **Portfolio Update**

Discussion: Investment Staff will brief the Board on recent events and current developments with respect to the investment portfolio.

Regular Board Meeting – Thursday, November 12, 2020

DALLAS POLICE & FIRE PENSION SYSTEM

Portfolio Update

November 12, 2020

Adjusted Asset Allocation

In this view staff adjusts reported private market values to roughly estimate the unrecognized impact from lower oil prices and Covid-19.

DPFP Asset Allocation Using Stressed Private Market Values	10/30/2020	Adjustments		Adjusted NAV		Target		Variance	
	NAV	$ mil.	% of NAV	$ mil.	%	$ mil.	%	$ mil.	%
Equity	**795**	**-38**	**-4.8%**	**757**	**42.6%**	**977**	**55.0%**	**-220**	**-12.4%**
Global Equity	545	0	0.0%	545	30.7%	711	40.0%	-166	-9.3%
Emerging Markets	53	0	0.0%	53	3.0%	178	10.0%	-125	-7.0%
Private Equity*	197	-38	-19.2%	159	9.0%	89	5.0%	71	4.0%
Fixed Income	**573**	**0**	**0.0%**	**573**	**32.3%**	**622**	**35.0%**	**-49**	**-2.7%**
Safety Reserve - Cash	65	0	0.0%	65	3.6%	53	3.0%	11	0.6%
Safety Reserve - ST IG Bonds	216	0	0.0%	216	12.2%	213	12.0%	3	0.2%
Investment Grade Bonds	61	0	0.0%	61	3.4%	71	4.0%	-11	-0.6%
Global Bonds	68	0	0.0%	68	3.8%	71	4.0%	-3	-0.2%
Bank Loans	70	0	0.0%	70	3.9%	71	4.0%	-2	-0.1%
High Yield Bonds	69	0	0.0%	69	3.9%	71	4.0%	-2	-0.1%
Emerging Mkt Debt	20	0	0.0%	20	1.1%	71	4.0%	-51	-2.9%
Private Debt*	6	0	0.0%	6	0.3%	0	0.0%	6	0.3%
Real Assets*	**519**	**-73**	**-14.1%**	**446**	**25.1%**	**178**	**10.0%**	**269**	**15.1%**
Real Estate*	352	-68	-19.2%	285	16.0%	89	5.0%	196	11.0%
Natural Resources*	123	-5	-4.4%	118	6.6%	89	5.0%	29	1.6%
Infrastructure*	44	0	0.0%	44	2.5%	0	0.0%	44	2.5%
Total	**1,888**	**-111**	**-5.9%**	**1,777**	**100.0%**	**1,777**	**100.0%**	**0**	**0.0%**
Safety Reserve ~$270M=30 mo net CF	281	0	0.0%	281	15.8%	267	15.0%	14	0.8%
*Private Mkt. Assets w/NAV Discount	722	-111	-15.3%	611	34.4%	267	15.0%	345	19.4%

Source: JP Morgan Custodial Data, Staff Estimates and Calculations
Numbers may not foot due to rounding

data is preliminary

DALLAS POLICE & FIRE PENSION SYSTEM

Investment Initiatives

- Liquidation of private market assets remains the top focus. Significant delays expected due to COVID-19 market disruption.
- Staff continuing evaluation of and engagement with private equity funds.
- Global Equity – Expect Board recommendation in December.
- Fixed Income – Global Bond and High Yield recommendations at November Board.
- Completed IMA reviews. Now verifying manager certifications and evaluating guidelines.
- On-deck: Asset allocation study (early/mid 2021)

2020 Investment Review Calendar*

January ✓	• Real Estate Reviews: Vista 7, King's Harbor, & Museum Twr.
March ✓	• Real Estate: Clarion Presentation
April ✓	• Real Estate: AEW Presentation
May ✓	• Timber: Staff Review of FIA & BTG • Real Estate: Staff Review of Hearthstone
June ✓	• Natural Resources: Hancock Presentation
July ✓	• Infrastructure: Staff review of AIRRO and JPM Maritime
August ✓	• Staff review of Private Equity and Debt
Sept. ✓	• Public Equity Manager Reviews
October✓	• Fixed Income Manager Reviews

*Presentation schedule is subject to change.

DISCUSSION SHEET

ITEM #C12

Topic: **Loomis Sayles High Yield Bonds**

Discussion: Staff and Meketa have analyzed the Loomis Sayles High Yield Investment. Staff will discuss the analysis.

Staff Recommendation: **Available** at the meeting.

Regular Board Meeting – Thursday, November 12, 2020

DALLAS POLICE & FIRE PENSION SYSTEM

LOOMIS SAYLES HIGH YIELD EVALUATION

Date: November 12th, 2020

To: DPFP Board of Trustees

From: DPFP Investment Staff

Subject: Loomis Sayles High Yield Evaluation

Executive Summary

In September 2019, staff identified performance, organization, and portfolio guideline issues with the High Yield Full Discretion bond portfolio managed by Loomis Sayles. Staff's initial recommendation was to maintain exposure and monitor closely. Since then, staff has conducted monthly calls with the portfolio managers and has gained conviction in their positioning and performance. In recent months, staff surveyed other High Yield bond products as potential replacements. Our view is that Loomis remains our best option. We have also reviewed the range of Loomis High Yield offerings and guidelines and believe a shift from our current opportunistic product to a benchmark-aware product would be beneficial.

Background

9/12/19 Board meeting

At the 9/12/19 Board meeting, in accordance with section 7.B.4 of the Investment Policy, DPFP investment staff discussed its concerns regarding the High Yield bond portfolio managed by Loomis Sayles. Staff noted significant underperformance in 1H19 and highlighted the following key issues.

- This Dan Fuss managed portfolio has historically differed substantially from the strategy composite with superior returns.
- Positioning in recent periods can be characterized as a bar bell with low quality exposure, especially in the energy sector, offset by substantial allocation to cash and US Treasuries.
- In 4Q18, cash provided the expected downside cushions, but this protection was more than offset by a key default with material negative impact.
- Then, while the overall High Yield market rallied into 2019, the energy sector rebound was muted.
- Again, negative security selection exacerbated underperformance as Loomis holdings struggled vs. the sector, including additional defaults.
- Dan Fuss transitioned off the portfolio in April 2019 as part of realignment. The core Loomis High Yield team has taken over portfolio management.
- They will gradually/opportunistically move the portfolio toward the representative account. The transition is hampered by a relatively rich High Yield market, which has made it difficult to redeploy cash.

Staff recommended maintaining the current allocation to Loomis Sayles. Staff indicated that it would continue to monitor this manager closely and seek ongoing perspective from the Investment Advisory Committee and the Consultant.

DALLAS POLICE & FIRE PENSION SYSTEM

9/23/19 IAC Meeting

Investment staff provided a detailed analysis for discussion at the 9/23/19 meeting of the Investment Advisory Committee (IAC). Members of the IAC offered the following perspective and guidance.

- The Committee expressed concern regarding the high level of portfolio cash both in absolute terms and relative to the composite.
- The Committee discussed trailing performance trends and composite dispersion.
- The Committee recommended reviewing all public market investment guidelines, especially with respect to allowable cash allocations.
- The Committee recommended closely monitoring this mandate.
- The Committee concurred with staff Recommendation to maintain the current allocation to the Loomis High Yield Bond portfolio with ongoing close monitoring.
- The Committee advised staff to not push the manager to aggressively shift from cash to High Yield bonds in the current environment.

3/23/20 IAC meeting

At the 3/23/20 meeting of the IAC, investment staff discussed their updated evaluation of the Loomis Sayles High Yield Bond Portfolio positioning, performance, and investment guidelines. The Committee was supportive of staff's recommendation to maintain the existing product and full discretion guidelines until the current market volatility subsides. Ms. Byrne advised staff to review DPFP's options for High Yield managers given the transition of portfolio managers on the Loomis product.

9/28/20 IAC meeting

At the 9/28/20 meeting of the IAC, investment staff discussed their evaluation of Loomis High Yield against a universe of high-quality High Yield managers along with an evaluation of all Loomis High Yield products. The Committee was supportive of staff's recommendation to keep Loomis Sayles as the High Yield manager but shift to the benchmark aware US High Yield product that is less opportunistic.

Staff has conducted monthly calls with the Loomis High Yield portfolio management team since September 2019. In recent months staff has evaluated alternative products and guidelines.

DPFP Loomis High Yield Full Discretion Update

Since new portfolio managers (Matt Eagan and Elaine Stokes) took over for Dan Fuss in April 2019, staff has gained conviction in the team and portfolio through the monthly calls. While there were communication issues in early 2019, the new portfolio managers were very responsive and transparent. When the new portfolio managers took over in April 2019, the positioning was bar-belled with heavy allocations to cash/short-term US TSYs and lower rated distressed bonds concentrated in energy. During 4Q19 and 1Q20, the portfolio was repositioned to more closely resemble the High Yield Full Discretion composite. The portfolio managers lowered energy exposure by taking advantage of higher energy prices that resulted from September 2019 turmoil in the Middle East. They also lowered the cash/short term US TSY exposure during the COVID drawdown by purchasing attractive High Yield bonds. While energy exposure has continued to detract in 2020, the impact has been smaller and overall Loomis modestly outperformed their benchmark in both the downturn (1Q20) and recovery (2Q20) in 2020. Performance in August modestly trailed the benchmark.

DALLAS POLICE & FIRE PENSION SYSTEM

Staff believes Loomis should return to their historical outperformance once the energy exposure issues are resolved. Loomis has a contrarian and value driven strategy that focuses on opportunistic investments. Loomis was able to generate alpha with their value driven strategy in March 2020 as they bought undervalued bonds which have since outperformed. Staff also has conviction in the new portfolio managers who handled the portfolio transition very well.

High Yield Manager Study

Staff conducted a study to evaluate Loomis Sayles High Yield against other High Yield managers in the universe to determine if DPFP should conduct a formal High Yield manager search. In March 2020, staff conducted an informal screen of 20 managers in the High Yield investment universe using recommendations from Meketa, inbound marketing, and a staff screen of the eVestment database (trial). Staff spoke with managers and collected pitchbooks and return streams. After reviewing the pitchbooks and comparing risk/return statistics, staff selected 12 high caliber High Yield managers out of the 20 for a comparison universe. These managers met DPFP evaluation requirements including a stable organizational structure, having a US High Yield product, the product AUM being > $2B, and having at least a 5-year track record. The High Yield products evaluated were all US High Yield for manager comparability. The Loomis US High Yield product used in the comparison has been managed by DPFP's new portfolio managers (Matt Eagan and Elaine Stokes) historically. The Loomis US High Yield product is managed the same way as DPFP's High Yield Full Discretion product except the US High Yield has tighter constraints.

The analysis shows that out of a top tier evaluation universe, Loomis returns historically screened in the top quartile, but recent performance lowered Loomis to the second quartile. The growth of a dollar, 5-year rolling annualized returns, and 5-year information ratio charts show that Loomis performance was at the top of the pack until 2018 when other managers began to outperform Loomis. The drawdowns for Loomis have been higher than average which is consistent with their investment philosophy and our expectations. Given that Loomis has one of the lowest 5-year tracking errors, we believe they will regain having one of the highest rolling information ratios with the new portfolio managers (see appendix for charts). Despite the recent drop in performance, staff believes performance should return to historical standards and prefers to stay with Loomis.

Loomis High Yield Products and Constraints

The Loomis High Yield suite of products are grouped into opportunistic and benchmark aware products. The opportunistic products have more guideline flexibility and include DPFP's current product the High Yield Full Discretion (HYFD), the Global High Yield Full Discretion (GHYFD), and the High Yield Conservative (HYCV) products. The benchmark aware products have tighter guidelines and include the US High Yield (USHY) and Global High Yield (GHY) products.

DALLAS POLICE & FIRE PENSION SYSTEM

	DPFP (HYFD)	HYFD	GHYFD	HYCV	USHY	GHY
Benchmark	Barclays Global HY	Barclays US Corp HY	Barclays Global HY	Barclays US Corp HY	Barclays US Corp HY (2% Issuer Cap)	ICE BAML Global HY
Duration	No Limit	+/- 2 years	+/- 2 years	+/- 2 years	+/- 2 years	+/- 2 years
Credit Quality	No Limit	B- or better	B- or better	BB- or better; <10% CCC's	B- or better	B- or better
Non USD	30%	10%	Bench +/- 10%; 10% off-bench	10%	None	Bench +/-5%; No off-bench
Issuer	10%	5%	5%	5%	3% or bench +2%	3% or bench +2%
Industry	25%	25%	25%	25%	25%	25%
IG Credit	Allowed	10%	10%	10%	10%	10%
Total Foreign	25% Foreign Govt	30% (15% Emerging)	No Limit	30% (15% Emerging)	20% (10% Emerging)	Bench +15%
EM (USD Pay)	No Limit	15%	No Limit	15%	10%	Bench + 10%
Convertibles	No Limit	15%	15%	15%	5%	5%
Bank Loans	0% loans; 20% Loomis fund	15%	15%	15%	10%	10%
Max Off-Bench	N/A	N/A	N/A	N/A	25%	25%
Cash	No Limit	10%	10%	10%	5%	5%

Gross Returns 9/30/20	YTD	1YR	3YR	5YR	10YR
DPFP (HY Full Discretion)	0.87%	3.65%	2.65%	6.53%	6.74%
HY Full Discretion Composite	1.22%	4.01%	6.60%	6.30%	6.73%
GHY Full Discretion Composite	1.41%	3.48%	2.02%	4.60%	6.68%
HY Conservative Composite	2.10%	4.97%	4.09%	6.39%	6.05%
Bench Aware US HY Composite	1.46%	3.58%	3.79%	6.48%	6.84%
Bench Aware GHY (EUR) Composite	-2.25%	-2.12%	4.31%	N/A	N/A
Barclays US Corp HY Benchmark	*0.62%*	*3.25%*	*4.21%*	*6.79%*	*6.47%*
Barclays Global HY Benchmark	*-0.58%*	*2.90%*	*2.69%*	*5.95%*	*5.71*

Staff favors a benchmark aware strategy going forward. While we acknowledge the potential for more flexible guidelines to generate higher returns, DPFP's results have been mixed. Historically there have been periods of outperformance from the manager's ability to deviate from the benchmark and periods of underperformance due to the increased amount of risk. DPFP's portfolio positioning in 2019 led to underperformance vs the composite and the benchmark. Going forward the excess risk from an unconstrained portfolio might not justify the possible excess returns given the previous portfolio manager, Dan Fuss is no longer managing DPFP's portfolio. The current portfolio managers have historically run the benchmark aware products and have more experience in that area.

With respect to US vs global, staff prefers the benchmark aware US HY product, which is managed by our current PMs. Meketa advises that this is the industry standard approach to High Yield, and we recall that their recommended alternative products were all US focused. As can be seen in the related tables, the Loomis US HY product has the flexibility to invest in non-US securities if warranted. Additionally, shifting to a US focused product will somewhat mitigate currency risk.

We note that DPFP's current allocation is very similar to the benchmark aware US High Yield portfolio. We could also tighten the constraints on DPFP's current portfolio; however, we would not be closely aligned with the High Yield Full Discretion composite. Another benefit of being in the benchmark aware US High Yield product would be simplicity of portfolio performance tracking.

DALLAS POLICE & FIRE PENSION SYSTEM

Given the tighter constraints, higher conviction in the new portfolio managers to outperform in the benchmark aware product, and a modest fee savings, staff prefers to switch to the US HY product.

Sector Allocation (9/30/20)	DPFP (HYFD)	USHY
Bank Loans	-	-
Cash/Equivalents	3.21%	7.06%
Convertibles	5.25%	2.16%
Emerging Market Credit	3.91%	0.15%
Equity	-	0.05%
Hedge	-	-
High Yield Credit	80.69%	84.23%
Investment Grade Credit	6.55%	6.35%
Non-US Dollar	-	-
Securitized	0.39%	-

We also note that DPFP's account has a minimum of 50% in US High Yield, while the benchmark aware USHY product has a minimum of 75%.

	HIGH YIELD FULL DISCRETION	US HIGH YIELD
Portfolio Management Team	Matt Eagan, Brian Kennedy, Dan Fuss, Elaine Stokes, Todd Vandam	Matt Eagan, Elaine Stokes, Tom Stolberg, Todd Vandam
Benchmark	Bloomberg Barclays US Corporate High Yield Index	Bloomberg Barclays US Corporate High Yield - 2% Issuer Capped Index
Inception	1/1/1989	10/1/2009
Style/Strategy	Opportunistic; Seeks high total return through individual security selection	Benchmark aware and seeks to outperform the benchmark through a diversified and actively managed exposure to the US High Yield credit market
Target tracking error	No target	2% - 3% over full market cycle
Out-of-benchmark sector limits	Inv Grade 25%, Non-USD 10%, US Treasury & Agency 25%, MBS/CMBS/ABS 25%, Emerging Markets 50%, Bank Loans 25%, Convertibles 45%, Equities 5%	Typically 20% out-of-benchmark: US Treasury & Agency 10%, Inv Grade 10%, Bank Loans 10%, CDS 10%, Non-USD (hedged back to USD) 5%, Convertibles 10%
Quality constraints	None	Overall average credit quality must be B- or higher, as determined at the time of purchase. There is no minimum requirement for individual investment
Duration range	+/- 2 years relative to benchmark	+/- 2 years relative to benchmark
Derivatives	Use of treasury futures for duration mgmt purposes (eligible accounts)	Allows for futures, swaps, options, CDS, forwards

Recommendation

Given the conviction gained in the new portfolio managers, staff recommends keeping Loomis Sayles as the High Yield manager. However, staff recommends shifting to the benchmark aware US High Yield product that is less opportunistic. Staff has more conviction in the new portfolio managers to outperform in a benchmark aware strategy since they have historically run the benchmark aware High Yield portfolios at Loomis. In addition, Staff and Meketa recommend

DALLAS POLICE & FIRE PENSION SYSTEM

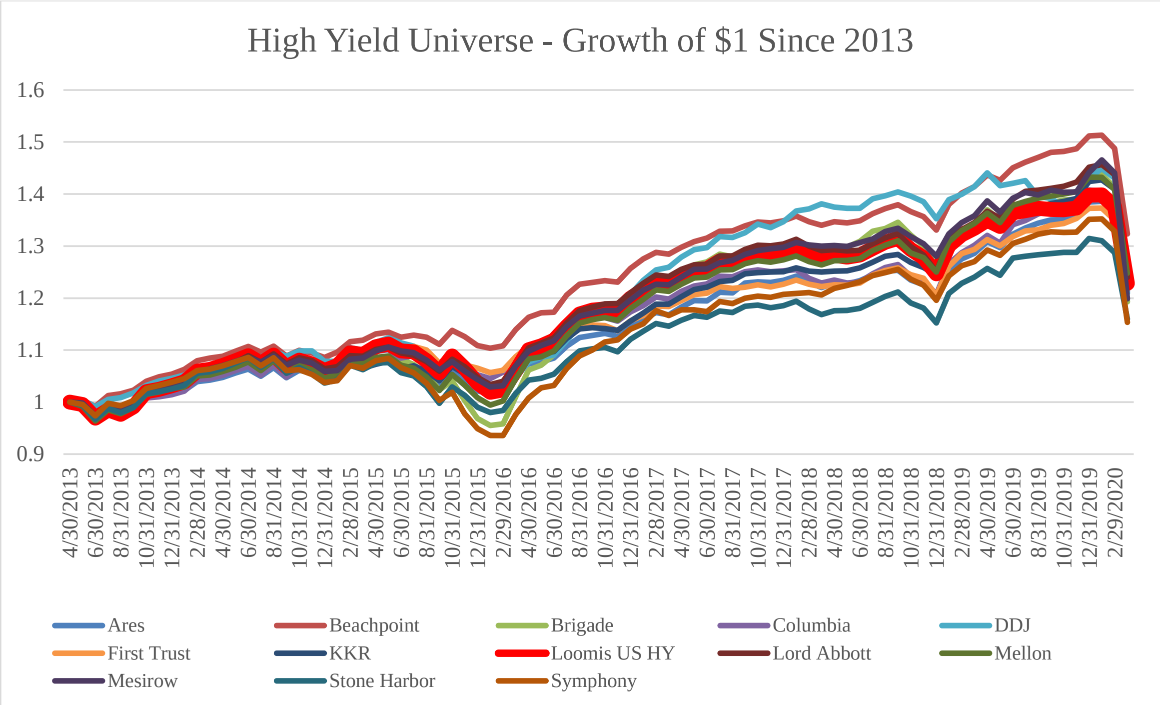
changing DPFP's High Yield benchmark from a global benchmark (Bloomberg Barclays Global High Yield Total Return) to a US benchmark (Bloomberg Barclays US Corp HY (2% Issuer Cap)).

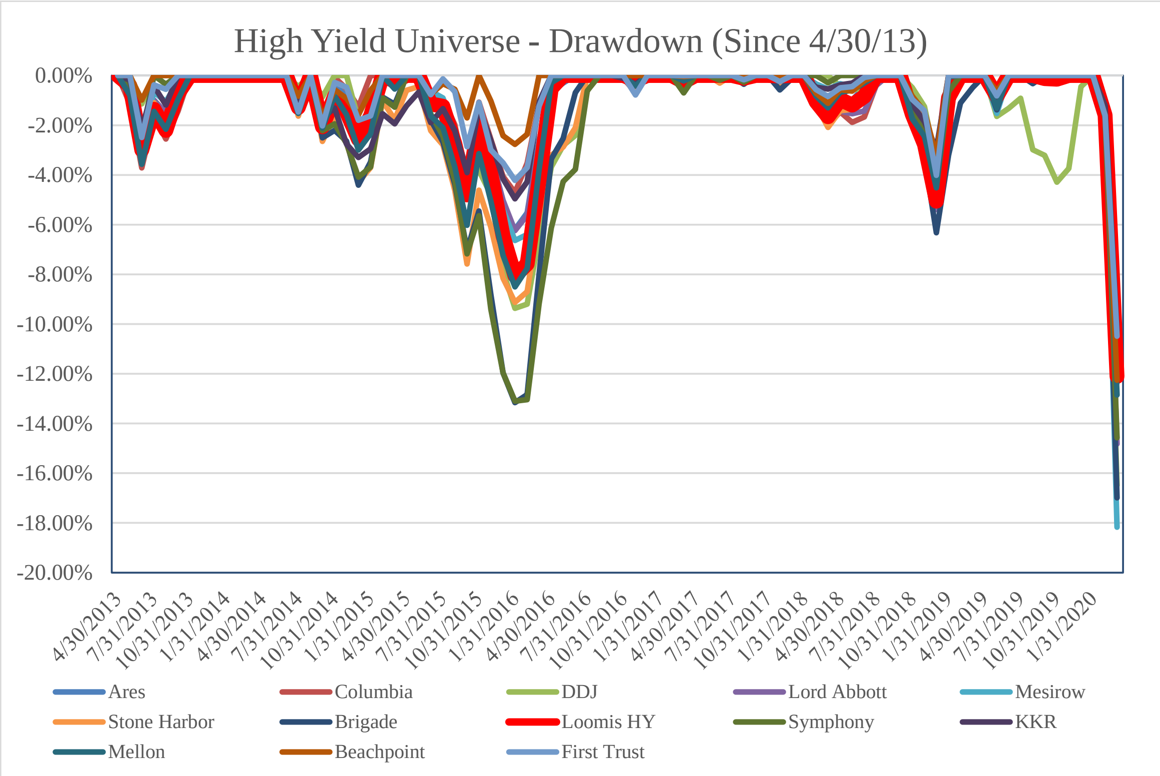
Meketa comments

Meketa concurs with Staff's analysis and recommendation. Staff followed a well-documented process, with multiple review periods, inclusive of alternative products. In particular, we agree with the move to a US-focused product, which limits to a degree currency risk. In addition, we highlight the fee savings and lower tracking error of the proposed strategy. Meketa notes there are other qualified managers in the space to offer sound domestic high yield exposure. That said, the Loomis offering Staff is recommending is also sound, and this transition likely can be accomplished more efficiently and at a lower cost than switching to other competing products, many of which have also higher fee loads. In short, we concur with the recommendation made by Staff and will be available at the upcoming IAC meeting to address this topic and answer any questions.

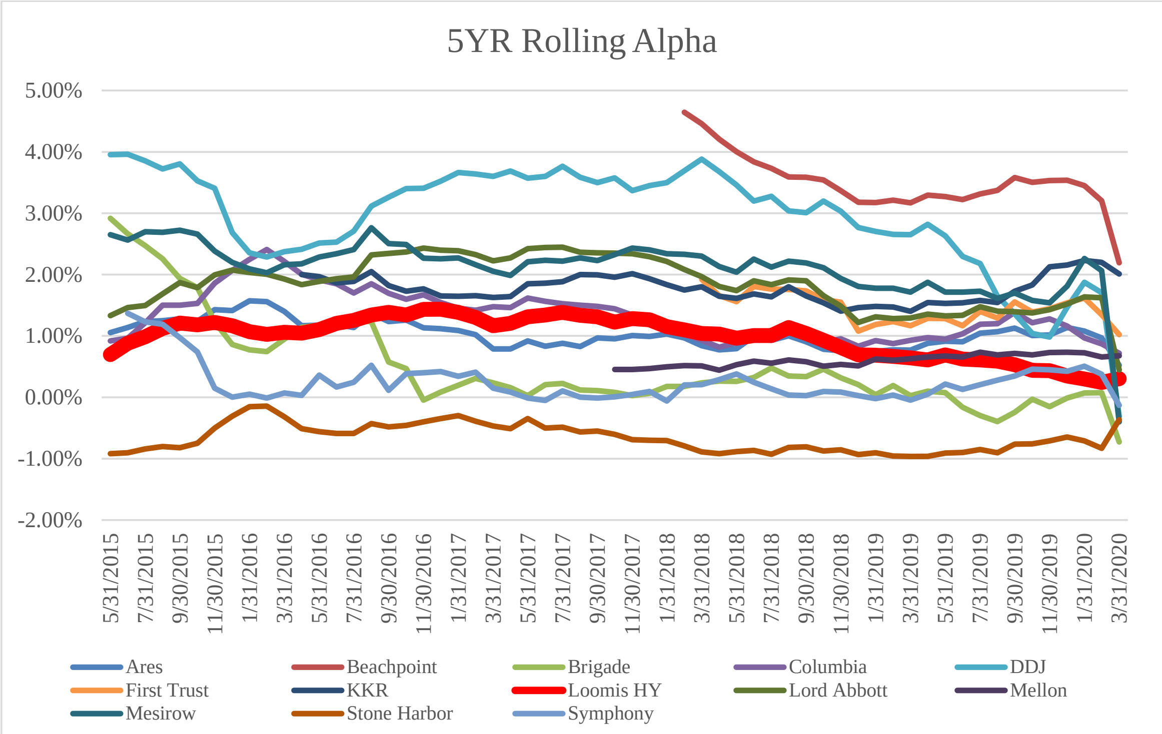
DALLAS POLICE & FIRE PENSION SYSTEM

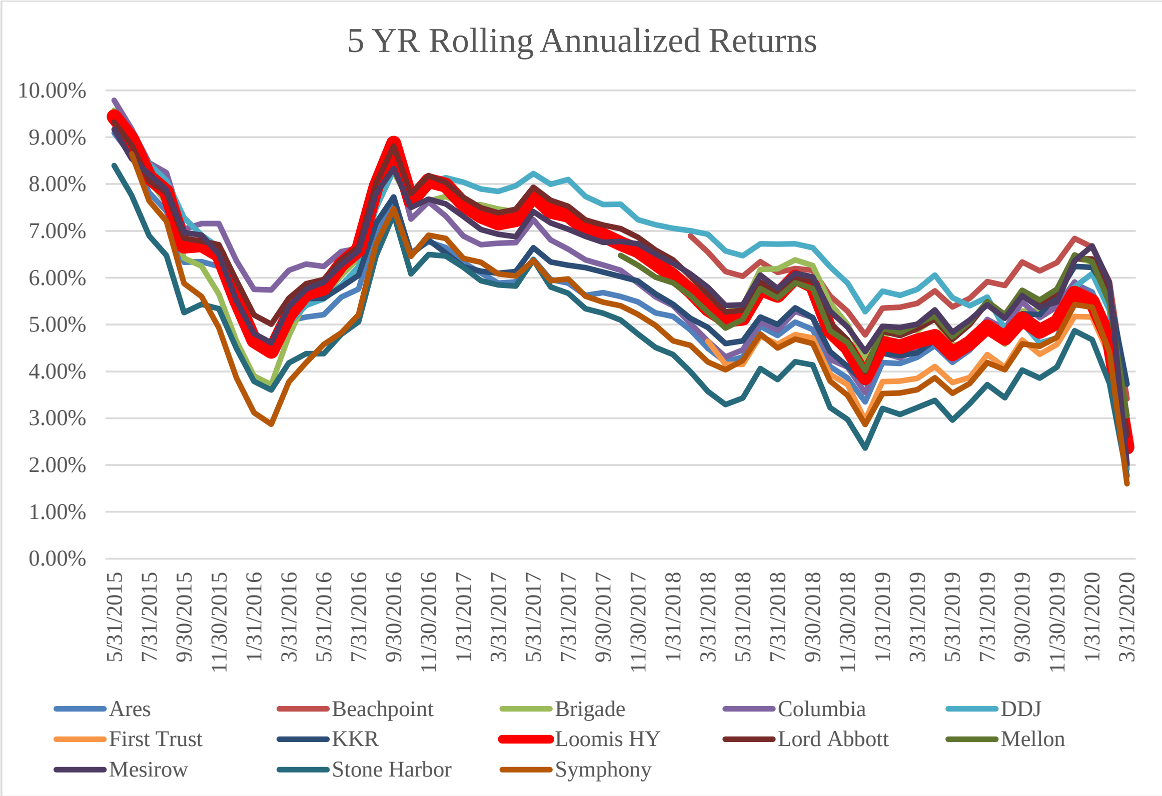
Appendix – High Yield Product Study



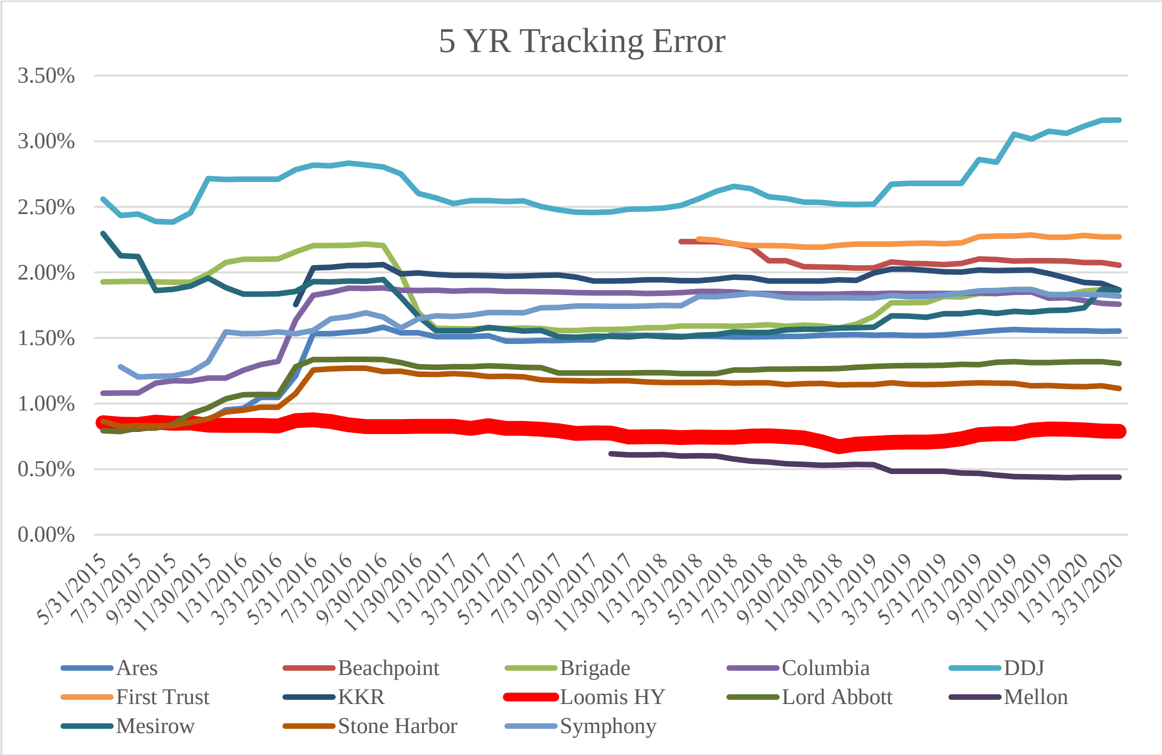


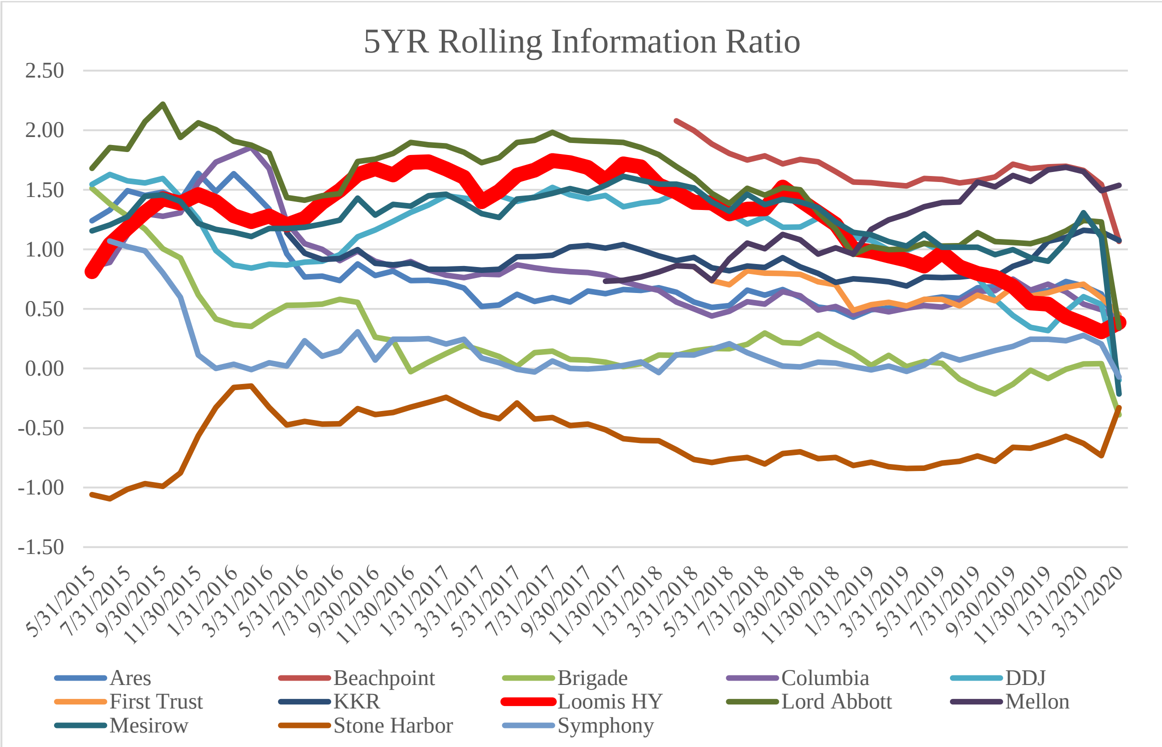
DALLAS POLICE & FIRE PENSION SYSTEM





DALLAS POLICE & FIRE PENSION SYSTEM





DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C13

Topic: **Global Bond Allocation**

Discussion: Staff and Meketa have analyzed the global bond allocation. Staff will discuss the analysis.

Staff Recommendation: **Available** at the meeting.

Regular Board Meeting – Thursday, November 12, 2020

DALLAS POLICE & FIRE PENSION SYSTEM

GLOBAL BOND ALLOCATION REVIEW

Date: November 12, 2020

To: DPFP Board of Trustees

From: DPFP Investment Staff

Subject: Global Bond Allocation

Executive Summary

Concerns have been raised by Staff, Meketa, and the Investment Advisory Committee regarding DPFP's Global Bond Allocation, including low return expectations for global bonds and Brandywine's performance. Globally low yields have made the asset class less attractive and resulted in a large percentage of returns being attributed to currencies.

Brandywine performance has been volatile and has underperformed the index since the beginning of 2018. Most recent performance concerns stem from 1Q20, when Brandywine fell 10.7% compared to a near-flat index return of -0.33%. This type of drawdown is not consistent with the risk mitigation role of the asset class. Most of the underperformance is attributed to an underweight in the US Dollar driven by Brandywine's relative purchase power parity (PPP) model that states the US Dollar value is over two standard deviations above from the mean. While this is in line with their philosophy and the US Dollar underweight has outperformed during the 2020 recovery, overall performance has been disappointing.

Staff recommends prudently liquidating the account and using the ~$67MM of proceeds to fund cash flow needs and contributions to Investment Grade Bonds and Emerging Market Debt.

Background

DPFP currently has a target allocation to Global Bonds of 4.0%, which is solely invested in Brandywine's Global Fixed Income strategy. DPFP has been with Brandywine since Dec 2004. Brandywine was founded in 1986 with headquarters in Philadelphia. They are known as a fixed income shop with $50 billion out of the total $75 billion firm assets under management (AUM) in fixed income. As of September 30th, 2020, DPFP has $67 million allocated to Brandywine representing 3.2% of DPFP's portfolio.

In April 2020, Meketa brought forward concerns regarding Brandywine's volatility and sensitivity to currencies in a globally low yielding environment. Staff agreed and brought up additional concerns regarding recent 3-year underperformance amplified by a -10.37% relative return for 1Q20.

At the May 28th, 2020 Investment Advisory Committee (IAC) meeting, Global Bonds and Brandywine were discussed and the IAC asked Staff to evaluate allocation options and make a recommendation at the next IAC meeting.

At the September 28th, 2020 IAC meeting, Staff and Meketa reviewed the situation with the IAC, who was supportive of eliminating the Global Bond allocation and liquidating the Brandywine account.

DALLAS POLICE & FIRE PENSION SYSTEM

Reallocation scenarios were also evaluated. Staff and the IAC lean toward a shifting the 4% allocation to Global Equity, but this decision should be incorporated into the 2021 asset allocation study.

Global Bond Asset Class Concerns

Currency has become a large part of non-US fixed income annual returns in recent years. The currency effect on Global Bonds is much more pronounced because of extreme low yields in the developed markets, which has led to lower returns and higher volatility. The Global Bond Allocation has become more of a currency play than a bond investment, which is not consistent with the risk mitigation role of the asset class. In addition, recent strength of the US Dollar has contributed to challenges for many global bond strategies. For example, since 2012 non-US currencies were a detractor from global bond returns every year except for 2017.

Yields in many global countries have seen an unprecedented move into negative territory. As a result, the Global Bond universe contains many unattractive international bonds. This leads Global Bond managers to consistently underweight positions in many developed countries and overweight Emerging Markets Debt and International Corporate Debt relative to the index leading to higher volatility.

Brandywine Philosophy and Process

Brandywine's investment goal is to capture interest income and generate principal growth through capital appreciation when market conditions permit. The investment philosophy is value oriented and focuses on purchasing dislocated securities with identifiable catalysts for mean reversion. The strategy focuses on real yields and does not invest in negative yielding debt. The strategy is driven by top down and macroeconomic factors with the belief that interest rates and currencies are regulators of economic activity. Currency exposures are actively managed to protect principal & enhance returns. The strategy is benchmark agnostic which can result in higher volatility and tracking error. Risk management is centered on avoiding permanent capital loss in the bonds and does not use risk budgeting to a benchmark. Guidelines are also in place avoid over concentrated risk in certain investments.

Brandywine Performance Expectations

Brandywine's performance objective is to exceed the Barclays Global Aggregate Index by 1.50% over the long term. We expect relative underperformance during periods of stress in global bond markets due to the value investment philosophy. However, we expect relative outperformance in market recoveries and risk-on environments.

Brandywine Performance

Performance has not followed expectations in recent years. Brandywine's performance objective to exceed the Barclays Global Aggregate Index by 1.50% was not met as excess returns have been negative over the past three years. Performance has been volatile and correlated to US Dollar strength. Brandywine underperforms when the US Dollar is strong and outperforms when the US Dollar is weak. This is due to an underweight to US Treasury bonds (TSY) and an overweight to Emerging Market Debt. This trend was magnified in 2020. In 1Q20, Brandywine underperformed their benchmark by 10.37% when the US Dollar rose during a risk-off environment. However, Brandywine outperformed the benchmark by 6.12% in 2Q20.

Quarterly Returns

DALLAS POLICE & FIRE PENSION SYSTEM

Date	3Q20	2Q20	1Q20	4Q19	3Q19	2Q19	1Q19	4Q18	3Q18	2Q18	1Q18
Brandywine	-1.56%	9.44%	-10.70%	3.93%	-1.51%	3.50%	3.13%	-1.27%	-0.31%	-6.20%	4.07%
*Index**	*-0.36%*	*3.32%*	*-0.33%*	*0.48%*	*0.71%*	*3.29%*	*2.19%*	*1.19%*	*-1.46%*	*-3.35%*	*2.50%*
Excess Return	-1.20%	6.12%	-10.37%	3.45%	-2.21%	0.21%	0.94%	-2.46%	1.15%	-2.85%	1.58%

**Bloomberg Barclays Global Aggregate Index*

Trailing Returns

Date (as of 9/30/20)	YTD	1 YR	3 YR	5 YR	SI (12/04)
Brandywine	0.90%	4.87%	1.95%	4.11%	4.54%
*Index**	*5.72%*	*6.24%*	*4.10%*	*3.92%*	*3.45%*
Excess Return	-4.82%	-1.37%	-2.15%	0.19%	1.09%

**Bloomberg Barclays Global Aggregate Index*

The underweight to the US Dollar started in 2013 with the allocation declining from 50% down to an unprecedented 20% in 2016. Since 2016, the USD weight has been as low as 10% in late 2017 and has not been above 25%, vs. market weight of 40% to 45%. While that is consistent with their philosophy and process, the attribution for the product has recently been affected more by currency rather than bonds. The value add has gone from 66% bonds and 33% currency to 33% bond and 66% currency. We do not see any problems with bond selection, but recent currency positioning has detracted from performance.

Recommendation

Staff recommends gradually liquidating the Brandywine investment as follows:

1. Transfer ~$11 million to Longfellow to fully fund the 4.0% Investment Grade Bond allocation.
2. Transfer ~$16 million to Ashmore Emerging Market Debt to increase their allocation from 1.1% to 2.0% vs. the 4.0% target. This would be a higher priority than stipulated in the asset allocation implementation plan (IPS Appendix B1) but is recommended to somewhat offset similar exposure from Brandywine.
3. Prudently liquidate the remaining Brandywine assets (~$40 million) and use the proceeds to fund cash flow needs.
4. Private market distributions would be deployed in accordance with the asset allocation implementation plan (IPS Appendix B1), except there would be no contributions to Global Bonds.

MEKETA
INVESTMENT GROUP

5796 Armada Drive
Suite 110
Carlsbad, CA 92008
760.795.3450
Meketa.com

MEMORANDUM

TO: Board of Trustees, Dallas Police & Fire Pension Fund
FROM: Leandro Festino, Aaron Lally, Alli Wallace, Sidney Kawanguzi, Meketa Investment Group
DATE: November 5, 2020
RE: Review of Global Bonds Allocation

Executive Summary

Investment Staff, the Investment Advisory Committee and Meketa have expressed concerns regarding DPFP's Global Bonds allocation, citing low return expectations for global bonds and the pronounced effect of currency management as a source of returns that introduces more volatility to the asset class.

The topic was discussed in-depth at the September 28th, 2020 IAC Meeting. The IAC was supportive of eliminating the Global Bonds allocation and liquidating the Brandywine account. Staff and the IAC favor re-allocating to Global Equity. Staff noted that this reallocation should be incorporated into the 2021 asset allocation study. Meketa concurs with this timeline and plan of action.

Background

Dallas Police and Fire Pension Fund (DPFP) currently has a 4% target allocation to Global Bonds as part of the asset allocation approved in 2018 by the Board. The Global Bonds allocation is intended to provide risk mitigation as a counter-balance to equities, as well as providing interest rate sensitive exposure. DPFP's global bonds allocation is currently managed by Brandywine Global ("Brandywine"). As of September 30, 2020, Brandywine managed $67 million for DPFP. The portfolio has returned an annualized net-of-fees return of 4.5% vs. the index return of 3.5% since inception on December 17, 2004.

While Meketa holds a positive view of Brandywine, we have discussed with Staff and the Investment Advisory Committee (IAC) the suitability of a global fixed income allocation in the DPFP portfolio. In April 2020, Meketa communicated with Staff a desire to review the Global Bonds allocation, noting the following concerns;

- With yields at or close to zero, currency has a pronounced effect on returns for global bonds, and indeed has contributed meaningfully (positively and negatively) to returns for Brandywine.
- Given the Fund's liquidity issues, every liquid allocation needs to be evaluated strategically.

Staff also noted Brandywine's underperformance relative to its benchmark over the trailing 3-year period and particularly over the first quarter of 2020.

November 5, 2020

Comments on Brandywine

Meketa's Public Markets Research team maintains a positive view of Brandywine and has other clients invested in Brandywine's similar product - the Global Opportunistic Fixed Income ("GOFI") strategy. Brandywine also manages a Global Fixed Income strategy that has a higher quality restriction. The custom strategy Brandywine manages for DPFP most closely resembles the Opportunistic (GOFI) strategy.

- Brandywine is a top down, macro-driven, value focused, benchmark-agnostic global fixed income manager.
- Meketa's view on the DPFP/ GOFI strategy is that it is a sound investment product executed by a team of experienced professionals with expertise in the asset class. The team focuses on real yields across the world looking for a combination of attractive real yields and/or undervalued currency.
- Meketa's last meeting with Brandywine was held on August 25, 2020.

Currency as a Return Driver

Historically low yields near or below zero in developed markets have amplified the contribution of currency to global bonds total returns. Meketa's analysis of this theme is provided in Appendix 1, with the key observation that currency has become a large part of non-US fixed income annual returns in recent years, and detracted from performance more than it has helped. Furthermore, US dollar strength has posed a serious challenge for global fixed income managers.

Meketa's view is that this low yield environment is likely to persist in the medium term, and as such, currency headwinds will continue to be a challenge for global fixed income allocations.

One of the tenets of Brandywine's investment philosophy is active currency management. Analyses done independently by Staff and Meketa (Appendix 1) highlighted the higher contribution of currency management to returns, as opposed to bond selection in recent periods. Currency has detracted from Brandywine's annual returns in six of the ten years since 2009[1], compared to eight for the index.

The pronounced role that active currency management has had on returns historically, and is likely to have going forward, makes the strategy more of a currency bet, than a global bond allocation. This is not the intended role the allocation is expected to serve in the overall DPFP asset allocation.

[1] Source: Brandywine Presentation; September 3, 2020.

November 5, 2020

Conclusion

All Committee members of the IAC present at the September 2020 IAC meeting were supportive of eliminating the Global Bonds allocation. Staff recommends waiting for the Meketa 2021 Asset Study to be completed (expected spring 2021) before determining where to permanently reallocate the 4% Global Bond target weight in the overall asset allocation policy.

Meketa concurs with the decision to eliminate the Global Bond allocation and is supportive of the suggested reinvestment plan and timeline on the eventual asset allocation decision.

Appendix 1: Global Bond Review

LF/AL/AWS/SK/sf

November 5, 2020

Disclosure

WE HAVE PREPARED THIS REPORT (THIS "REPORT") FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE "RECIPIENT").

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

INFORMATION USED TO PREPARE THIS REPORT WAS OBTAINED FROM INVESTMENT MANAGERS, CUSTODIANS, AND OTHER EXTERNAL SOURCES. WHILE WE HAVE EXERCISED REASONABLE CARE IN PREPARING THIS REPORT, WE CANNOT GUARANTEE THE ACCURACY OF ALL SOURCE INFORMATION CONTAINED HEREIN.

CERTAIN INFORMATION CONTAINED IN THIS REPORT MAY CONSTITUTE "FORWARD - LOOKING STATEMENTS," WHICH CAN BE IDENTIFIED BY THE USE OF TERMINOLOGY SUCH AS "MAY," "WILL," "SHOULD," "EXPECT," "AIM", "ANTICIPATE," "TARGET," "PROJECT," "ESTIMATE," "INTEND," "CONTINUE" OR "BELIEVE," OR THE NEGATIVES THEREOF OR OTHER VARIATIONS THEREON OR COMPARABLE TERMINOLOGY. ANY FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION ARE BASED UPON CURRENT ASSUMPTIONS. CHANGES TO ANY ASSUMPTIONS MAY HAVE A MATERIAL IMPACT ON FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS. ACTUAL RESULTS MAY THEREFORE BE MATERIALLY DIFFERENT FROM ANY FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION.

PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

MEKETA
INVESTMENT GROUP

Appendix 1

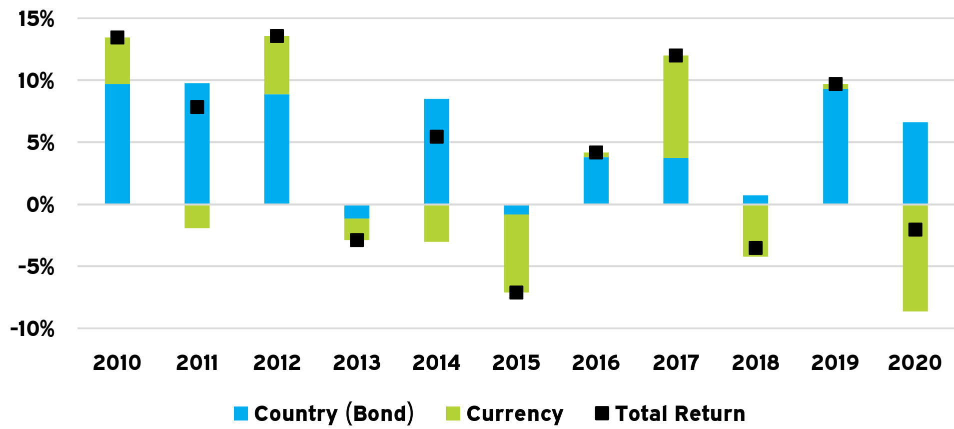
Global Bond Review

MEKETA

Dallas Police & Fire Pension System

Global Bond Review

Brandywine Global: Dallas Police and Fire
Currency Contribution to Returns (Annual)
As of June 30, 2020



Brandywine Global: Dallas Police and Fire

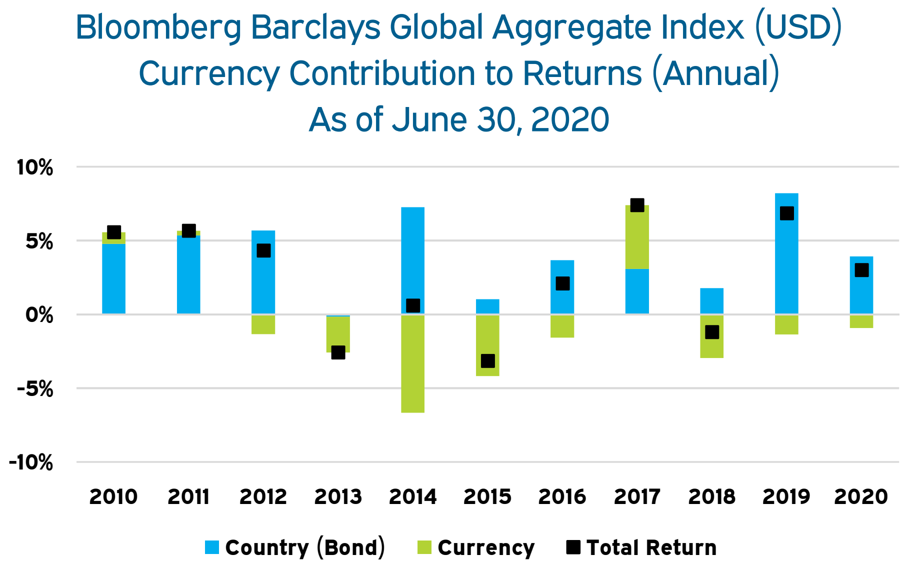
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Country (Bond)	9.69%	9.76%	8.86%	-1.17%	8.48%	-0.84%	3.78%	3.73%	0.70%	9.29%	6.61%
Currency	3.74%	-1.94%	4.70%	-1.73%	-3.04%	-6.29%	0.38%	8.26%	-4.24%	0.39%	-8.66%
Total Return	13.43%	7.83%	13.56%	-2.90%	5.43%	-7.13%	4.16%	11.99%	-3.54%	9.68%	-2.05%

- Currency has become a large part of annual returns in recent years. In four of the last six years, the proportion of returns from currency was significantly larger than the proportion from bond returns.
- In seven of the last eight years, currency was either a meaningful detractor from returns (five years) or was insignificant (two years). Only in 2017 did currency enhance returns – the first time since 2012.

MEKETA

Dallas Police & Fire Pension System

Global Bond Review



Bloomberg Barclays Global Aggregate Index (USD)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Country (Bond)	4.77%	5.33%	5.67%	-0.16%	7.25%	1.03%	3.67%	3.06%	1.77%	8.20%	3.91%
Currency	0.77%	0.31%	-1.35%	-2.44%	-6.66%	-4.18%	-1.58%	4.33%	-2.97%	-1.36%	-0.93%
Total Return	5.54%	5.64%	4.32%	-2.60%	0.59%	-3.15%	2.09%	7.39%	-1.20%	6.84%	2.98%

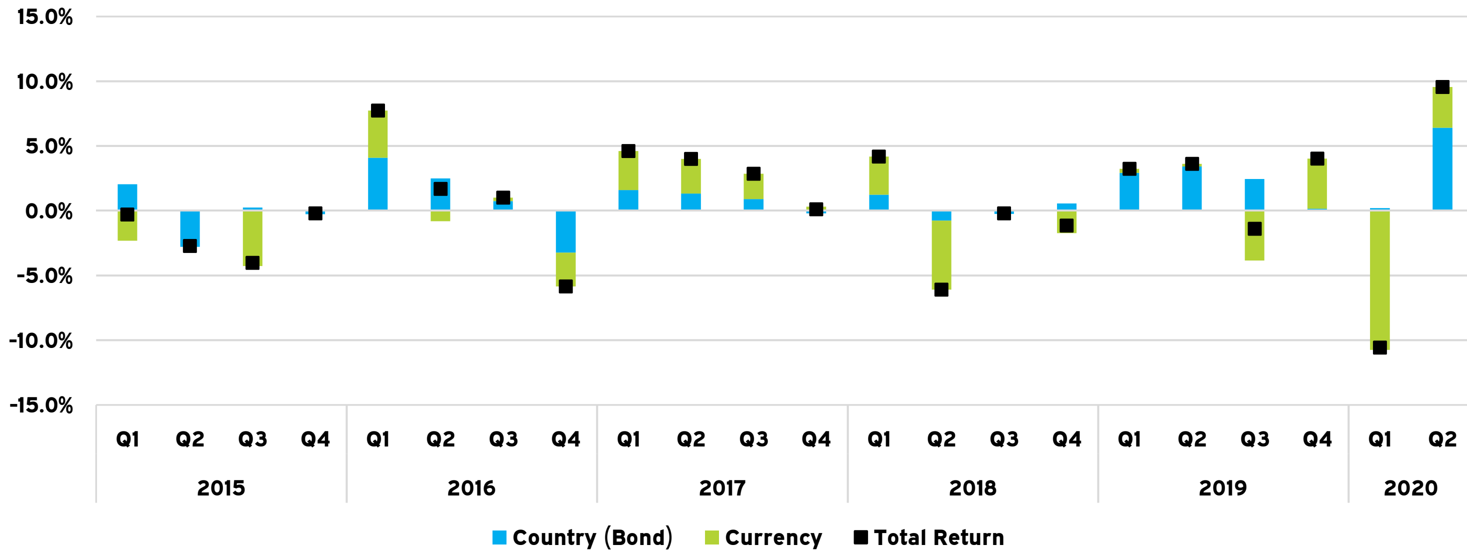
- Similarly, the index reflects the challenge of currency management. In eight of the last nine years, currency was a detractor from returns. Only in 2017 did currency enhance returns – the first time since 2011.

MEKETA

Dallas Police & Fire Pension System

Global Bond Review

Brandywine Global: Dallas Police and Fire Currency Contribution to Returns (Quarterly) As of June 30, 2020



- Quarterly results also show currency being a significant proportion of returns. The impact of currency has been larger than bonds in 12 of the last 22 quarters, or 55% of the time.
- On a quarterly basis, currency is often a detractor from performance. In the observed 22 quarters, currency was either a meaningful detractor from returns (eight quarters) or was insignificant (seven quarters). Currency significantly enhanced returns in seven quarters (32% of the time).

MEKETA

Dallas Police & Fire Pension System

Global Bond Review

Brandywine Global: Dallas Police and Fire Review

Summary

- Currency has become a large part of international fixed income annual returns in recent years. The strength of the US Dollar has contributed to challenges for many bond strategies investing outside the US.
- Additionally, in a world of unprecedented negative yields in a growing number of countries, the index reflects many unattractive international bonds. As a result, international bond managers like Brandywine Global exhibit consistently underweight positions in many developed countries in the index and overweight positions in Emerging Markets Debt and corporate bonds of international companies.
- The off-benchmark positions in emerging markets debt and corporate debt result in increased tracking error. This can lead to potential large dispersion of returns (both positive and negative) relative to the index. This is not necessarily a bad thing as long as the IAC/Board understand this and recognize the strategy has the potential to significantly underperform its benchmark at times.
- Another unintended consequence of more corporate bond positioning is that the higher proportion of corporate bonds can be more highly correlated with US equities, having a dampening impact on diversification.

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C14

Topic: **Lone Star Investment Advisors Update**

Portions of the discussion under this topic may be closed to the public under the terms of Section 551.071 of the Texas Government Code.

Discussion: Investment Staff will update the Board on recent performance, operational, and administrative developments with respect to DPFP investments in funds managed by Lone Star Investment Advisors.

Regular Board Meeting – Thursday, November 12, 2020

DALLAS POLICE & FIRE PENSION SYSTEM

Lone Star Investment Advisors

LSCRA & LSCG Extensions

LSGC & LSCRA Extension Recommendation

- Staff believes DPFP interests are best served by extending the Lone Star Growth Capital (LSGC) and Lone Star CRA (LSCRA) funds with no management fee. Staff believes the rationale for the extension remains unchanged.
- The LSGC fund term was extended at no fee from its original expiration date of October 4, 2018 to April 25, 2019 to be co-terminus with LSCRA initial fund term expiration.
- In April 2019, both funds were extended for six months to October 25, 2019 with no management fee.
- In November 2019, both funds were extended for an additional six months to April 25, 2020 with no management fee.
- In May 2020, both funds were extended for an additional six months to October 25, 2020.
- LSIA is recommending extensions identical to the terms of the previous extension – six months, free of management fees through April 25, 2021.

Recommendation: Authorize the Executive Director to enter into six-month extensions with no management fee on the Lone Star Growth Capital and Lone Star CRA funds.

DALLAS POLICE & FIRE PENSION SYSTEM

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C15

Topic: **Legal issues - In accordance with Section 551.071 of the Texas Government Code, the Board will meet in executive session to seek and receive the advice of its attorneys about pending or contemplated litigation or any other legal matter in which the duty of the attorneys to DPFP and the Board under the Texas Disciplinary Rules of Professional Conduct clearly conflicts with Texas Open Meeting laws.**

Discussion: Counsel will brief the Board on these issues.

Regular Board Meeting – Thursday, November 12, 2020

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C16

Topic: **Closed Session - Board serving as Medical Committee**

Discussion of the following will be closed to the public under the terms of Section 551.078 of the Texas Government Code:

Application for death benefits for disabled child

Discussion: Staff will present an application for consideration by the Board of a survivor benefits for a disabled child in accordance with Section 6.06(n) of Article 6243a-1.

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #D1

Topic: **Public Comment**

Discussion: Comments from the public will be received by the Board.

Regular Board Meeting – Thursday, November 12, 2020

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #D2

Topic: **Executive Director's report**

a. Associations' newsletters
- NCPERS Monitor (October 2020)
- TEXPERS Pension Observer
  http://online.anyflip.com/mxfu/alie/mobile/index.html

b. Open Records

c. Operational Response to COVID-19

Discussion: The Executive Director will brief the Board regarding the above information.

Regular Board Meeting – Thursday, November 12, 2020

THE NCPERS

MONITOR

The Latest in Legislative News

October 2020

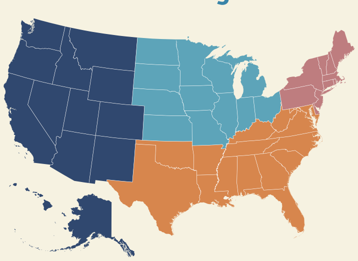
In This Issue

Photo illustration © 2020, Dreamstime

Regarding promises to deliver big on infrastructure legislation, this election season is no different and there is no doubt that bipartisan legislative action on infrastructure is long overdue.

Photo illustration © 2020, Shutterstock.com

It's all hopeless. That seems to be the attitude of critics of public pensions whenever a funding gap occurs. The fact is, there are plenty of things we can do to address funding gaps in public pension plans.



This month, we will highlight New Jersey, Kansas, Puerto Rico and Colorado.

Report: Rising Risks and Costs Threaten Americans' Retirement Security

The hurdles to a secure retirement for Americans are becoming more daunting than ever as the shift from pensions to 401(k) pushes retirement risk onto workers' shoulders.

That is the key finding of a new study, [The Growing Burden of Retirement: Rising Costs and More Risk Increase Uncertainty], published by the National Institute on Retirement Security (NIRS).

Rising costs of housing, health care and long-term care are major threats to financial security during retirement, the report found. At the same time, the shift from defined benefit to defined contribution plans means that risks are being "unpooled," or transferred to individuals rather than spread out across a large group. This unpooling of risk is adding a new layer of volatility to the retirement equation.

Rules of thumb about how much Americans should aim to save for retirement are of limited value, because retirement planning is inherently unpredictable at the individual level, the report said. "No one knows how long they will live -- it could be five years or 25 years after retirement. Preparing for retirement across those two timespans is vastly different," the report noted.

For example, how a future retiree answers the unknowable question of how long income will be needed in retirement, referred to as longevity risk, is a tremendous variable. Probabilities can be calculated, but they are more useful when assets are pooled than when an individual is managing his or her own retirement assets.

CONTINUED ON PAGE 5

Public Pensions and Infrastructure Investing

By Tony Roda

Photo Illustration © 2020, Dreamstime.com

Each recent Congress and presidential administration has begun with grand promises of comprehensive infrastructure investment legislation and the resulting massive numbers of new jobs and economic growth. Unfortunately, after running into the age old question of how to pay for the infrastructure projects, Congress and presidents of both parties have shown little appetite for rolling up their sleeves and finding an acceptable solution.

Regarding promises to deliver big on infrastructure legislation, this election season is no different and there is no doubt that bipartisan legislative action on infrastructure is long overdue.

If infrastructure legislation moves in 2021, the public pension community should be aware of some relevant proposals that have been discussed in recent years. One proposal is being developed by members of the New Jersey Congressional Delegation. Known as the Pension Infrastructure Finance and Innovation Act (PIFIA), it would authorize federal dollars to be borrowed by a state or locality with over one million in population in the form of a 30-year loan. Then, the borrower would transfer the monies to the pension plan(s) that it sponsors.

Under PIFIA, the pension plan must use 10-20 percent of the loan proceeds (depending on population density) for public infrastructure investments, as defined broadly in the draft bill. In theory, providing the pension plan with the new money would mean that the plan's unfunded liability would be reduced and, consequently, the borrower's actuarially determined contribution (ADC) would be reduced.

The borrower then must use 50 percent of any budget relief it realizes for public infrastructure projects starting the fourth year and for every year thereafter. The first three years of budget relief would be used for expenses related to Covid-19. Of course, there will be unique aspects of each sponsor's funding structure, e.g., statutory employer contribution funding rates and/or periodic payments made to lower the unfunded liabilities, that will affect how much relief would be realized by the sponsor.

PIFIA also includes a tax title, which tracks previous legislation, H.R. 6276 (115th Congress) introduced by then-Rep. Mike Bishop (R-MI). The provisions are designed to promote investments in public infrastructure projects by state and local governmental pension plans by making two changes to the federal tax code.

First, it would amend Section 141(b) to state that use by a public pension fund of public infrastructure property shall not be treated as private business use. It goes on to define the term public pension fund as "a pension fund established or maintained for employees or former employees of a State, political subdivision of a State, or an agency or instrumentality thereof." The bill also contains a detailed definition of public infrastructure property.

Second, the legislation would amend Section 148(b) to state that the term "investment-type property" shall not include public infrastructure property. This clarification of tax law is crucial because without it the bonds used to finance the public infrastructure property would almost certainly be treated as arbitrage bonds and would lose their tax-exempt status.

CONTINUED ON PAGE 5

NCPERS Executive Directors Corner

NCPERS Delivers 10 Constructive Approaches to Closing Public Pension Funding Gaps

Photo illustration © 2020, shutterstock.com

It's all hopeless. That seems to be the attitude of critics of public pensions whenever a funding gap occurs.

File that ill-informed comment right next to "How did this happen?" (The answer to the latter question is usually a no-brainer. Although there are a number of possible reasons, far too often it's very simple. A shortfall developed after a government withheld its payments to the pension fund while cheerfully requiring workers to keep forking over their share. No one should act surprised when a gap develops in such a case.)

The fact is, there are plenty of things we can do to address funding gaps in public pension plans. The idea that we can't is both helpless and defeatist thinking. Simplistic solutions such as throwing up our hands and shutting down the plan are far too drastic, and underscore how poorly many lawmakers understand how pensions work and why they are provided in the first place.

The fact is, there are plenty of things we can do to address funding gaps in public pension plans. The idea that we can't is both helpless and defeatist thinking.

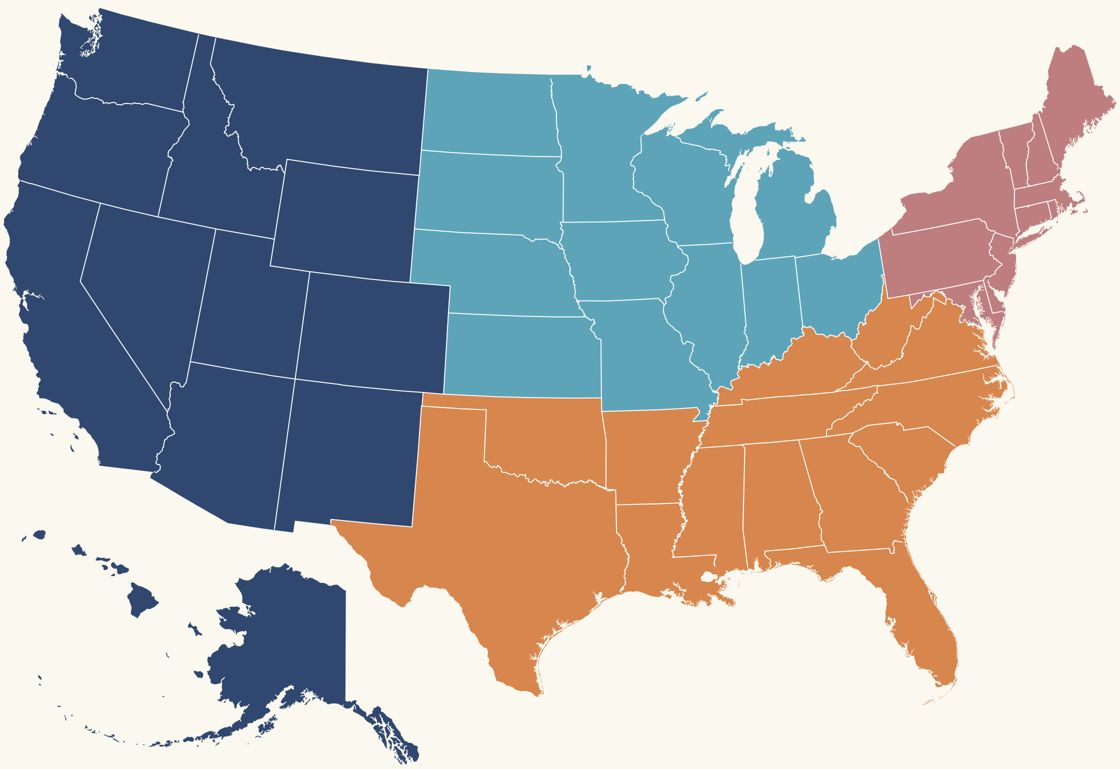
A new research paper from NCPERS, "Ten Ways to Close Public Pension Funding Gaps," offers practical, common-sense solutions to counteract ill-advised quick fixes. The paper describes alternative approaches that public pension systems and their government relations team should consider, understand, and bring up in discussions, debates, and negotiations.

We at NCPERS believe that long-term pension funding should be aligned with the long-term economic capacity of state and local governments. We reject the idea that long-term pension policy should reflect short-term fiscal tactics. We also believe that fiscal policy should encourage behaviors that are ultimately in the best interests of our states and localities, including having the right incentives in place to support the delivery of critical public services—and removing disincentives.

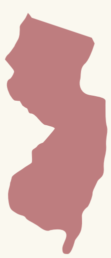
CONTINUED ON PAGE 6

NCPERS Around the Regions

This month, we will highlight New Jersey, Kansas, Puerto Rico and Colorado.



NORTHEAST: New Jersey



A $4.7 billion pension payment was part of the annual budget that Governor Phil Murphy signed into law on September 29. The payment was $200 million less than the Democratic governor had requested, and represents approximately 78% of the actuarial requirement.

Borrowings would make up $4.5 billion, or 14%, of the $32.7 billion budget, which the state assembly approved five days earlier.

The budget includes a third consecutive record pension payment, Murphy said, "each bigger than the year before."

"It's the right thing to do," Murphy said. "We have to regain our trust as a state whether its employees or retirees in the system, whether it's our rating agencies."

The budget covers a shortened nine-month fiscal year that starts October 1. New Jersey tacked three months onto fiscal year 2020 amid economic uncertainty related to the Covid-19 pandemic.

On his third annual attempt, Murphy pushed through a millionaire's tax, raising the income tax rate to 10.75%, from 8.97%, on taypayers with incomes exceeding $1 million. This measure is expected to generate $400 million in additional revenue. The budget also imposes a 2.5% surtax on corporations with income exceeding $1 million, which will yield $210 million, and will raise $102.7 million from an assessment tied to health-maintenance organization premiums. Other tax increases, such as a proposed $143.1 million from cigarettes and $26.3 million from limousine services, boat sales and firearms and ammunition purchases, were cut from the budget.

The new debt incurred under the budget would be repaid over 10 years at an annual coupon rate of around 2%, news reports said.

CONTINUED ON PAGE 7

RISING RISKS AND COSTS CONTINUED FROM PAGE 1

Unless the retirement infrastructure is rebuilt, older Americans may be forced to turn to their families or government programs to meet their most basic needs after they leave the workforce, the report said. "These systemic problems will be unsurmountable for too many families," said the report's co-author and NIRS executive director, Dan Doonan.

The report offers a roadmap to understanding the difficulties Americans face in achieving a financially secure retirement. Among the observations: Saving early and continuously during working years is easier said than done. Marking timing, interest rates, and longevity risk can derail carefully laid retirement plans. More Americans over 65 are carrying mortgage debt into retirement. Healthcare costs are rising for all Americans, and especially older Americans. And long-term care solutions are out of reach for many people.

The report identifies four public policies would improve retirement outcomes. They are: addressing long-term care costs, creating stronger tax provisions, improving lifetime benefit options, and expanding Social Security. It also highlight creative solutions, such as a program underway in Washington State to cover long-term care costs using a social insurance model, private sector efforts to create lifetime income options for retirees, and the push by states and municipalities to establish SecureChoice-style workplace retirement programs for employees who lack access to workplace plans. ◆

INFRASTRUCTURE INVESTING CONTINUED FROM PAGE 2

Another proposal has been in development for some time and NCPERS has provided input to House Budget Committee Chairman John Yarmuth (D-KY) on his draft legislation to create a National Infrastructure Development Bank. The Bank would be financed through the sale of $75 billion worth of Rebuild America Bonds on the credit of the U.S. An additional $300 billion in bonds could be issued at the request of the Bank.

Under Yarmuth's draft legislation, the bonds would mature in 40 years and could not be resold until 10 years after the date of issuance. The bonds would bear an interest rate of 200 basis points above the 30-year Treasury bond. Interestingly for the public pension plan community, the bonds may be purchased only by pension plans – plans governed by the Employee Retirement Income Security Act (ERISA) and governmental plans as defined by ERISA, which includes state and local governmental pension plans.

Please know that NCPERS will closely monitor developments on infrastructure legislation that would impact public pension plans. In a few shorts months, we will know if Congress and the White House are able to find a path forward on this much-needed legislation. ◆

Tony Roda is a partner at the Washington, D.C. law and lobbying firm Williams & Jensen, where he specializes in federal legislative and regulatory issues affecting state and local governmental pension plans. He represents NCPERS and statewide, county, and municipal pension plans in California, Colorado, Georgia, Kentucky, Ohio, Tennessee, and Texas. He has an undergraduate degree in government and politics from the University of Maryland, J.D. from Catholic University of America, and LL.M (tax law) from Georgetown University.

EXECUTIVE DIRECTORS CORNER CONTINUED FROM PAGE 3

As the paper notes, the ultimate way to close public pension funding gaps is by reforming revenue systems and closing tax loopholes. But that is admittedly a long road, and it's not something pension trustees and administrators can control.

There are, however, some areas where trustees and administrators have influence, control or both. As the title indicates the paper advances 10 ideas. They include a new approach to limited pension obligations bonds and building on recently adopted emergency programs of the Federal Reserve System to buy underperforming assets.

And the list goes on. Other options include establishing bridge loans to increase liquidity; securitizing public assets; creating dedicated revenue stream, adopting a pension stabilization fund; mandating monthly employer contributions; exploring consolidation; exploring auto-triggers, in which employer and employee contributions to the plan are adjusted based on investment returns and changes in life expectancy; and reforming revenue systems and closing tax loopholes.

State and local public pensions vary in design and financial condition, and as a result there is no one-size-fits-all solution when a gap occurs. But there are ideas and approaches which every public pension system should become familiar with. The paper is a jumping-off point for public pension systems, providing the ideas and tools pensions need to be positive, creative and constructive when facing financing shortfalls. ◆

NCPERS Center for Online Learning

October 6, 2020:

COVID 19 – Investment Opportunities in Fixed Income for Public Plans

https://us02web.zoom.us/webinar/register/5716014948755/WN_cGzsTuucSE2m_TgX1qnefw

October 13, 2020:

Retiree Medical Trust: How Employers and Employees can Use Pre-Tax Dollars to Create a Lifetime Medical Reimbursement Plan

https://us02web.zoom.us/webinar/register/3616014949120/WN_Mx3APD1HR4aDLjJuWaDbmA

October 20, 2020:

Discussion of Proposed Changes to the HELPS Tax Benefit

https://us02web.zoom.us/webinar/register/6916014949434/WN_uRhbJv45S--B8wO-7its9Q

October 27, 2020:

U.S. Listed Companies from China- Buyer Beware

https://us02web.zoom.us/webinar/register/4716014949717/WN_LdUjjiRnSgmwU21PxCPKrA

2020 Webinar Series

NCPERS Around the Regions

AROUND THE REGIONS CONTINUED FROM PAGE 4

MIDWEST: Kansas

Governor Laura Kelly warned on September 14 that Kansas may face "serious cuts across the board," including reductions in pension contributions in fiscal year 2022 if it does not receive federal aid to rebound from the Covid-19 pandemic.

"It will be drastic and very harmful to Kansas and to our local municipalities," Kelly said. She also mentioned education and transportation as areas that could feel the impact "unless we get help from the federal government to backfill revenues on the state and local levels."

Kelly made the comments at a press conference on the impact of Covid-19 in the state. She said she does not anticipate further cuts in fiscal year 2021, "but that has to stay open."

The Kansas Public Employee Retirement System reported it had a combined unfunded actuarial liability of $9 billion at the end of 2019, down from $9.2 billion one year earlier. The funding ratio improved to 70% at year-end 2019, from 68% at the end of 2018. The ratio has climbed steadily from a low of 56% at the end of 2012.

SOUTHEAST: Puerto Rico

Protections for public pensions were a key element of Democratic presidential nominee Joe Biden's plan for Puerto Rico.

Massive damage inflicted in 2017 by Hurricane Maria devastated the island, which had already been in a restructuring process since 2016, when the federal government created the Financial Oversight and Management Board of Puerto Rico to manage public finances.

The conditions imposed by the fiscal control board have led to major cuts in public education, infrastructure spending, and pensions on Puerto Rico, leading some residents to say it has made recovering from the series of disasters even harder.

The plan put forth by Biden and his running mate, Senator Kamala Harris of California, is dubbed "The Biden-Harris Plan for Recovery, Renewal and Respect for Puerto Rico."

Among its tenets, the plan aims to "ensure low- and moderate-income people and pensioners are protected in any debt restructurings. Public pensions are critical to the financial security of 25% of Puerto Rico's families and hence to the local economy's health. Since 2013, pensioners have seen dramatic reductions in their benefits: retirement ages have been increased, employee contributions increased, cost of living increases eliminated, and pensions outright cut. Biden will work to protect pensioners in the context of debt restructuring."

WEST: Oregon

Colorado's Public Employees Retirement Association, or PERA, has sued a similarly named third-party marking firm in Nevada, saying it has engaged in a deceitful marketing campaign in violation of the state's consumer protection act.

According to a news report on the lawsuit, the marketing firm deceived PERA members "by using a similar name and suggesting it is a related, affiliated entity in a ploy for members to share their personal financial information." PERA members were persuaded to move their accounts to the marketing firm against their best interests, the lawsuit maintained.

Pera LLC, based in Henderson, Nevada, describes itself as "a third-party marketing organization that facilitates meetings between state-licensed representatives and public employees who have individual retirement related questions." The company says it works with "employees of school districts, colleges, universities, and other public institutions nationwide."

On its LinkedIn page, the marketing firm states that its "one of a kind marketing engine generates both pre-scheduled face to face and conference call appointments between school district employees seeking retirement and financial advice, and qualified

CONTINUED ON PAGE 8

AROUND THE REGIONS CONTINUED FROM PAGE 7

Retirement Specialists in their area. Generating appointments is our only business, and we do our business extremely well."

The case, Colorado Public Employees' Retirement Association v. Pera LLC, was filed September 3 in state district court. The lawsuit asserts that the marketing firm emailed thousands of employees of Colorado school districts, implied that the company is affiliated with the state, and offered consultations to discuss retirement questions, according to news reports.

PERA said the marketing firm's business model "relies on confusion and deception, copying PERA's name, imitating PERA's logo, relying on PERA's reputation, and falsely claiming its salesforce is approved by PERA or the PERA employer when it is not," a news report said. Colorado PERA is asking the court to prohibit the marketing firm from soliciting its members, and is seeking the profits made as a result of such actions, as well as other damages.

Grow Capital, headquartered in Henderson, Nevada, announced August 20 that it had acquired Pera LLC. Grow Capital lavishly praised its new subsidiary, saying it "has literally kept the public employee sector of financial and retirement planning alive during Covid-19 as most employees are working from home and only taking online meetings." ◆

2020 Conferences

Photo Illustration © 2020, Shutterstock.com

2020-2021 Officers

Daniel Fortuna
President

Kathy Harrell
First Vice President

Dale Chase
Second Vice President

Carol Stukes-Baylor
Secretary

Will Pryor
Treasurer

Mel Aaronson
Immediate Past President

Executive Board Members

State Employees Classification
Stacy Birdwell
John Neal

County Employees Classification
Teresa Valenzuela

Local Employees Classification
Sherry Mose
Thomas Ross
Ralph Sicuro

Police Classification
Kenneth Hauser
James Sklenar

Fire Classification
Dan Givens
Emmit Kane
James Lemonda

Educational Classification
David Kazansky
Richard Ingram

Protective Classification
Peter Carozza, Jr.
Ronald Saathoff

Canadian Classification
Frank Ramagnano

The Voice for Public Pensions

The Monitor is published by the National Conference on Public Employee Retirement Systems.
Website: www.NCPERS.org • E-mail: legislative@NCPERS.org