AGENDA

Date: March 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, March 12, 2020, in the Second Floor Board Room at 4100 Harry Hines Boulevard, Dallas, Texas.** 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 February 13, 2020

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

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

4. **Approval of Estate Settlements**

5. **Approval of Survivor Benefits**

6. **Approval of Service Retirements**

C. DISCUSSION AND POSSIBLE ACTION REGARDING ITEMS FOR INDIVIDUAL CONSIDERATION

1. **Chairman's Discussion Items**

   Recap of the meeting with Dallas Citizens Council Representatives

2. **Report on Professional Services Committee**

3. **Speakers at Board Meeting Policy**

4. **Fiduciary Duties of Trustees**

   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.

5. **Monthly Contribution Report**

6. **Peer Reviews**

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

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

8. **Portfolio Update**

9. **Fourth Quarter 2019 Investment Performance Analysis and Third Quarter 2019 Private Markets & Real Assets Review**

10. **Investment Practices and Performance Review (SB 322)**

11. **Asset Allocation Review**

12. **Real Estate Overview – Clarion Partners Portfolio**

    Portions of the discussion under this topic may be closed to the public under the terms of Section 551.072 of the Texas Government Code.

13. Closed Session - Board serving as Medical Committee

Discussion 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

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.

D. BRIEFING ITEMS

1. Public Comment

2. Executive Director's report

a. Associations' newsletters
- NCPERS Monitor (February 2020)
- NCPERS PERSist (Winter 2020)

b. Open Records

c. Staffing Update

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
Armond C. Beaty	Retired	Police	Feb. 7, 2020
R. B. Kimzey	Retired	Fire	Feb. 8, 2020
Raymond R. Rowe	Retired	Fire	Feb. 14, 2020
William F. Lovell	Retired	Police	Feb. 16, 2020
Richard O. Walker	Retired	Police	Feb. 21, 2020
Billy E. Barnes	Retired	Police	Feb. 29, 2020

Regular Board Meeting – Thursday, March 12, 2020

Dallas Police and Fire Pension System
Thursday, February 13, 2020
8:30 a.m.
4100 Harry Hines Blvd., Suite 100
Second Floor Board Room
Dallas, TX

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

ROLL CALL

Board Members

Present at 8:31 a.m.	William F. Quinn, Nicholas A. Merrick, Joseph P. Schutz, Susan M. Byrne, Robert B. French, Steve Idoux, Mark Malveaux, Armando Garza (by phone), Allen Vaught, Tina Hernandez Patterson
Absent:	Gilbert A. Garcia
Staff	Kelly Gottschalk, Josh Mond, Brenda Barnes, Kent Custer, John Holt, Damion Hervey, Cynthia Thomas, Ryan Wagner, Michael Yan, Milissa Romero
Others	Rick Salinas, David Elliston, Manet Schuman, Sheri Kowalski, Rob Gauss (by phone)

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

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A. MOMENT OF SILENCE

The Board observed a moment of silence in memory of retired police officer Tommie R. Murphy, Donald Kirkpatrick, Jose Losoya, Jr., James W. Nunn, Homer L. Hinton, and retired firefighters Joe B. Davis, J. W. McElroy, Gene E. Bennett, Hubert Townsend.

No motion was made.

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Regular Board Meeting
Thursday, February 13, 2020

DRAFT

B. CONSENT AGENDA

1. **Approval of Minutes**

   Regular meeting of January 9, 2020

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

3. **Approval of Estate Settlements**

4. **Approval of Survivor Benefits**

5. **Approval of Service Retirements**

After discussion, Ms. Byrne made a motion to approve the minutes of the meeting of January 9, 2020. Mr. Vaught seconded the motion, which was unanimously approved by the Board.

After discussion, Ms. Byrne made a motion to approve the remaining items on the Consent Agenda, subject to the final approval of the staff. Ms. Hernandez Patterson seconded the motion, which was unanimously approved by the Board.

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C. DISCUSSION AND POSSIBLE ACTION REGARDING ITEMS FOR INDIVIDUAL CONSIDERATION

1. **Quarterly Financial Statements**

   The Chief Financial Officer presented the fourth quarter 2019 financial statements.

   No motion was made.

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2. **Monthly Contribution**

   Staff presented the Monthly Contribution Report.

   No motion was made.

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Regular Board Meeting
Thursday, February 13, 2020

3. Portfolio Update

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

No motion was made.

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4. Rebalancing Report

In accordance with Investment Policy section 6.C.7, the staff reported on recent rebalancing recommendations and activity. During January 2020 staff rebalanced short term and high yield bonds to target and added $20 million to investment grade bonds.

No motion was made.

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5. Investment Policy Statement Review

Section 5.A.7 of the Investment Policy Statement (IPS) establishes a responsibility for the Board of Trustees to review the IPS annually and revise as needed. Staff reviewed the IPS and had a few recommended revisions. Meketa concurred with these recommendations.

After discussion, Mr. Merrick made a motion to approve the proposed Investment Policy Statement revisions. Mr. Malveaux seconded the motion, which was unanimously approved by the Board.

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6. Bank Loan Investment Allocation

Staff and Meketa analyzed the structure of the bank loan portfolio. Staff provided the Board a recommendation memo and discussed the analysis.

After discussion, Mr. Malveaux made a motion to approve staff's recommendation to liquidate the Loomis Sayles' Senior Floating Rate & Fixed Income portfolio and redeploy assets to Pacific Asset Management Bank Loans portfolio. Ms. Hernandez Patterson seconded the motion, which was unanimously approved by the Board.

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DRAFT

Regular Board Meeting
Thursday, February 13, 2020

7. Correction of Errors in Benefit Payments Policy

Amendments to the interest provisions of the policy were proposed to clarify the interest calculations on benefit payment errors.

After discussion, Mr. Malveaux made a motion to adopt the amended Correction of Errors in Benefit Payments Policy. Ms. Hernandez Patterson seconded the motion, which was unanimously approved by the Board.

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8. Board approval of Trustee education and travel

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

After discussion, Ms. Hernandez Patterson made a motion to approve the Southwest Trustee Education Program to be included on the Future Education and Trustee Travel list. No future investment-related travel is currently scheduled.

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9. SB 944

Counsel discussed SB 944 which was passed during the 2019 legislative session and its requirements regarding preserving public information on private devices.

No motion was made.

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10. Lone Star Investment Advisors Update

The Board went into closed executive session – Legal at 9:53 a.m.

The meeting was reopened at 11:01 a.m.

No motion was made.

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DRAFT

Regular Board Meeting
Thursday, February 13, 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, including DPFP's VCP filing with the Internal Revenue Service, consideration of legal options regarding DPFP's interests in funds managed by Lone Star Investment Advisors 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 – Legal at 9:53 a.m.

The meeting was reopened at 11:01 a.m.

After discussion, Ms. Byrne made a motion to authorize the Executive Director to execute the Internal Revenue Service Closing Agreement. Mr. Schutz seconded the motion, which was unanimously approved by the Board.

Mr. Idoux was not present when the vote was taken.

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12. Closed Session - Board serving as Medical Committee

Disability application

The Board went into closed executive session – Medical at 11:02 a.m.

The meeting was reopened at 11:25 a.m.

Staff presented an application for On-Duty disability pension for consideration by the Board in accordance with Section 6.03 of the Plan.

After discussion, Mr. Idoux made a motion to approve the On-Duty disability pension for Police Officer 20-01, not subject to future medical recalls but subject to the earning test until the age of 58. Mr. Quinn seconded the motion, which was unanimously approved by the Board.

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Regular Board Meeting
Thursday, February 13, 2020

D. BRIEFING ITEMS

1. Public Comments

The Board received public comments during the open forum.

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2. Executive Director's report

a. Associations' newsletters
NCPERS Monitor (January 2020)
b. Open Records

The Executive Director's report was presented.

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Ms. Gottschalk stated that there was no further business to come before the Board. On a motion by Ms. Hernandez Patterson and a second by Mr. Schutz, the meeting was adjourned at 11:26 a.m.

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William F. Quinn
Chairman

ATTEST:

____
Kelly Gottschalk
Secretary

DISCUSSION SHEET

ITEM #C1

Topic: **Chairman's Discussion Items**

Recap of the meeting with Dallas Citizens Council Representatives

Discussion: The Chairman will brief the Board on this item.

DISCUSSION SHEET

ITEM #C2

Topic: **Report on Professional Services Committee**

Discussion: According to the Committee Policy and Procedure, the Professional Services Committee is responsible for meeting privately with the external service providers, without DPFP staff present, at minimum on an annual basis. The purpose of such a meeting is to provide a forum for the service provider to provide candid comments to the Professional Services Committee.

The Professional Services Committee will meet with the investment consultant, Meketa, prior to the March Board meeting.

Staff Recommendation: The Professional Services Committee shall **report** to the Board any material comments and **recommend** to the Board any appropriate actions needed as a result of the meeting with Meketa.

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C3

Topic: **Speakers at Board Meeting Policy**

Discussion: Staff is recommending changes to the policy to reflect changes to the state law as well as providing discretion with respect to time limits for speakers.

Staff Recommendation: **Adopt** the Speakers at Board Meeting Policy as amended.

Regular Board Meeting – Thursday, March 12, 2020

DALLAS POLICE & FIRE PENSION SYSTEM

SPEAKERS AT BOARD MEETINGS POLICY

Amended~~dopted~~ March~~July~~ 1~~2~~2, 2020~~1985~~

DALLAS POLICE AND FIRE PENSION SYSTEM

SPEAKERS AT BOARD MEETINGS POLICY

Adopted July 22, 1985

Amended March 12, 2020

T~~In the discharge of its duties, t~~he agenda for every Board meeting shall contain an item prior to the consideration of any agenda item by the Board of Trustees ~~of Trustees of the Police and Fire Pension Fund of the City of Dallas may entertain from time to time requests from active and retired fund members wishing to address the Board on subjects relating either to their benefits or the investment of trusteed funds. Non-members may not address the Board~~where action may be taken by the Board, allowing members of the public to address the Board concerning any item on the agenda or any other matter affecting the Dallas Police and Fire Pension System. Each speaker shall be allotted three minutes to speak, provided that the Chairman may allow speakers to exceed such time limit if, in the Chairman's discretion, allowing such extra time shall not unduly disrupt or lengthen the Board meeting. The Chairman may also, in his or her discretion, allow speakers at other points in the meeting if allowing such speakers will not unduly disrupt or lengthen the Board meeting.

APPROVED on March 12, 2020 by the Board of Trustees of the Dallas Police and Fire Pension System.

William F. Quinn
Chairman

Attested:

Kelly Gottschalk
Executive Director

DALLAS POLICE & FIRE PENSION SYSTEM

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C4

Topic: **Fiduciary Duties of Trustees**

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: Chuck Campbell with Jackson Walker, fiduciary counsel for the Board, will give a presentation on fiduciary duties of trustees.

Regular Board Meeting – Thursday, March 12, 2020

Jackson Walker LLP

Dallas Police and Fire Pension System

Fiduciary Considerations for Trustees

March 12, 2020

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Overview

- Why and When Are You a Fiduciary?
- What Are Your Key Fiduciary Duties?
- What Other Standards of Conduct Apply?
- Fiduciary Implications in Selecting Third-Party Providers

Why Are You a Fiduciary?

- You are a fiduciary because you are a trustee of a trust
  - Exercise your duties for the benefit of others
  - Texas Constitution and State law
  - Internal Revenue Code: all assets of tax-qualified retirement plan held in trust for plan beneficiaries (members, retirees, survivors, etc.)

When Are You a Fiduciary?

- You are a fiduciary when you exercise discretion in performing your duties as a Trustee of the System.
  - Board action items
  - Delegating authority or allocating responsibility
  - Monitoring prior Board decisions
  - Establishing policies and procedures
  - Exercising individual discretion with System activities

Key Fiduciary Duties

- Duty of Loyalty
- Duty of Prudence
- Duty to Follow Governing Documents and Applicable Law

Duty of Loyalty

- Otherwise known as the "Exclusive Benefit Rule"
- Article 6243a-1, Section 3.01(a)
  - "The board shall execute its fiduciary duty to hold and administer the assets of the fund for the exclusive benefit of members and their beneficiaries under Section 802.203, Government Code, Section 67(f), Article XVI, Texas Constitution, and any other applicable law, in a manner that ensures the sustainability of the pension system for purposes of providing current and future benefits to members and their beneficiaries."

Duty of Loyalty

- Your loyalty is to the members and beneficiaries of the System.
  - Duty of impartiality: duty of loyalty extends to <u>all</u> members and beneficiaries—current and retired
    - "…ensuring the sustainability of the pension system…"
  - Wear your "trustee" hat in the Boardroom
    - Your loyalty is to all members and beneficiaries—not the other "hats" you might wear in your life or work, including your source of appointment or electorate.

Duty of Loyalty

- No Self-Dealing
  - Using position (directly or indirectly) for personal profit or advantage
- Avoid Conflicts of Interest
  - Personal or business relationships that **could reasonably be expected** to diminish the Trustee's independence of judgment
- Use System assets and resources only to pay benefits and reasonable expenses

Duty of Prudence

- Prudence Standard
  - "In making investments and supervising investments, trustees shall exercise the judgment and care under the circumstances then prevailing that persons of ordinary prudence, discretion, and intelligence exercise in the management of their own affairs…" *Article 6243a-1, §4.07(b)*

Duty of Prudence —Education and Information

- Fiduciaries should become educated on topics relevant to service as trustees:
  - Plan Administration
  - Investments
  - Fiduciary and Ethics
  - Actuarial Matters
  - Governance and Risk Management
- Fiduciaries should also receive adequate background information related to decisions in front of them.

Duty of Prudence — Process

- Demonstrate required care was taken in the decision-making process by:
  - Ensuring adequate information provided to make informed decision
  - Establishing policies and procedures for significant aspects of administration
  - Adhering to policies and procedures
  - Being consistent in process and decisions

Duty to Follow Governing Documents

- Plan Documents include:
  - Your Statute---Article 6243a-1
  - Board and System Policies and Procedures
- If administrative or governance issue arises, the first place to go is your governing documents.
- Note: failure to follow documents can also cause administrative and tax-qualified plan issues giving rise to other liability.

Duty to Follow Applicable Law

- Applicable State Law
  - Your Governing Statute, Article 6243a-1
  - Texas Open Meetings Act
  - Texas Public Information Act
  - Texas Local Government Code Chapter 171 and 176
  - Texas Government Code Chapter 802

Standards of Conduct

- System governance and ethics policies provide written guidelines around activities that implicate state ethics laws, fiduciary duties, and other standards of conduct
- Help ensure compliance by providing guidance to Trustees, DPFP staff, and contractors. These include:
  - Board of Trustees and Employees Ethics and Code of Conduct
  - Board of Trustees Governance and Conduct Policy
  - Contractor's Statement of Ethics

Standards of Conduct – Key Aspects of Board and System Policies

- Statements of Standards of Conduct and Fiduciary Duties
- Conflicts of Interest and Prohibited Transactions
- Gifts, Travel, and Expenses
- Undue Influence
- Confidentiality and System Information
- Trustee Communications—Internal and External
- Board Conduct at Meetings

Fiduciary Implications in Selecting Third-Party Providers

Duty of Loyalty and Selecting Third-Party Providers

- Trustees are to act for the exclusive benefit of members and beneficiaries.
  - No self-dealing and avoid conflict of interests in selecting providers
  - High quality at appropriate and reasonable cost
- What if Trustees believe that "collateral" considerations in selecting providers are important?
- Are these considerations consistent with the exclusive benefit rule?

Examples of Collateral Considerations in Selecting Investment Providers

- Minority or women-owned or controlled businesses
- Emerging manager programs
- Socially responsible investments (SRIs)
- Economically targeted investments (ETIs)
- Environmental, social and governance investments (ESG)

Legal Guidance--Texas AG Opinion GA-0871 (2011)

- State Board of Education (SBOE) asked the Attorney General (AG) whether it could consider benefits to state policy when investing its assets.
- AG held that the Texas Constitution and the Texas Education Code both required the SBOE to consider only the financial attributes of potential investments.
- Consideration of non-financial factors as part of its investment decisions was not authorized.
- Not binding on the System, but instructive.

DOL/EBSA Guidance under ERISA (IB 2015-01)

- Response to prior guidance which said consideration of collateral, non-economic factors should be rare and only “tie-breakers”

- “…plan fiduciaries should appropriately consider factors that potentially influence risk and return. Environmental, social, and governance issues may have a direct relationship to the economic value of the plan’s investment.”

- “…fiduciaries may invest in ETIs based, in part, on their collateral benefits so long as the investment is economically equivalent, with respect to return and risk to beneficiaries in the appropriate time horizon, to investments without such collateral benefits.”

Questions?

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DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

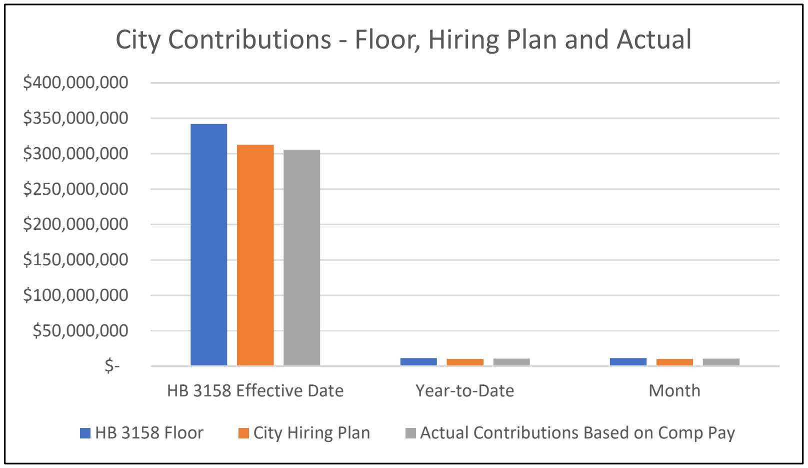
ITEM #C5

Topic: **Monthly Contribution Report**

Discussion: Staff will review the Monthly Contribution Report.

Regular Board Meeting – Thursday, March 12, 2020

Contribution Tracking Summary - March 2020 (January 2020 Data)



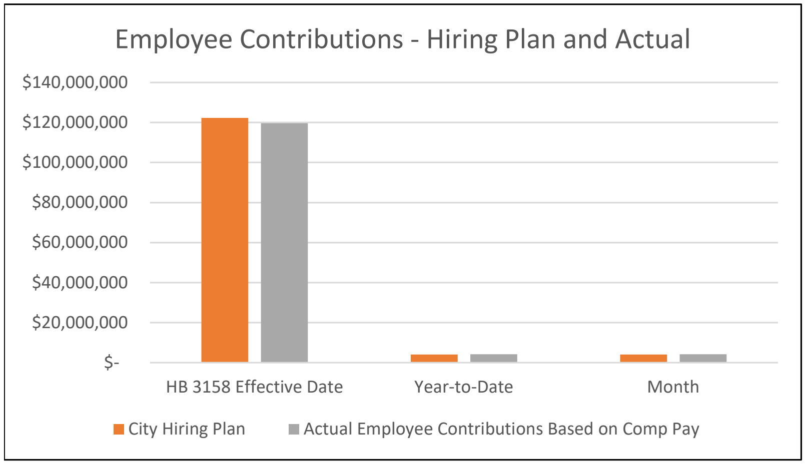
Actual Comp Pay was 98% of the Hiring Plan estimate since the effective date of HB 3158.

In the most recent month Actual Comp Pay was 103% of the Hiring Plan estimate and 94% 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 73 higher than the Hiring Plan for the pay period ending February 4, 2020. Fire was over the estimate by 95 fire fighters and Police was short 22 officers. In total January 2020 has 173 more contributing members than January 2019.



Since the effective date of HB 3158 actual employee contributions have been $2.6 million less than the Hiring Plan estimate. Potential earnings loss due to the contribution shortfall is $439k at the Assumed Rate of Return.

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

Jan-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	2	$ 11,448,000	$ 10,509,231	$ 10,795,519	$ 652,481	94%	103%
Year-to-Date		$ 11,448,000	$ 10,509,231	$ 10,795,519	$ 652,481	94%	103%
HB 3158 Effective Date		$ 341,795,000	$ 312,649,615	$ 305,852,727	$ 35,942,273	89%	98%

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

Jan-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	2	$ 4,112,308	$ 4,223,761	$ 111,453	$ 4,112,308	103%	103%
Year-to-Date		$ 4,112,308	$ 4,223,761	$ 111,453	$ 4,112,308	103%	103%
HB 3158 Effective Date		$ 122,341,154	$ 119,692,842	$ (2,648,312)	$ 117,231,946	98%	102%

Potential Earnings Loss from the Shortfall based on Assumed Rate of Return $ (439,638)

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					
March	$ 30,461,538					
April	$ 45,692,308					
May	$ 30,461,538					
June	$ 30,461,538					
July	$ 30,461,538					
August	$ 30,461,538					
September	$ 45,692,308					
October	$ 30,461,538					
November	$ 30,461,538					
December	$ 30,461,538					

DISCUSSION SHEET

ITEM #C6

Topic: **Peer Reviews**

Discussion: The Executive Director's 2020 Performance Objectives include conducting a peer review of staff compensation and an organizational and expense review.

The Executive Director will discuss options for conducting the studies, the scope and the estimated cost.

DISCUSSION SHEET

ITEM #C7

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
Regular Board Meeting – March 12, 2020

			ATTENDING	APPROVED
1.	**Conference:**	**AIF Institute Annual Southwest Trustee Education Program**	**AG**	
	Dates:	March 30-31, 2020		
	Location:	Austin, TX		
	Est. Cost:	$1,700		
2.	**Conference:**	**TEXPERS Basic Trustee Training**		
	Dates:	May 2, 2020		
	Location:	Galveston, TX		
	Est. Cost:	$875		
3.	**Conference:**	**TEXPERS Advanced Trustee Training**		
	Dates:	May 2, 2020		
	Location:	Galveston, TX		
	Est. Cost:	$800		
4.	**Conference:**	**TEXPERS 31st Annual Conference**		
	Dates:	May 3-6, 2020		
	Location:	Galveston, TX		
	Est. Cost:	$1,311		
5.	**Conference:**	**NCPERS Trustee Education Seminar (TEDS)**		
	Dates:	May 9 – 10, 2020		
	Location:	Las Vegas, NV		
	Est. Cost:	$2,000		

ATTENDING APPROVED

6.	**Conference:**	**NCPERS Annual Conference**
	Dates:	May 10 – 13, 2020
	Location:	Las Vegas, TX
	Est. Cost:	$2,900
7.	**Conference:**	**TEXPERS Summer Education Forum**
	Dates:	August 16-18, 2020
	Location:	San Antonio, TX
	Est. Cost:	TBD

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C8

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, March 12, 2020

DALLAS POLICE & FIRE PENSION SYSTEM

Portfolio Update

March 12, 2020

Asset Allocation

DPFP Asset Allocation	$ millions				% weight		
	2/29/20	Target	Variance		2/29/20	Target	Variance
Equity	**804**	**1,100**	**-297**		**40.2%**	**55.0%**	**-14.8%**
Global Equity	463	800	-337		23.1%	40.0%	-16.9%
Emerging Markets	48	200	-152		2.4%	10.0%	-7.6%
Private Equity*	293	100	193		14.6%	5.0%	9.6%
Fixed Income	**639**	**700**	**-61**		**32.0%**	**35.0%**	**-3.0%**
Safety Reserve - Cash	42	60	-18		2.1%	3.0%	-0.9%
Safety Reserve - ST IG Bonds	251	240	11		12.5%	12.0%	0.5%
Investment Grade Bonds	59	80	-21		2.9%	4.0%	-1.1%
Global Bonds	67	80	-13		3.4%	4.0%	-0.6%
Bank Loans	111	80	31		5.5%	4.0%	1.5%
High Yield Bonds	81	80	1		4.1%	4.0%	0.1%
Emerging Mkt Debt	20	80	-60		1.0%	4.0%	-3.0%
Private Debt*	8	0	8		0.4%	0.0%	0.4%
Real Assets*	**557**	**200**	**357**		**27.9%**	**10.0%**	**17.9%**
Real Estate*	375	100	275		18.7%	5.0%	13.7%
Natural Resources*	128	100	28		6.4%	5.0%	1.4%
Infrastructure*	54	0	54		2.7%	0.0%	2.7%
Total	**2,000**	**2,000**	**0**		**100.0%**	**100.0%**	**0.0%**
Safety Reserve	293	300	-7		14.6%	15.0%	-0.4%
*Private Market Assets	858	300	558		42.9%	15.0%	27.9%

Source: JP Morgan Custodial Data, Staff Estimates and Calculations

PRELIMINARY

DALLAS POLICE & FIRE PENSION SYSTEM

Investment Initiatives

- Managing liquidation of private market assets remains the top focus with key initiatives discussed quarterly and as part of periodic asset class reviews.
- Staff monitoring investment commentary and performance in light of Coronavirus, but no action anticipated. Maintain strategic asset allocation and implementation.
- $30 million contribution to PAM Bank Loans on Feb 29. Most Loomis Bank Loan Assets expected mid-March with remainder in mid-April.
- Investment Grade Bond Search
    - Meketa provided preliminary short-list of candidates on February 28.
    - Staff/Meketa Conference call scheduled for March 6.
    - Invitation RFP expected mid-March.
    - Target funding in June 2020
- High Yield and equity structure evaluations moving forward slowly.
- SB322 independent consultant evaluation completed for March presentation.
- Asset allocation assumptions and update completed for March presentation.
- On deck - Public market manager IMA/fee reviews

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
June	• Natural Resources: Hancock Presentation • Real Estate: Hearthstone Presentation
July	• Infrastructure: Staff review of AIRRO and JPM Maritime
August	• Staff review of Private Equity and Debt
September	• Global Equity Manager Reviews
October	• Fixed Income Manager Reviews

*Presentation schedule is subject to change.

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C9

Topic: **Fourth Quarter 2019 Investment Performance Analysis and Third Quarter 2019 Private Markets & Real Assets Review**

Attendees: Leandro Festino, Managing Principal - Meketa Investment Group
Aaron Lally, Principal - Meketa Investment Group

Discussion: Meketa and Investment Staff will review investment performance.

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INVESTMENT GROUP

Dallas Police & Fire Pension System

December 31, 2019

Quarterly Review

Agenda

1. Executive Summary
2. 4Q19 Review
3. Disclaimer, Glossary, and Notes

Executive Summary

As of December 31, 2019

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Dallas Police and Fire Pension System

Executive Summary

DPFP 4Q19 Flash Summary

Category	Results	Notes
Total Fund Performance Return	Positive	2.2%
Performance vs. Policy Index	Underperformed	2.2% vs. 5.4%
Performance vs. Peers[1]	Underperformed	2.2% vs. 5.1% median (99th percentile in peer group)
Asset Allocation vs. Targets	Detractive	Overweight private markets and underweight public equities hurt
Safety Reserve Exposure	Sufficient	$354 million (approximately 17%)
Active Management	Detractive	Underperformed benchmarks in most asset classes
DPFP Public Markets vs. 60/40[2]	Underperformed	4.7% vs. 5.6%
DPFP Public Markets vs. Peers	Underperformed	4.7% vs. 5.1% median (78th percentile in peer group)
Compliance with Targets	No	Below minimums in Inv. Grade Bonds and EM Debt[3]

[1] InvestorForce Public DB $1-5 billion net

[2] Performance of Total Fund excluding private market investments relative to a 60% MSCI ACWI IMI Net/40% Barclays Global Aggregate Index.

[3] Investment Grade Bonds and Emerging Market Debt (EMD) are below target minimums in accordance with following the implementation plan approved by the Trustees. The EMD minimum was subsequently lowered to zero percent in February 2020.

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Dallas Police and Fire Pension System

Executive Summary

DPFP Trailing One-Year Flash Summary

Category	Results	Notes
Total Fund Performance Return	Positive	11.6%
Performance vs. Policy Index	Underperformed	11.6% vs. 15.7%
Performance vs. Peers[1]	Underperformed	11.6% vs. 17.1% median (99th percentile in peer group)
Asset Allocation vs. Targets	Detractive	Overweight private markets and underweight public equities hurt
Active Management	Additive	Outperformed in private equity and global equity
DPFP Public Markets vs. 60/40[2]	Underperformed	15.5% vs. 18.4%
DPFP Public Markets vs. Peers	Underperformed	15.5% vs. 17.1% median (75th percentile in peer group)

[1] InvestorForce Public DB $1-5 billion net.
[2] Performance of Total Fund excluding private market investments relative to a 60% MSCI ACWI IMI Net/40% Barclays Global Aggregate Index.

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Dallas Police and Fire Pension System

Executive Summary

DPFP Trailing Three-Year Flash Summary

Category	Results	Notes
Total Fund Performance Return	Positive	4.9%
Performance vs. Policy Index	Underperformed	4.9% vs. 8.1%
Performance vs. Peers[1]	Underperformed	4.9% vs. 8.7% median (99th percentile in peer group)
Active Management	Mixed	Favorable in public equity and detractive in PE, NR, RE and PD
DPFP Public Markets vs. 60/40[2]	Underperformed	7.2% vs. 9.1%
DPFP Public Markets vs. Peers	Underperformed	7.2% vs. 8.7% median (99th percentile in peer group)

[1] InvestorForce Public DB $1-5 billion net

[2] Performance of Total Fund excluding private market investments relative to a 60% MSCI ACWI IMI Net/40% Barclays Global Aggregate Index.

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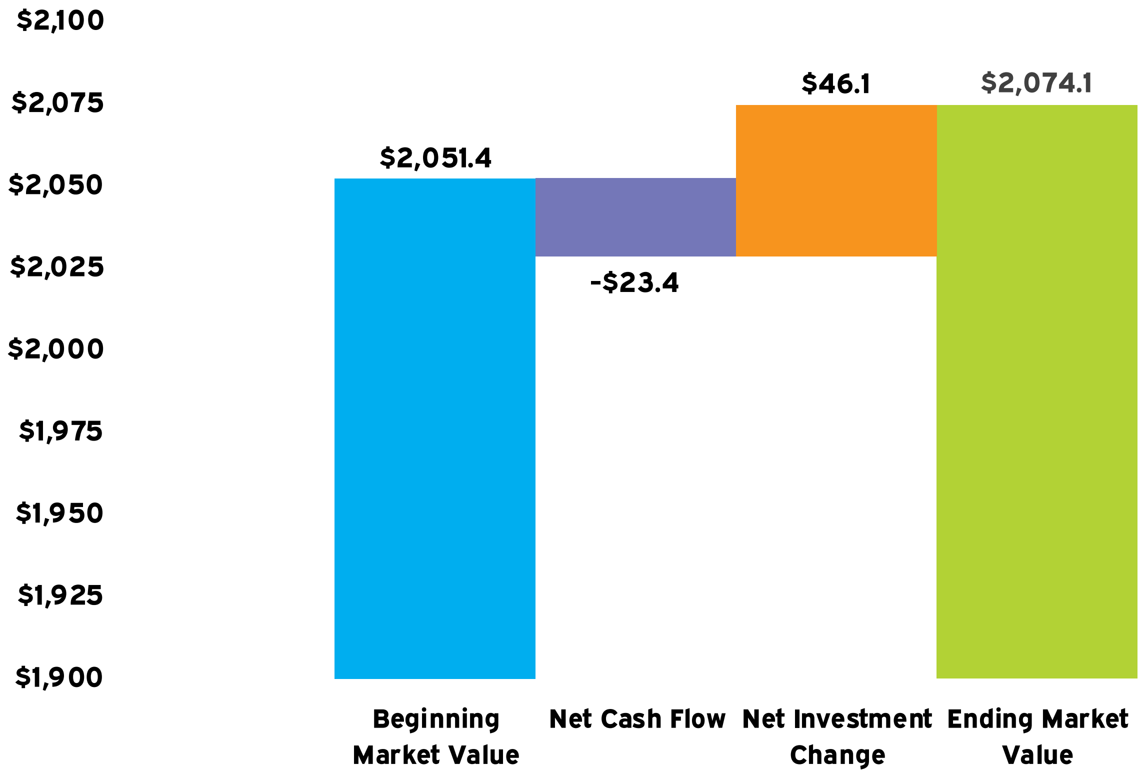
Dallas Police and Fire Pension System

Executive Summary

Quarterly Change in Market Value



- Total market value increased due to positive investment performance.

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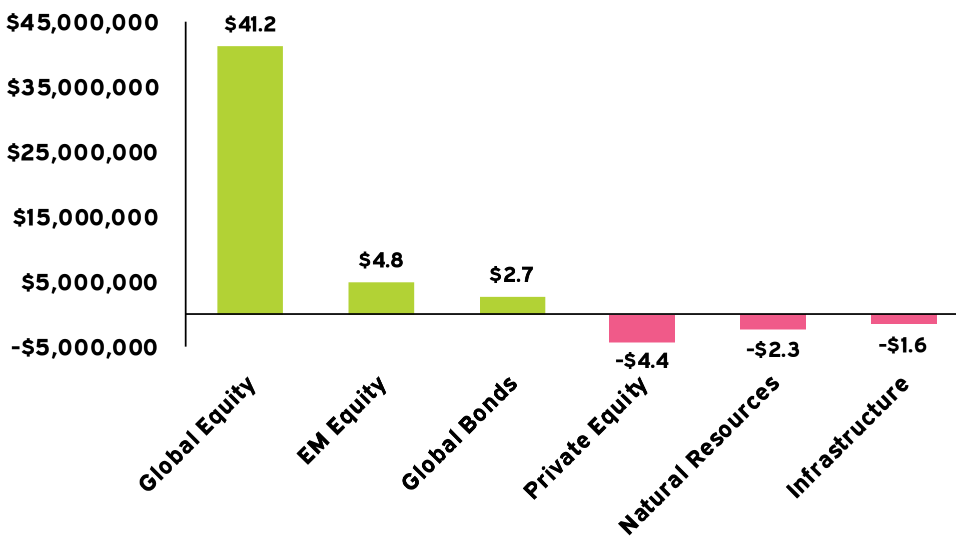
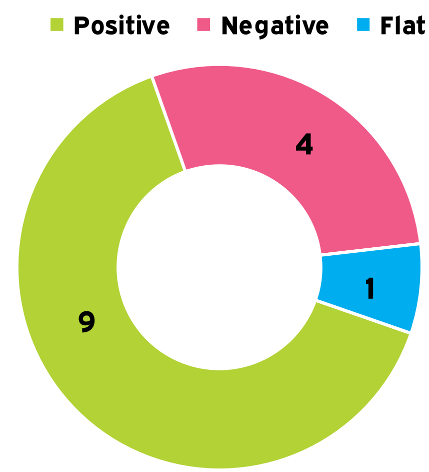
Dallas Police and Fire Pension System

Executive Summary

Quarterly Absolute Performance

Asset Classes Dollar Gain/ Loss[1] Top Three and Bottom Three	**Asset Class Absolute Performance**





- Asset class performance was mixed during the quarter.
- In absolute terms, global equity appreciated the most, gaining approximately $41.2 million in market value.
- Private equity depreciated the most, losing approximately $4.4 million in value.

[1] Estimated Gain/ Loss calculated by multiplying beginning market value by quarterly performance.

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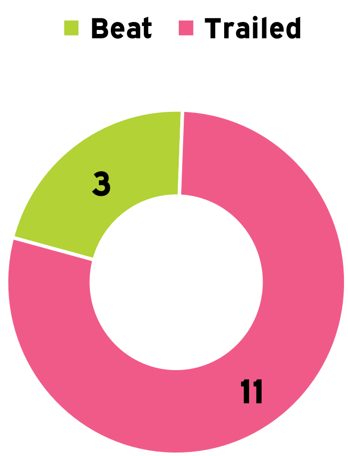
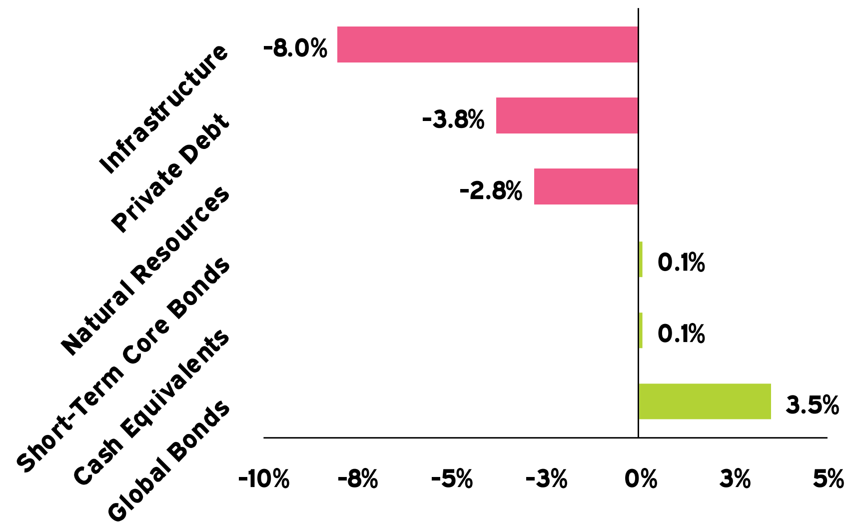
Dallas Police and Fire Pension System

Executive Summary

Quarterly Relative Performance

Asset Classes vs Benchmarks	Asset Classes vs Benchmarks Top Three and Bottom Three





- In the quarter, global bonds had the best relative performance.
- Infrastructure, private debt and natural resources had the worst relative performance in the quarter.
- Only three of fourteen asset classes delivered positive relative performance versus respective benchmarks.

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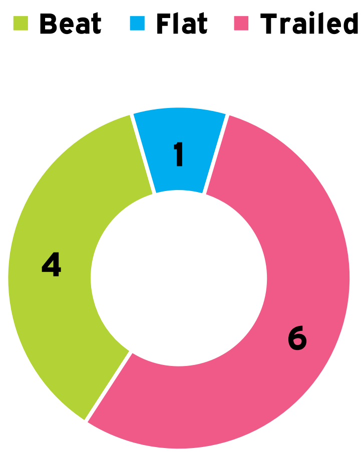
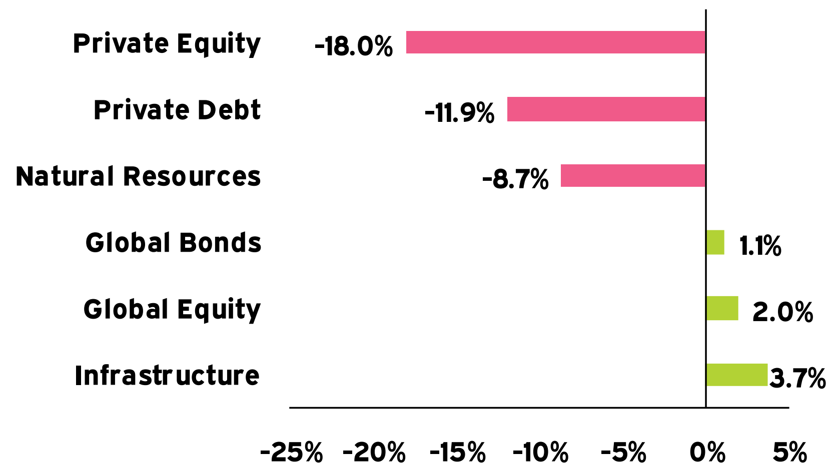
Dallas Police and Fire Pension System

Executive Summary

Trailing 3 Year Relative Performance

Asset Classes vs Benchmarks[1]	Asset Classes vs Benchmarks Top Three and Bottom Three





- Four of the eleven asset classes with trailing three-year return history delivered positive relative performance versus respective benchmarks.
- Over the trailing three-year period, the best relative performance came from infrastructure, global equity and global bonds.
- Private equity, private debt, and natural resources had the worst relative performance over the trailing three-year period.

[1] Analysis excludes asset classes with a performance history of less than three years.

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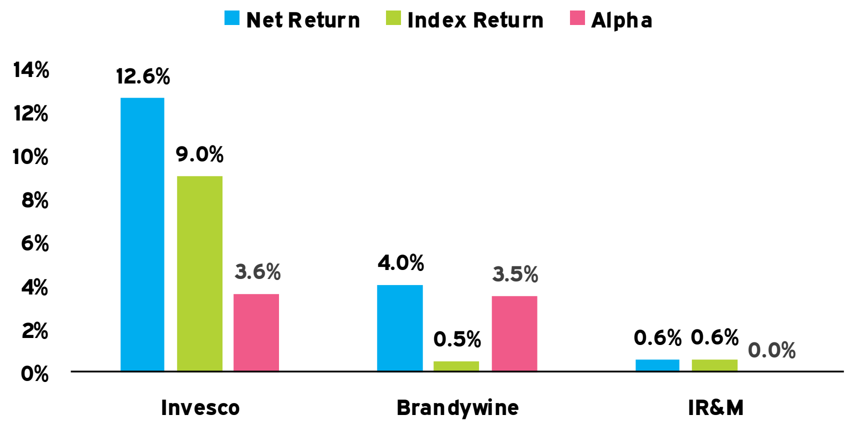
Dallas Police and Fire Pension System

Executive Summary

Public Manager Alpha

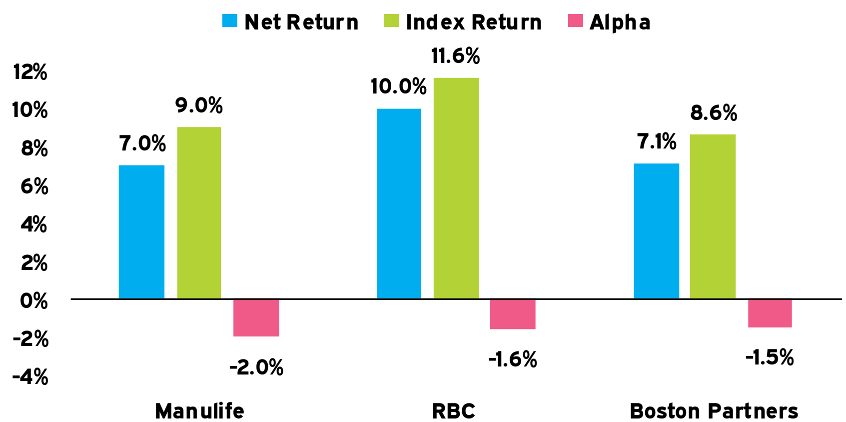
Top Three Outperformers in Quarter



$463 million

Combined exposure

Bottom Three Underperformers in Quarter



$310 million

Combined exposure

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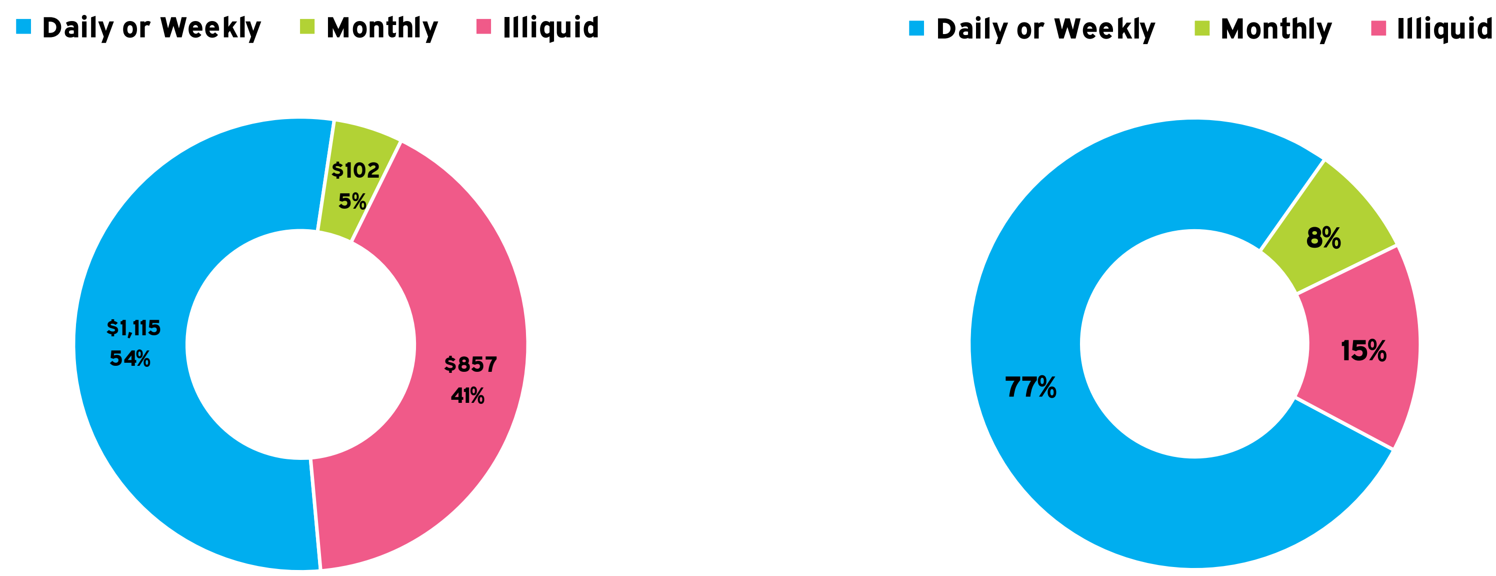
Dallas Police and Fire Pension System

Executive Summary

Liquidity Exposure
As of December 31, 2019

Exposure ($ mm)	Targets



- Approximately 41% of the System's assets are illiquid versus 15% of the target allocation.

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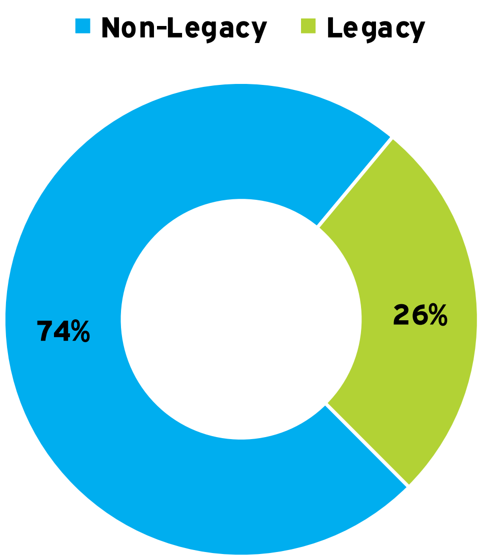
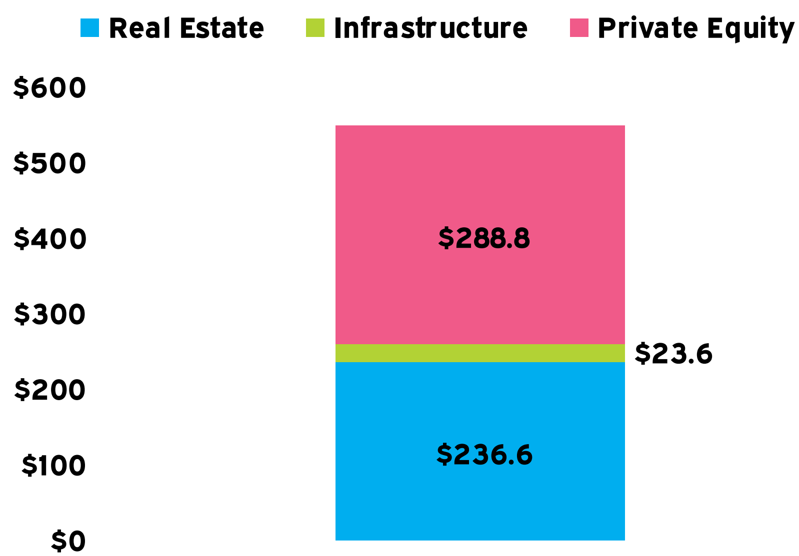
Dallas Police and Fire Pension System

Executive Summary

Legacy Assets





$549 million

Net Asset Value of Legacy Assets

4Q19 Review

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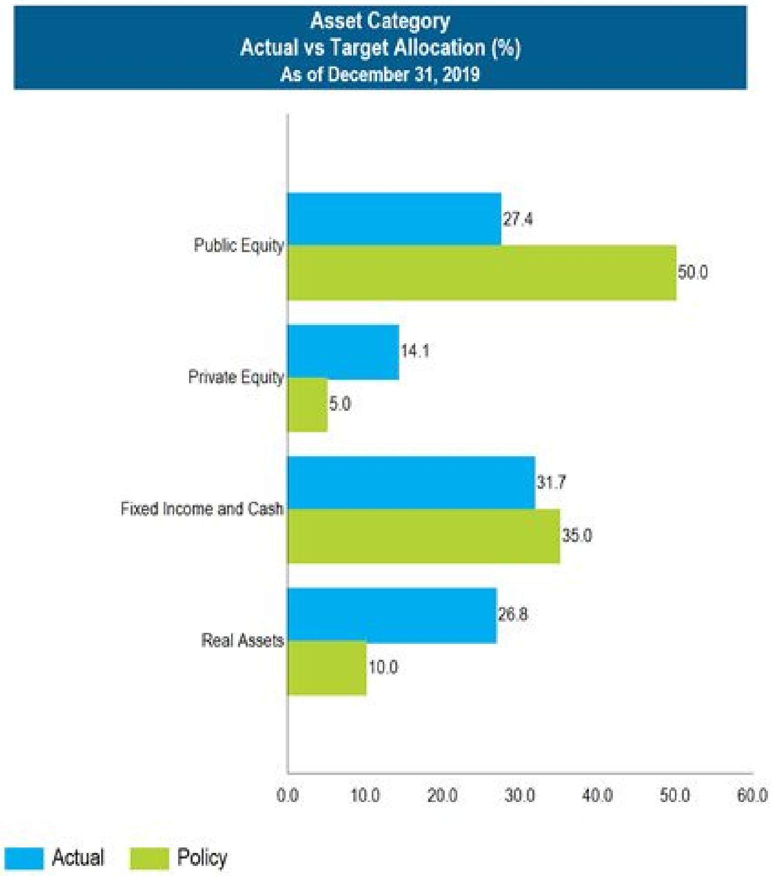
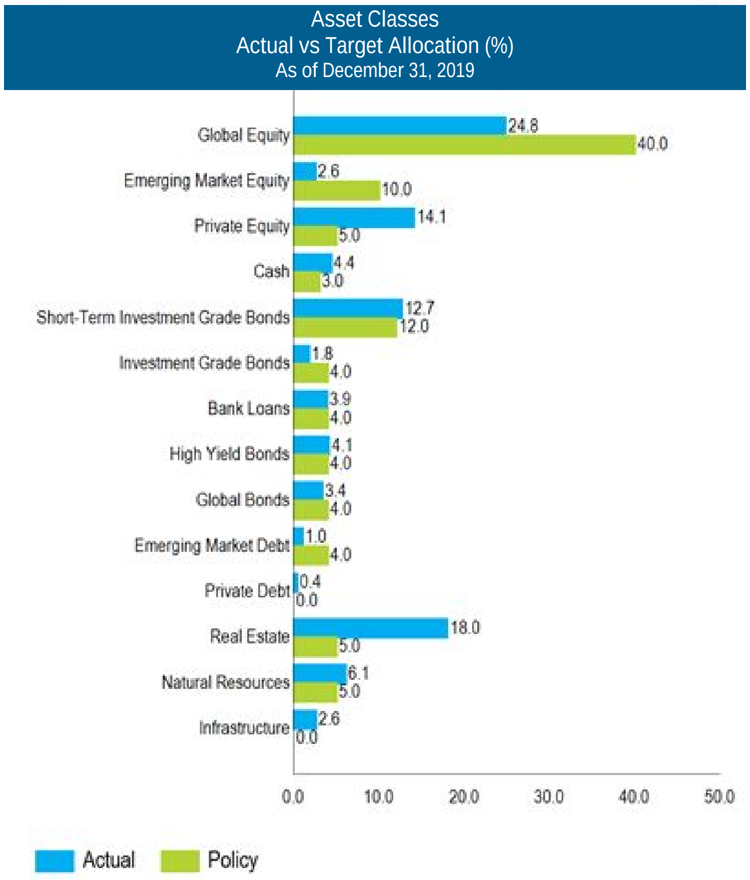
Dallas Police & Fire Pension System

DPFP | As of December 31, 2019





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Dallas Police & Fire Pension System

DPFP | As of December 31, 2019

Allocation vs. Targets and Policy

	Current Balance	Current Allocation	Policy	Policy Range	Within IPS Range?
Equity	**$861,093,487**	**42%**	**55%**		
Global Equity	$515,138,013	25%	40%	18% - 48%	Yes
Emerging Market Equity	$53,160,484	3%	10%	0% - 12%	Yes
Private Equity	$292,794,990	14%	5%		
Fixed Income and Cash	**$658,090,519**	**32%**	**35%**		
Cash	$91,181,180	4%	3%	0% - 5%	Yes
Short-Term Investment Grade Bonds	$263,096,788	13%	12%	5% - 15%	Yes
Investment Grade Bonds	$36,718,202	2%	4%	2% - 6%	No
Global Bonds	$69,661,567	3%	4%	2% - 6%	Yes
Bank Loans	$81,261,689	4%	4%	2% - 6%	Yes
High Yield Bonds	$86,038,276	4%	4%	2% - 6%	Yes
Emerging Market Debt	$21,184,707	1%	4%	2% - 6%	No
Private Debt	$8,948,111	0%	0%		
Real Assets	**$554,921,870**	**27%**	**10%**		
Real Estate	$373,841,107	18%	5%		
Natural Resources	$126,859,018	6%	5%		
Infrastructure	$54,221,745	3%	0%		
Total	**$2,074,105,877**	**100%**	**100%**		

As of 12/31/2019, the Safety Reserve exposure was approximately $354.3 million (17%).
Rebalancing ranges are not established for illiquid assets (Private Equity, Private Debt, Natural Resources, Infrastructure and Real Estate)

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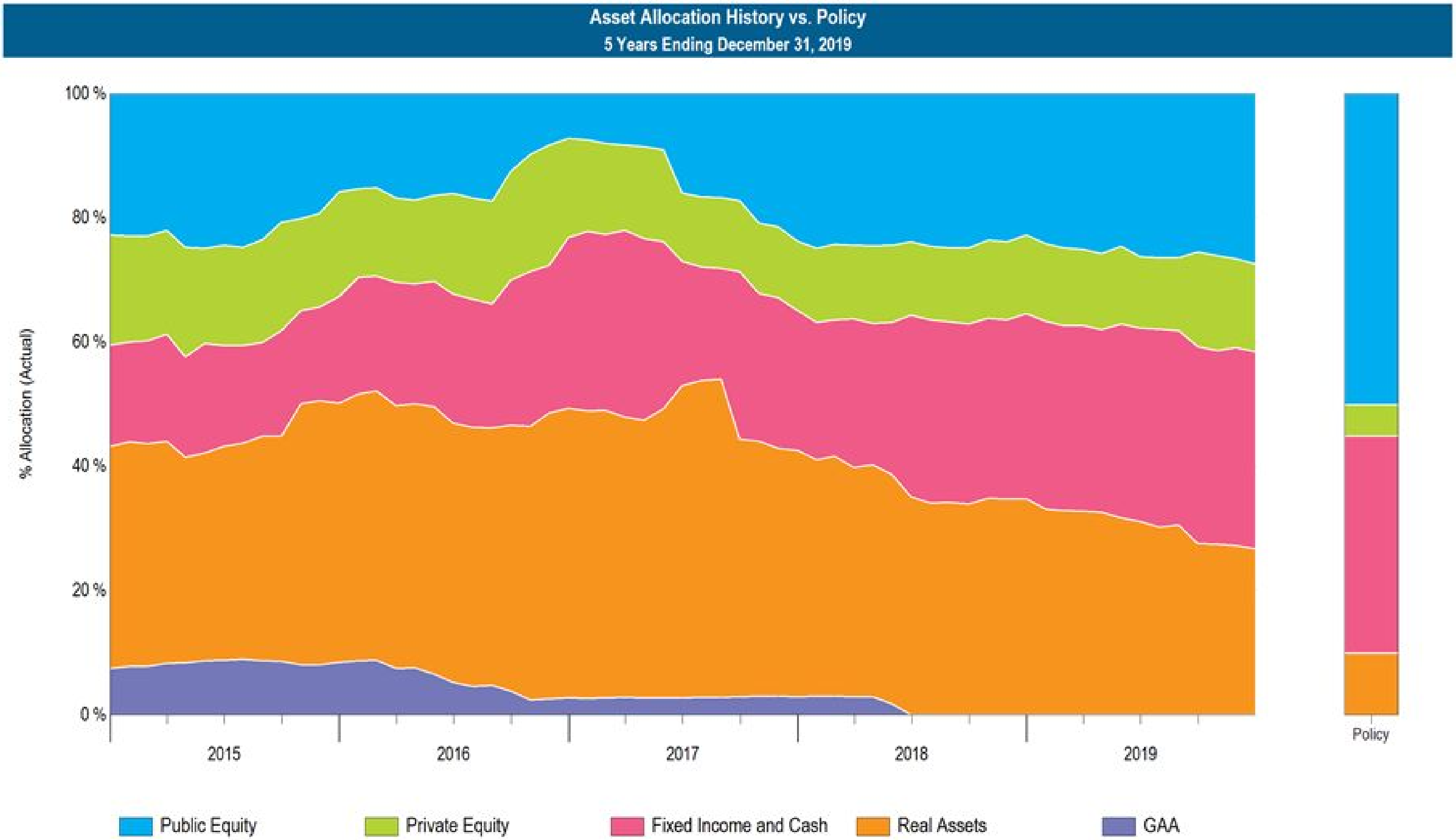
Dallas Police & Fire Pension System

DPFP | As of December 31, 2019



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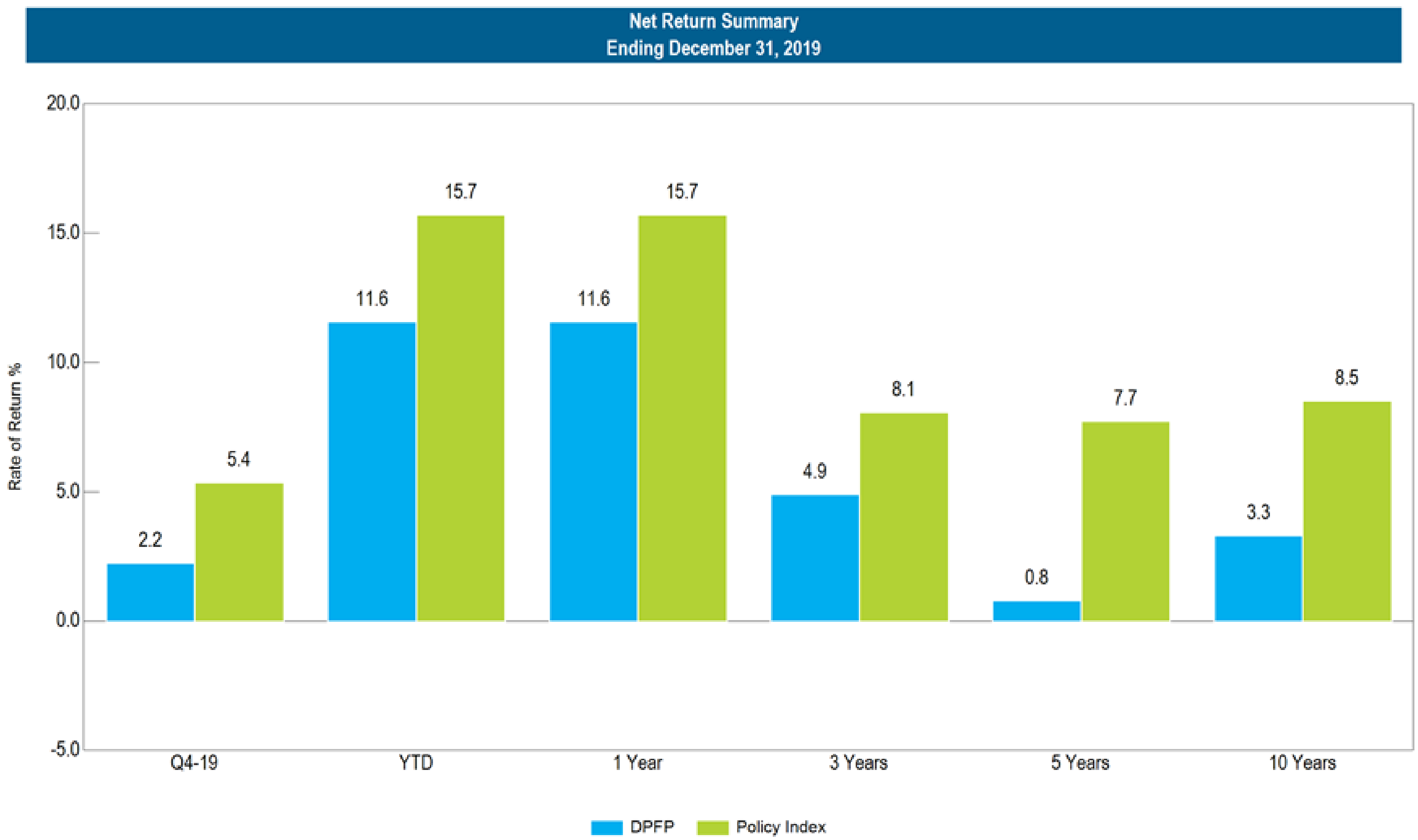
Dallas Police & Fire Pension System

DPFP | As of December 31, 2019



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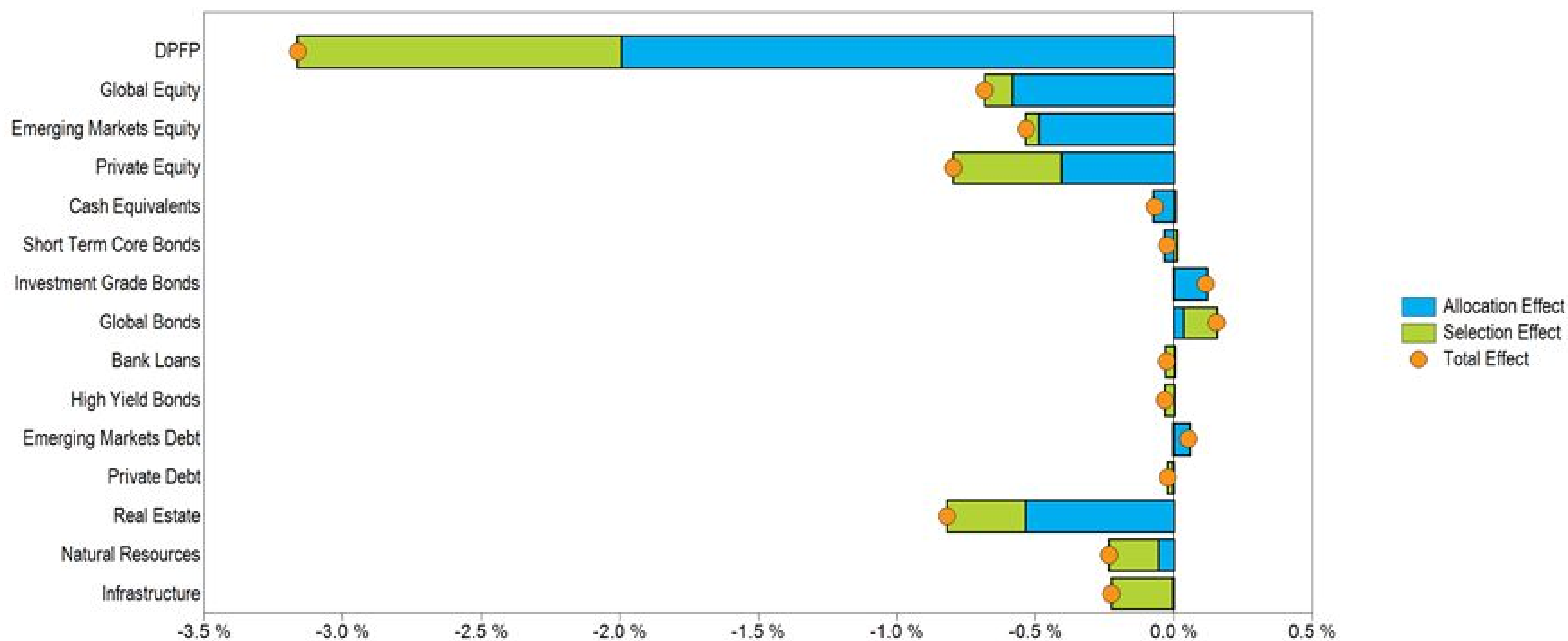
Dallas Police & Fire Pension System

DPFP | As of December 31, 2019

Attribution Effects vs. Policy Benchmark
3 Months Ending December 31, 2019



Attribution Summary
3 Months Ending December 31, 2019

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Total Effects
Total	**2.2%**	**5.4%**	**-3.2%**	**-1.2%**	**-2.0%**	**-3.2%**

The performance calculation methodology in attribution tables is different from the standard time weighted returns (geometric linkage of monthly returns) found throughout the rest of the report. In attribution tables, the average weight of each asset class (over the specified time period) is multiplied by the time period performance of that asset class and summed. Values may not foot due to rounding.

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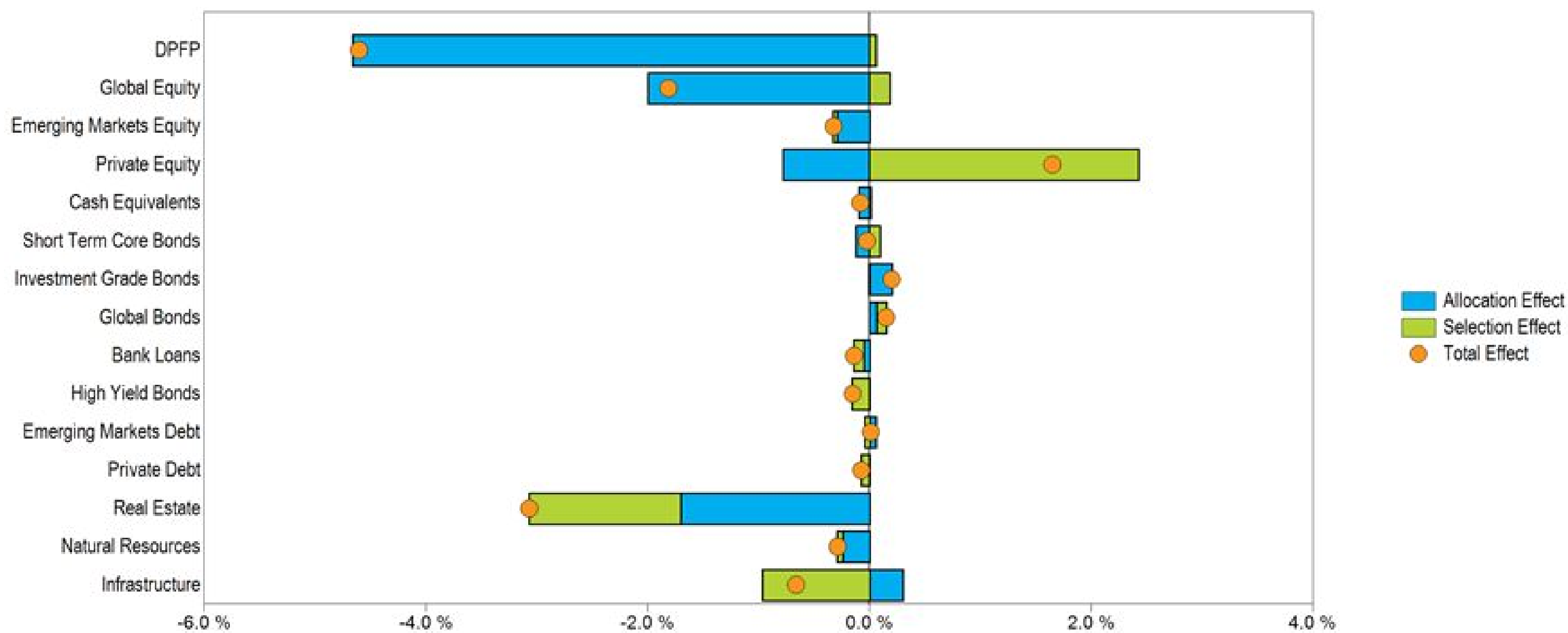
Dallas Police & Fire Pension System

DPFP | As of December 31, 2019

Attribution Effects vs. Policy Benchmark
1 Year Ending December 31, 2019



Attribution Summary
1 Year Ending December 31, 2019

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Total Effects
Total	**11.6%**	**16.2%**	**-4.6%**	**0.1%**	**-4.7%**	**-4.6%**

The performance calculation methodology in attribution tables is different from the standard time weighted returns (geometric linkage of monthly returns) found throughout the rest of the report. In attribution tables, the average weight of each asset class (over the specified time period) is multiplied by the time period performance of that asset class and summed. Values may not foot due to rounding.

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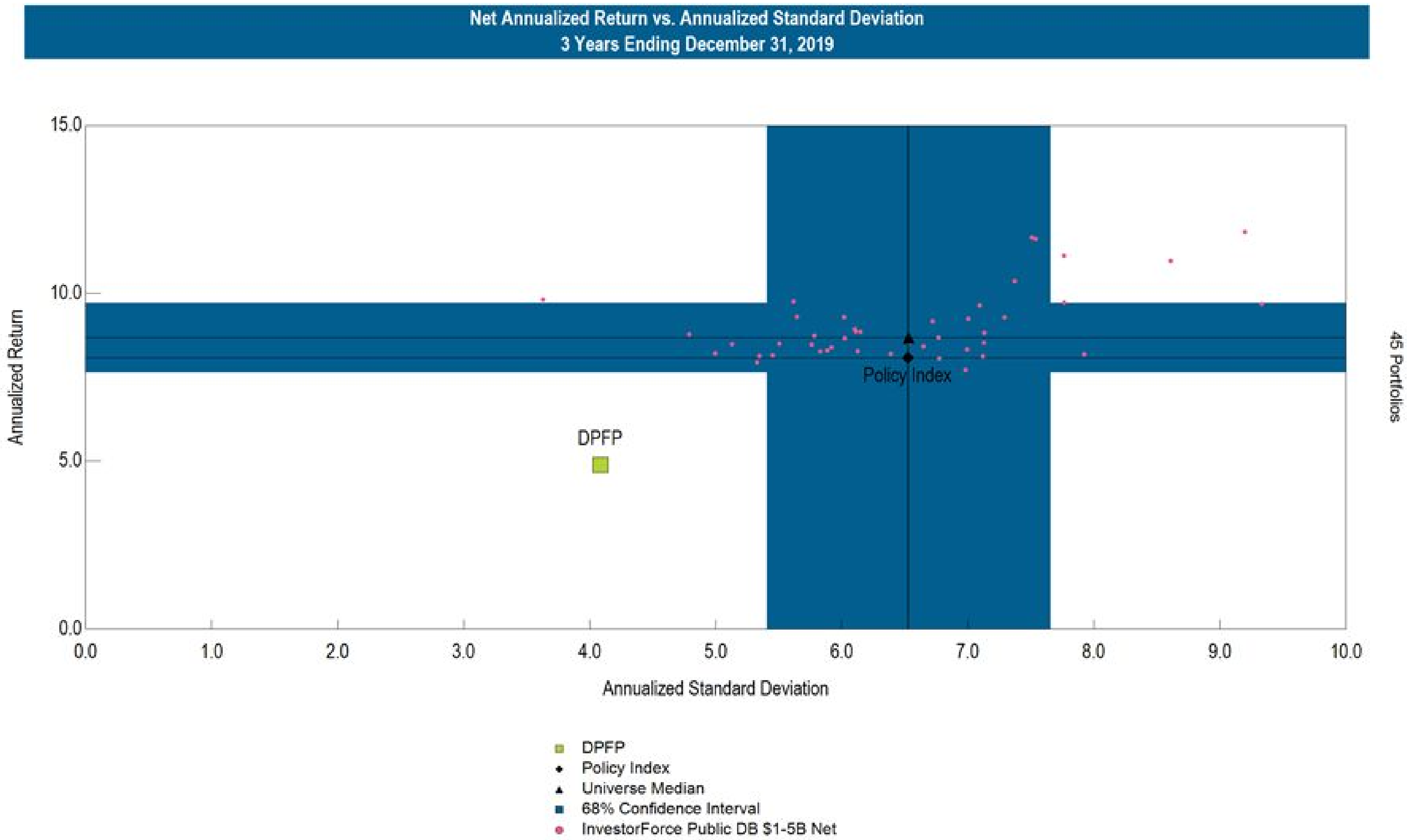
Dallas Police & Fire Pension System

DPFP | As of December 31, 2019



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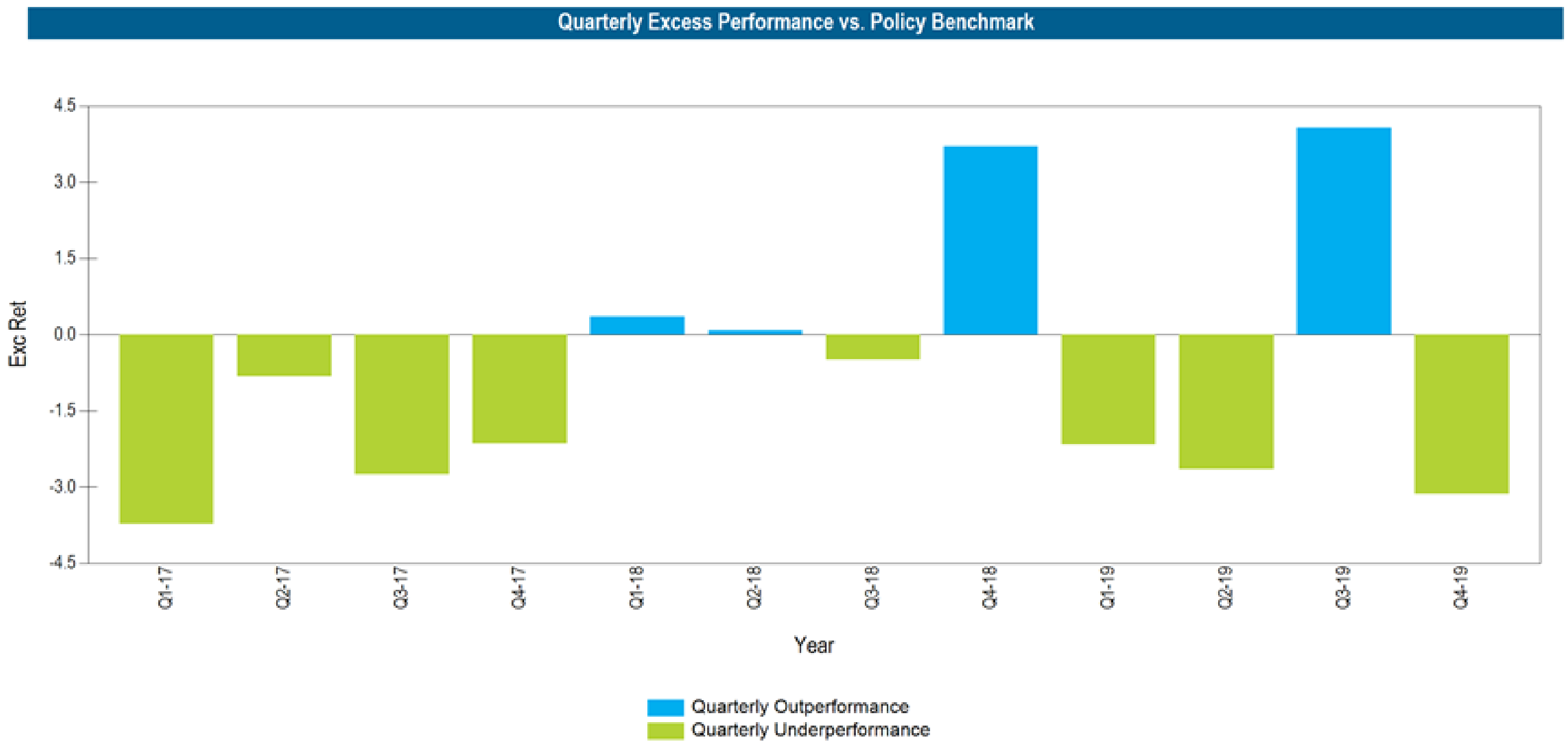
Dallas Police & Fire Pension System

DPFP | As of December 31, 2019



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Dallas Police & Fire Pension System

DPFP | As of December 31, 2019

Total Fund Correlation Matrix
1 Year Ending December 31, 2019

	DPFP	Policy Index	60% MSCI ACWI/40% Barclays Global Agg
DPFP	1.00	--	--
Policy Index	0.52	1.00	--
60% MSCI ACWI/40% Barclays Global Agg	0.44	0.99	1.00

Total Fund Correlation Matrix
3 Years Ending December 31, 2019

	DPFP	Policy Index	60% MSCI ACWI/40% Barclays Global Agg
DPFP	1.00	--	--
Policy Index	0.70	1.00	--
60% MSCI ACWI/40% Barclays Global Agg	0.66	0.98	1.00

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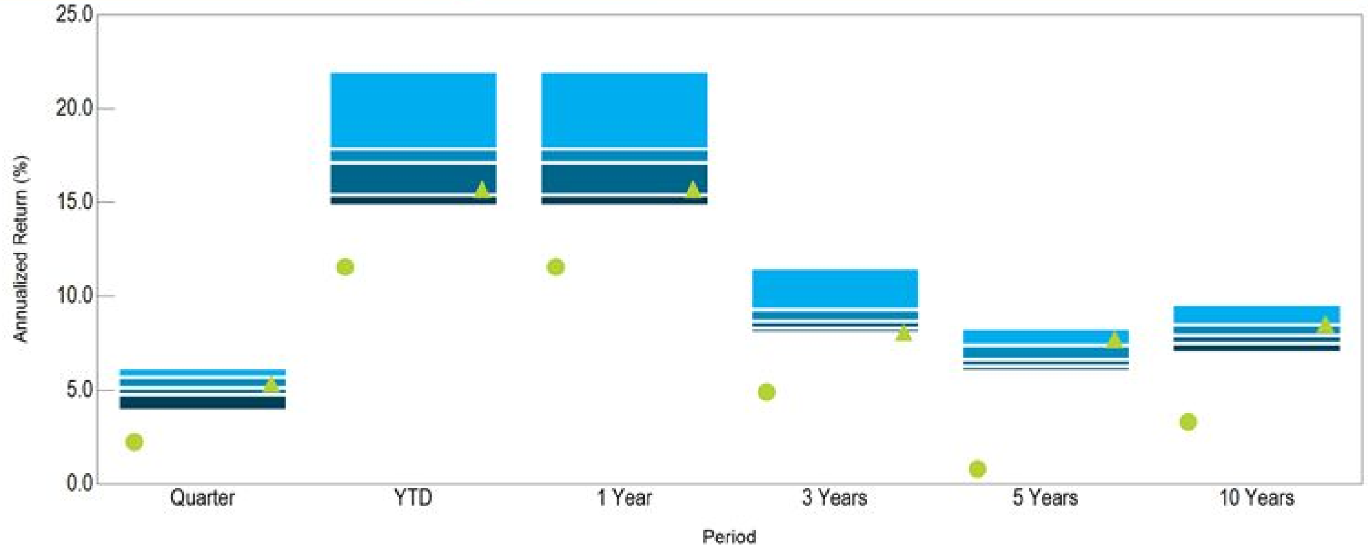
Dallas Police & Fire Pension System

DPFP | As of December 31, 2019

Total Plan vs. InvestorForce Public DB $1-5B Net Accounts
Ending December 31, 2019



	Return (Rank)											
5th Percentile	6.2		22.0		22.0		11.5		8.3		9.6	
25th Percentile	5.7		17.8		17.8		9.3		7.4		8.5	
Median	5.1		17.1		17.1		8.7		6.6		7.9	
75th Percentile	4.8		15.4		15.4		8.3		6.3		7.5	
95th Percentile	3.9		14.8		14.8		8.1		6.0		7.0	
# of Portfolios	45		45		45		45		45		39	
DPFP	2.2	(99)	11.6	(99)	11.6	(99)	4.9	(99)	0.8	(99)	3.3	(99)
Policy Index	5.4	(41)	15.7	(74)	15.7	(74)	8.1	(95)	7.7	(11)	8.5	(25)

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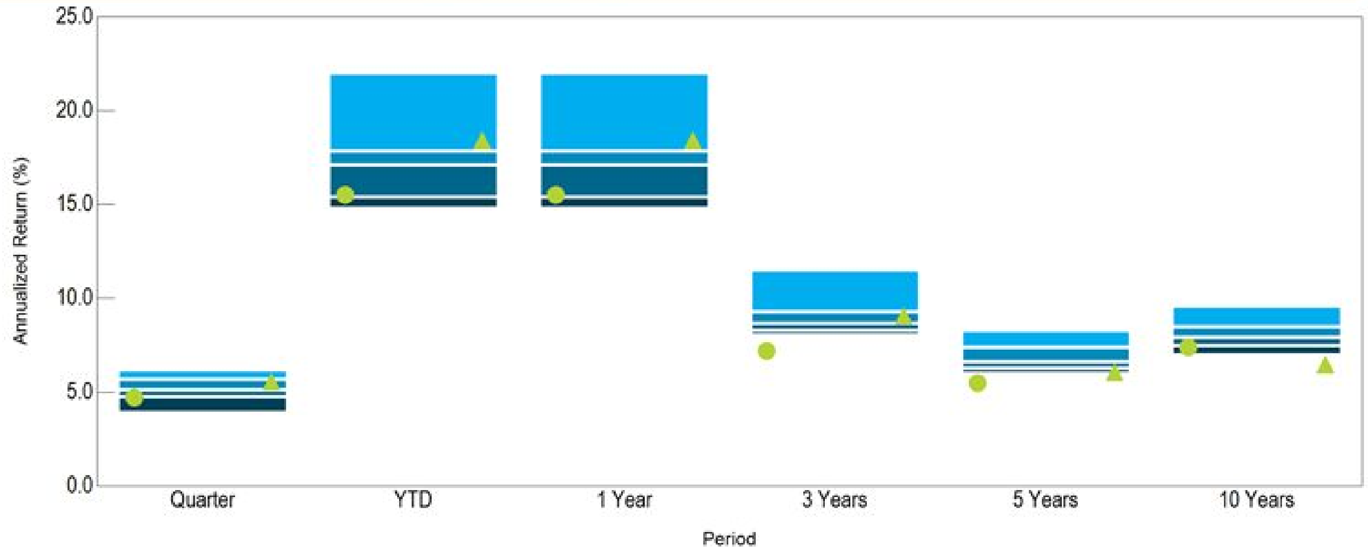
Dallas Police & Fire Pension System

DPFP | As of December 31, 2019

Total Plan ex Privates vs. InvestorForce Public DB $1-5B Net Accounts
As of December 31, 2019



Return (Rank)	Quarter		YTD		1 Year		3 Years		5 Years		10 Years	
5th Percentile	6.2		22.0		22.0		11.5		8.3		9.6	
25th Percentile	5.7		17.8		17.8		9.3		7.4		8.5	
Median	5.1		17.1		17.1		8.7		6.6		7.9	
75th Percentile	4.8		15.4		15.4		8.3		6.3		7.5	
95th Percentile	3.9		14.8		14.8		8.1		6.0		7.0	
# of Portfolios	45		45		45		45		45		39	
● Total Fund ex Privates	4.7	(78)	15.5	(75)	15.5	(75)	7.2	(99)	5.5	(99)	7.4	(81)
▲ 60% MSCI ACWI IMI Net/40% Barclays Global	5.6	(34)	18.4	(22)	18.4	(22)	9.1	(35)	6.1	(92)	6.5	(99)

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Dallas Police & Fire Pension System

DPFP | As of December 31, 2019

Asset Class Performance Summary (Net)

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	S.I. (%)	S.I. Date
DPFP	**2,074,105,877**	**100.0**	**2.2**	**11.6**	**4.9**	**0.8**	**3.3**	**5.9**	**Jun-96**
Policy Index			*5.4*	*15.7*	*8.1*	*7.7*	*8.5*	*--*	*Jun-96*
Allocation Index			*3.4*	*11.5*	*7.4*	*7.4*	*7.8*	*7.3*	*Jun-96*
Total Fund Ex Private Markets			*4.7*	*15.5*	*7.2*	*5.5*	*7.4*	*5.6*	*Jun-96*
60% MSCI ACWI IMI Net/40% Barclays Global Aggregate Index			*5.6*	*18.4*	*9.1*	*6.1*	*6.5*	*6.2*	*Jun-96*
Global Equity	**515,138,013**	**24.8**	**8.7**	**28.3**	**14.1**	**9.6**	**10.0**	**6.9**	**Jul-06**
MSCI ACWI IMI Net USD			*9.0*	*26.4*	*12.1*	*8.3*	*8.9*	*6.5*	*Jul-06*
Emerging Markets Equity	**53,160,484**	**2.6**	**10.0**	**17.9**	**--**	**--**	**--**	**2.9**	**Jan-18**
MSCI Emerging Market IMI Net			*11.6*	*17.7*	*11.0*	*5.3*	*3.6*	*0.0*	*Jan-18*
Private Equity	**292,794,990**	**14.1**	**-1.4**	**23.5**	**-3.8**	**-6.8**	**-1.0**	**0.8**	**Oct-05**
Cambridge Associates US All PE (1 Qtr Lag)			*1.3*	*8.0*	*14.2*	*11.4*	*14.1*	*12.7*	*Oct-05*
Cash Equivalents	**91,181,180**	**4.4**	**0.5**	**2.4**	**1.7**	**--**	**--**	**1.5**	**Apr-15**
91 Day T-Bills			*0.4*	*2.1*	*1.6*	*1.1*	*0.6*	*1.1*	*Apr-15*
Short Term Core Bonds	**263,096,788**	**12.7**	**0.6**	**4.3**	**--**	**--**	**--**	**2.5**	**Jun-17**
BBgBarc US Treasury 1-3 Yr TR			*0.5*	*3.6*	*1.9*	*1.4*	*1.2*	*2.0*	*Jun-17*
Investment Grade Bonds	**36,718,202**	**1.8**	**0.0**	**--**	**--**	**--**	**--**	**0.0**	**Oct-19**
BBgBarc US Aggregate TR			*0.2*	*8.7*	*4.0*	*3.0*	*3.7*	*0.2*	*Oct-19*
Global Bonds	**69,661,567**	**3.4**	**4.0**	**9.3**	**5.4**	**2.7**	**--**	**3.0**	**Dec-10**
BBgBarc Global Aggregate TR			*0.5*	*6.8*	*4.3*	*2.3*	*2.5*	*2.1*	*Dec-10*
Bank Loans	**81,261,689**	**3.9**	**0.9**	**6.9**	**4.3**	**4.5**	**--**	**4.1**	**Jan-14**
S&P/LSTA Leveraged Loan			*1.7*	*8.6*	*4.3*	*4.4*	*--*	*4.0*	*Jan-14*
High Yield Bonds	**86,038,276**	**4.1**	**2.7**	**9.1**	**5.6**	**4.6**	**--**	**6.2**	**Dec-10**
BBgBarc Global High Yield TR			*3.5*	*12.6*	*6.0*	*5.8*	*7.3*	*6.5*	*Dec-10*
Emerging Markets Debt	**21,184,707**	**1.0**	**3.1**	**10.6**	**6.2**	**5.2**	**--**	**3.8**	**Dec-10**
50% JPM EMBI/50% JPM GBI-EM			*3.5*	*14.3*	*6.9*	*4.6*	*--*	*3.8*	*Dec-10*
Private Debt	**8,948,111**	**0.4**	**0.2**	**2.5**	**-3.7**	**--**	**--**	**-1.9**	**Jan-16**
Barclays Global High Yield +2%			*4.0*	*14.8*	*8.2*	*7.9*	*--*	*10.2*	*Jan-16*

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Asset Class Performance Summary (Net)

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	S.I. (%)	S.I. Date
Real Estate	**373,841,107**	**18.1**	**-0.1**	**0.2**	**3.4**	**-6.0**	**-3.5**	**3.7**	**Mar-85**
NCREIF Property (1-quarter lagged)			*1.4*	*6.2*	*6.8*	*8.6*	*9.8*	*8.0*	*Mar-85*
Natural Resources	**126,859,018**	**6.1**	**-1.8**	**3.6**	**-2.6**	**1.1**	**--**	**3.7**	**Dec-10**
NCREIF Farmland Total Return Index 1Q Lag			*1.0*	*5.3*	*6.1*	*7.9*	*11.0*	*11.7*	*Dec-10*
Infrastructure	**54,221,745**	**2.6**	**-2.9**	**-5.6**	**15.0**	**6.6**	**--**	**6.1**	**Jul-12**
S&P Global Infrastructure TR USD			*5.1*	*27.0*	*11.3*	*6.6*	*7.7*	*9.0*	*Jul-12*

[1] Please see the Appendix for composition of the Custom Benchmarks. [2] As of 12/31/2019, the Safety Reserve exposure was approximately $354.3 million (17%). [3] All private market data is one quarter lagged, unless otherwise noted. [4] Huff Alternative Fund 6/30/2019 valuation used.

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Trailing Net Performance

	Market Value ($)	% of Portfolio	% of Sector	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	S.I. (%)	S.I. Date
DPFP	**2,074,105,877**	**100.0**	**--**	**2.2**	**11.6**	**4.9**	**0.8**	**3.3**	**5.9**	**Jun-96**
Policy Index				*5.4*	*15.7*	*8.1*	*7.7*	*8.5*	*--*	*Jun-96*
Allocation Index				*3.4*	*11.5*	*7.4*	*7.4*	*7.8*	*7.3*	*Jun-96*
Total Fund Ex Private Markets				*4.7*	*15.4*	*7.2*	*5.5*	*7.4*	*5.6*	*Jun-96*
60% MSCI ACWI IMI Net/40% Barclays Global Aggregate Index				*5.6*	*18.4*	*9.1*	*6.1*	*6.5*	*6.2*	*Jun-96*
InvestorForce Public DB $1-5B Net Rank				*99*	*99*	*99*	*99*	*99*	*81*	*Jun-96*
Total Equity	**861,093,488**	**41.5**	**41.5**	**5.1**	**26.0**	**4.0**	**2.6**	**--**	**5.5**	**Dec-10**
MSCI ACWI IMI Net USD				*9.0*	*26.4*	*12.1*	*8.3*	*8.9*	*8.3*	*Dec-10*
Public Equity	**568,298,497**	**27.4**	**66.0**	**8.8**	**27.2**	**13.7**	**9.4**	**9.9**	**6.8**	**Jul-06**
MSCI ACWI IMI Net USD				*9.0*	*26.4*	*12.1*	*8.3*	*8.9*	*6.5*	*Jul-06*
eV All Global Equity Net Rank				*46*	*44*	*31*	*33*	*37*	*39*	*Jul-06*
Global Equity	**515,138,013**	**24.8**	**90.6**	**8.7**	**28.3**	**14.1**	**9.6**	**10.0**	**6.9**	**Jul-06**
MSCI ACWI IMI Net USD				*9.0*	*26.4*	*12.1*	*8.3*	*8.9*	*6.5*	*Jul-06*
eV All Global Equity Net Rank				*49*	*38*	*29*	*30*	*35*	*37*	*Jul-06*
Boston Partners Global Equity Fund	127,967,394	6.2	24.8	7.1	19.6	--	--	--	5.6	Jul-17
MSCI World Net				*8.6*	*27.7*	*12.6*	*8.7*	*9.5*	*10.7*	*Jul-17*
eV Global Large Cap Value Eq Net Rank				*77*	*83*	*--*	*--*	*--*	*76*	*Jul-17*
Manulife Global Equity Strategy	129,297,700	6.2	25.1	7.0	30.4	--	--	--	9.2	Jul-17
MSCI ACWI Net				*9.0*	*26.6*	*12.4*	*8.4*	*8.8*	*10.2*	*Jul-17*
eV Global Large Cap Value Eq Net Rank				*78*	*1*	*--*	*--*	*--*	*14*	*Jul-17*

[1] 60% MSCI ACWI IMI Net/40% Barclays Global Aggregate Index composed of 60% MSCI ACWI (Net)/ 40% Barclays Global Aggregate in periods before 2/1/1997.

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	Market Value ($)	% of Portfolio	% of Sector	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	S.I. (%)	S.I. Date
Invesco (fka OFI) Global Equity	129,905,674	6.3	25.2	12.6	32.0	16.1	10.6	10.8	6.8	Oct-07
MSCI ACWI Net				*9.0*	*26.6*	*12.4*	*8.4*	*8.8*	*4.8*	*Oct-07*
eV Global Large Cap Growth Eq Net Rank				*10*	*64*	*85*	*68*	*65*	*53*	*Oct-07*
Walter Scott Global Equity Fund	127,967,245	6.2	24.8	8.1	30.5	17.0	11.5	10.5	10.4	Dec-09
MSCI ACWI Net				*9.0*	*26.6*	*12.4*	*8.4*	*8.8*	*8.9*	*Dec-09*
eV Global Large Cap Growth Eq Net Rank				*79*	*83*	*69*	*37*	*71*	*74*	*Dec-09*
Emerging Markets Equity	**53,160,484**	**2.6**	**9.4**	**10.0**	**17.9**	**--**	**--**	**--**	**2.9**	**Jan-18**
MSCI Emerging Market IMI Net				*11.6*	*17.7*	*11.0*	*5.3*	*3.6*	*0.0*	*Jan-18*
eV Emg Mkts Equity Net Rank				*72*	*63*	*--*	*--*	*--*	*15*	*Jan-18*
RBC Emerging Markets Equity	53,160,484	2.6	100.0	10.0	17.9	--	--	--	2.9	Jan-18
MSCI Emerging Market IMI Net				*11.6*	*17.7*	*11.0*	*5.3*	*3.6*	*0.0*	*Jan-18*
eV Emg Mkts Equity Net Rank				*72*	*63*	*--*	*--*	*--*	*15*	*Jan-18*
Private Equity	**292,794,990**	**14.1**	**34.0**	**-1.4**	**23.5**	**-3.8**	**-6.8**	**-1.0**	**0.8**	**Oct-05**
Cambridge Associates US All PE (1 Qtr Lag)				*1.3*	*8.0*	*14.2*	*11.4*	*14.1*	*12.7*	*Oct-05*
Total Fixed Income and Cash	**658,090,519**	**31.7**	**31.7**	**1.3**	**5.7**	**3.1**	**2.7**	**5.9**	**5.2**	**Jul-06**
BBgBarc Multiverse TR				*0.6*	*7.1*	*4.4*	*2.5*	*2.7*	*3.9*	*Jul-06*
eV All Global Fixed Inc Net Rank				*59*	*88*	*92*	*68*	*20*	*36*	*Jul-06*
Cash Equivalents	**91,181,180**	**4.4**	**13.9**	**0.5**	**2.4**	**1.7**	**--**	**--**	**1.5**	**Apr-15**
91 Day T-Bills				*0.4*	*2.1*	*1.6*	*1.1*	*0.6*	*1.1*	*Apr-15*

[1] All Private Equity market values are one quarter lagged unless otherwise noted.

[2]Huff Alternative Fund 6/30/2019 valuation used.

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	Market Value ($)	% of Portfolio	% of Sector	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	S.I. (%)	S.I. Date
Public Fixed Income	**557,961,228**	**26.9**	**84.8**	**1.4**	**6.2**	**5.2**	**4.1**	**--**	**5.2**	**Dec-10**
BBgBarc Multiverse TR				*0.6*	*7.1*	*4.4*	*2.5*	*2.7*	*2.3*	*Dec-10*
eV All Global Fixed Inc Net Rank				*57*	*86*	*40*	*38*	*--*	*23*	*Dec-10*
Short Term Core Bonds	**263,096,788**	**12.7**	**47.2**	**0.6**	**4.3**	**--**	**--**	**--**	**2.5**	**Jun-17**
BBgBarc US Treasury 1-3 Yr TR				*0.5*	*3.6*	*1.9*	*1.4*	*1.2*	*2.0*	*Jun-17*
IR&M 1-3 Year Strategy	263,096,788	12.7	100.0	0.6	4.3	--	--	--	2.5	Jul-17
BBgBarc US Govt/Credit 1-3 Yr. TR				*0.6*	*4.0*	*2.1*	*1.7*	*1.5*	*2.3*	*Jul-17*
eV US Short Duration Fixed Inc Net Rank				*34*	*54*	*--*	*--*	*--*	*43*	*Jul-17*
Investment Grade Bonds	**36,718,202**	**1.8**	**6.6**	**0.0**	**--**	**--**	**--**	**--**	**0.0**	**Oct-19**
BBgBarc US Aggregate TR				*0.2*	*8.7*	*4.0*	*3.0*	*3.7*	*0.2*	*Oct-19*
Vanguard Total Bond Market Index Inst	36,718,202	1.8	100.0	0.0	--	--	--	--	0.0	Oct-19
BBgBarc US Aggregate Float Adjusted TR				*0.1*	*8.9*	*4.1*	*3.1*	*3.8*	*0.1*	*Oct-19*
Global Bonds	**69,661,567**	**3.4**	**12.5**	**4.0**	**9.3**	**5.4**	**2.7**	**--**	**3.0**	**Dec-10**
BBgBarc Global Aggregate TR				*0.5*	*6.8*	*4.3*	*2.3*	*2.5*	*2.1*	*Dec-10*
eV All Global Fixed Inc Net Rank				*10*	*53*	*34*	*68*	*--*	*61*	*Dec-10*
Brandywine Global Fixed Income	69,661,567	3.4	100.0	4.0	9.3	5.4	2.4	4.7	4.7	Oct-04
BBgBarc Global Aggregate TR				*0.5*	*6.8*	*4.3*	*2.3*	*2.5*	*3.6*	*Oct-04*
eV All Global Fixed Inc Net Rank				*10*	*53*	*34*	*72*	*39*	*44*	*Oct-04*

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	Market Value ($)	% of Portfolio	% of Sector	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	S.I. (%)	S.I. Date
Bank Loans	**81,261,689**	**3.9**	**14.6**	**0.9**	**6.9**	**4.3**	**4.5**	**--**	**4.1**	**Jan-14**
S&P/LSTA Leveraged Loan				*1.7*	*8.6*	*4.3*	*4.4*	*--*	*4.0*	*Jan-14*
eV US Float-Rate Bank Loan Fixed Inc Net Rank				*92*	*84*	*20*	*34*	*--*	*17*	*Jan-14*
Loomis Sayles Senior Rate and Fixed Income	39,807,214	1.9	49.0	0.4	5.3	3.9	4.2	--	3.9	Jan-14
S&P/LSTA Leveraged Loan				*1.7*	*8.6*	*4.3*	*4.4*	*--*	*4.0*	*Jan-14*
eV US Float-Rate Bank Loan Fixed Inc Net Rank				*99*	*92*	*60*	*48*	*--*	*42*	*Jan-14*
Pacific Asset Management Corporate (Bank) Loans	41,454,475	2.0	51.0	1.5	8.7	--	--	--	4.6	Aug-17
Credit Suisse Leveraged Loan				*1.7*	*8.2*	*4.5*	*4.5*	*--*	*4.4*	*Aug-17*
eV US Float-Rate Bank Loan Fixed Inc Net Rank				*69*	*22*	*--*	*--*	*--*	*15*	*Aug-17*
High Yield Bonds	**86,038,276**	**4.1**	**15.4**	**2.7**	**9.1**	**5.6**	**4.6**	**--**	**6.2**	**Dec-10**
BBgBarc Global High Yield TR				*3.5*	*12.6*	*6.0*	*5.8*	*7.3*	*6.5*	*Dec-10*
eV Global High Yield Fixed Inc Net Rank				*54*	*99*	*74*	*89*	*--*	*55*	*Dec-10*
Loomis Sayles High Yield Fund	86,038,276	4.1	100.0	2.7	9.1	5.7	4.9	7.6	9.0	Oct-98
BBgBarc Global High Yield TR				*3.5*	*12.6*	*6.0*	*5.8*	*7.3*	*8.2*	*Oct-98*
eV Global High Yield Fixed Inc Net Rank				*54*	*99*	*73*	*72*	*24*	*22*	*Oct-98*
Emerging Markets Debt	**21,184,707**	**1.0**	**3.8**	**3.1**	**10.6**	**6.2**	**5.2**	**--**	**3.8**	**Dec-10**
50% JPM EMBI/50% JPM GBI-EM				*3.5*	*14.3*	*6.9*	*4.6*	*--*	*3.8*	*Dec-10*
eV All Emg Mkts Fixed Inc Net Rank				*55*	*91*	*61*	*53*	*--*	*58*	*Dec-10*
Ashmore EM Blended Debt	21,184,707	1.0	100.0	3.1	10.6	--	--	--	2.8	Dec-17
Ashmore Blended Debt Benchmark				*3.1*	*12.2*	*6.2*	*4.3*	*4.3*	*3.9*	*Dec-17*
eV All Emg Mkts Fixed Inc Net Rank				*55*	*91*	*--*	*--*	*--*	*75*	*Dec-17*

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	Market Value ($)	% of Portfolio	% of Sector	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	S.I. (%)	S.I. Date
Private Debt	**8,948,111**	**0.4**	**1.4**	**0.2**	**2.5**	**-3.7**	**--**	**--**	**-1.9**	**Jan-16**
Barclays Global High Yield +2%				*4.0*	*14.8*	*8.2*	*7.9*	*--*	*10.2*	*Jan-16*
Total Real Assets	**554,921,870**	**26.8**	**26.8**	**-0.8**	**0.5**	**4.7**	**-2.9**	**--**	**-1.9**	**Dec-10**
Total Real Assets Policy Index				*1.2*	*5.8*	*6.4*	*8.2*	*10.4*	*11.0*	*Dec-10*
Real Estate	**373,841,107**	**18.0**	**67.4**	**-0.1**	**0.2**	**3.4**	**-6.0**	**-3.5**	**3.7**	**Mar-85**
NCREIF Property (1-quarter lagged)				*1.4*	*6.2*	*6.8*	*8.6*	*9.8*	*8.0*	*Mar-85*
Natural Resources	**126,859,018**	**6.1**	**22.9**	**-1.8**	**3.6**	**-2.6**	**1.1**	**--**	**3.7**	**Dec-10**
NCREIF Farmland Total Return Index 1Q Lag				*1.0*	*5.3*	*6.1*	*7.9*	*11.0*	*11.7*	*Dec-10*
Infrastructure	**54,221,745**	**2.6**	**9.8**	**-2.9**	**-5.6**	**15.0**	**6.6**	**--**	**6.1**	**Jul-12**
S&P Global Infrastructure TR USD				*5.1*	*27.0*	*11.3*	*6.6*	*7.7*	*9.0*	*Jul-12*

[1] All Private Market market values are one quarter lagged unless otherwise noted.

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Benchmark History
As of December 31, 2019

DPFP		
		DPFP Policy Benchmark is based upon the asset class target weight multiplied by its respective benchmark for every period and was updated when benchmark or asset allocation targets changed. The most recent Policy Benchmark changes are shown below.
1/1/2019	Present	50% JPM EMBI/50% JPM GBI-EM / 5% NCREIF Farmland Total Return Index 1Q Lag / 5% NCREIF Property (1-quarter lagged) / 3% 91 Day T-Bills
10/1/2018	12/31/2018	40% MSCI ACWI Gross / 10% MSCI Emerging Markets Gross / 5% Private Equity Custom Benchmark / 12% BBgBarc US Treasury 1-3 Yr TR / 4% BBgBarc Global Aggregate TR / 4% BBgBarc Global High Yield TR / 4% S&P/LSTA Leveraged Loan / 4% BBgBarc US Aggregate TR / 4% 50% JPM EMBI/50% JPM GBI-EM / 5% Natural Resources Benchmark (Linked) / 5% NCREIF Property Index / 3% 91 Day T-Bills
4/1/2016	9/30/2018	20% MSCI ACWI Gross / 5% MSCI Emerging Markets Gross / 5% Private Equity Custom Benchmark / 2% BBgBarc US Treasury 1-3 Yr TR / 3% BBgBarc Global Aggregate TR / 5% BBgBarc Global High Yield TR / 6% S&P/LSTA Leveraged Loan / 6% HFRI RV: FI (50/50-ABS/Corp) / 6% 50% JPM EMBI/50% JPM GBI-EM / 5% Barclays Global High Yield +2% / 5% 60% MSCI ACWI/40% Barclays Global Agg / 3% 60% MSCI ACWI/40% Barclays Global Agg / 2% HFRX Absolute Return Index / 5% Natural Resources Benchmark (Linked) / 5% S&P Global Infrastructure TR USD / 12% NCREIF Property Index / 3% CPI + 5% (Seasonally Adjusted) / 2% 91 Day T-Bills
4/1/2014	3/31/2016	15% MSCI ACWI / 15% S&P 500 + 2% / 10% Total Global Natural Resources Custom Benchmark / 15% BBgBarc Global Aggregate TR / 20% CPI + 5% (Seasonally Adjusted) / 10% CPI + 5% (Seasonally Adjusted) / 15% NCREIF Property Index
1/1/2014	3/31/2014	15% MSCI ACWI / 15% Private Markets / 10% Total Global Natural Resources Custom Benchmark / 15% BBgBarc Global Aggregate TR / 20% CPI + 5% (Seasonally Adjusted) / 10% Infrastructure / 15% Real Estate
Ashmore EM Blended Debt		
12/1/2017	Present	50% JP Morgan EMBI Global Diversified / 25% JPM ELMI+ TR USD / 25% JP Morgan GBI EM Global Diversified TR USD
Total Real Assets		
12/31/2010	Present	50% NCREIF Property (1-quarter lagged) / 50% NCREIF Farmland Total Return Index 1Q Lag

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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.

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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.

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Credit Risk: Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security.)

Duration: Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Jensen's Alpha: A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. Portfolio Return- [Risk Free Rate+Beta*(market return-Risk Free Rate)].

Market Capitalization: For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

Market Weighted: Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

Prepayment Risk: The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

Price-Book Value (P/B) Ratio: The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

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Price-Earnings (P/E) Ratio: A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about is future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

Quality Rating: The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

STIF Account: Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

Style: The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

Tracking Error: A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

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Yield to Maturity: The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a "basis book." For example, a 5% bond pays $5 a year interest on each $100 par value. To figure its current yield, divide $5 by $95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay $100 for the bond that can be bought now for $95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{\text{5\% (discount)}}{\text{5 (yrs. to maturity)}} = \begin{array}{l}\text{1\% pro rata, plus} \\ \text{5.26\% (current yield)}\end{array} = \text{6.26\% (yield to maturity)}$$

Yield to Worst: The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

NCREIF Property Index (NPI): Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE): Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.
The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

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Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.

MEKETA INVESTMENT GROUP

Dallas Police & Fire Pension System

As of September 30, 2019

Private Markets Review

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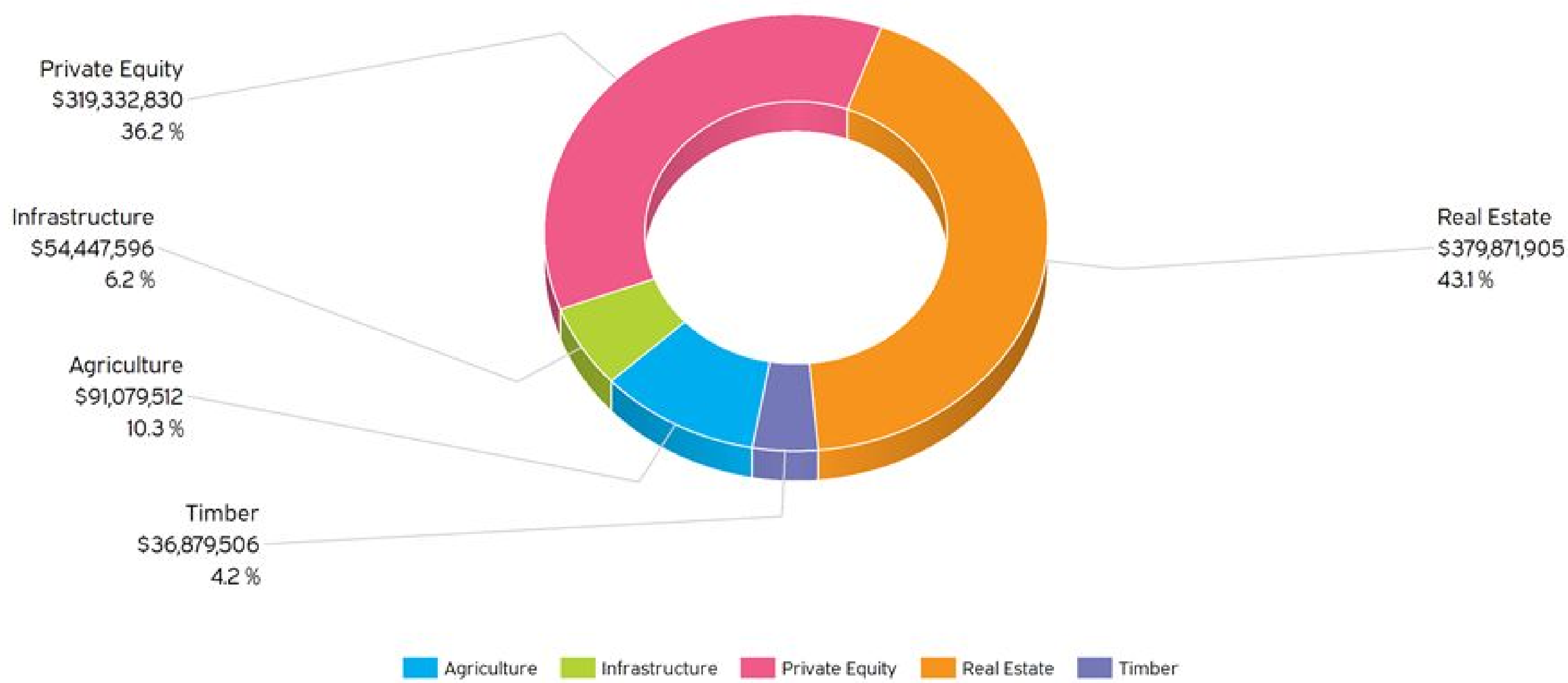
Dallas Police & Fire Pension System

Private Markets Review | As of September 30, 2019

Private Market Investments as of September 30, 2019
Market Value Allocation by Asset Class



1. Private Equity is composed of Private Equity and Private Debt

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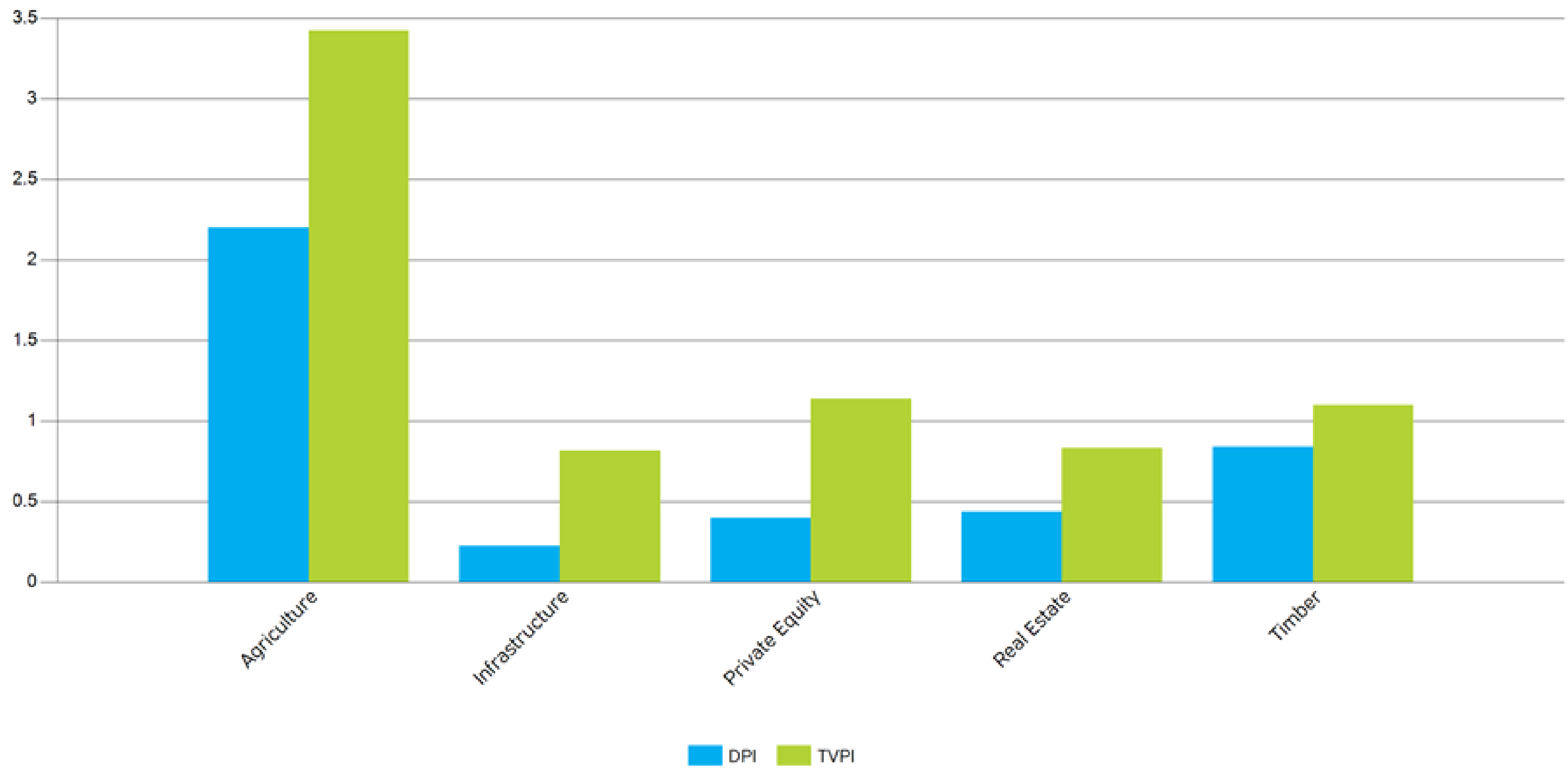
Dallas Police & Fire Pension System

Private Markets Review | As of September 30, 2019

Private Market Investments as of September 30, 2019
DPI and TVPI by Asset Class



1. Private Equity is composed of Private Equity and Private Debt
2. Private markets performance reflected is composed of active investments only

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Dallas Police & Fire Pension System

Private Markets Review | As of September 30, 2019

Private Market Investments Overview											
Active Funds	Commitments		Distributions & Valuations				Performance				
Asset Class	Commitment ($)	Paid In Capital ($)	Distributions ($)	Valuation ($)	Total Value ($)	Gain/Loss ($)	Call Ratio	DPI	TVPI	IRR (%)
Total Agriculture	74,420,001	74,420,001	163,842,840	91,079,512	254,922,352	180,502,351	1.00	2.20	3.43	14.99
Total Infrastructure	97,000,000	92,757,053	21,348,653	54,447,596	75,796,249	-16,960,804	0.96	0.23	0.82	-3.80
Total Private Equity	414,034,369	444,271,476	172,977,962	319,332,830	492,310,792	48,039,316	1.07	0.39	1.11	1.74
Total Real Estate	964,623,520	953,973,999	415,083,690	379,871,905	794,955,596	-159,018,404	0.99	0.44	0.83	-2.63
Total Timber	141,824,220	141,824,220	119,230,209	36,879,506	156,109,715	14,285,495	1.00	0.84	1.10	1.77
Total	**1,691,902,110**	**1,707,246,749**	**892,483,354**	**881,611,349**	**1,774,094,703**	**66,847,954**	**1.01**	**0.52**	**1.04**	**0.61**

1. Private Equity is composed of Private Equity and Private Debt
2. Private markets performance reflected is composed of active investments only
3. Commitment value is equal to paid in capital for direct investments made outside of a traditional limited

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Dallas Police & Fire Pension System

Active Funds with Unfunded Commitments Overview | As of September 30, 2019

Active Funds with Unfunded Commitments				
Active Funds		Commitments		
Investment Name	Vintage Year	Commitment ($)	Paid In Capital ($)	Unfunded Commitment ($)
Infrastructure				
TRG AIRRO	2008	37,000,000	37,038,332	3,289,100
TRG AIRRO II	2013	10,000,000	7,133,745	2,453,943
JPM Maritime Fund, LP	2009	50,000,000	48,584,975	1,365,941
Total Infrastructure		**97,000,000**	**92,757,053**	**7,108,985**
Private Equity				
Huff Energy Fund LP	2006	100,000,000	98,932,684	119,979
Industry Ventures Partnership IV	2016	5,000,000	3,380,000	1,620,000
Lone Star Growth Capital	2006	16,000,000	26,560,000	2,240,000
Riverstone Credit Partners LP	2016	10,000,000	12,242,390	770,350
Yellowstone Capital	2008	5,283,254	5,112,307	170,947
Total Private Equity		**136,283,254**	**146,227,381**	**4,921,276**
Real Estate				
Hearthstone MS II Homebuilding Investors	1999	10,000,000	7,973,058	1,008,131
Hearthstone MS III Homebuilding Investors	2003	10,000,000	1,221,446	1,278,554
Total Real Estate		**20,000,000**	**9,194,504**	**2,286,685**
Total		**253,283,254**	**248,178,938**	**14,316,946**

1. Private markets performance reflected is composed of active investments only
2. The funds and figures above represent investments with unfunded capital commitments
3. Lone Star valuations as directed bv Dallas Police and Fire investment staff

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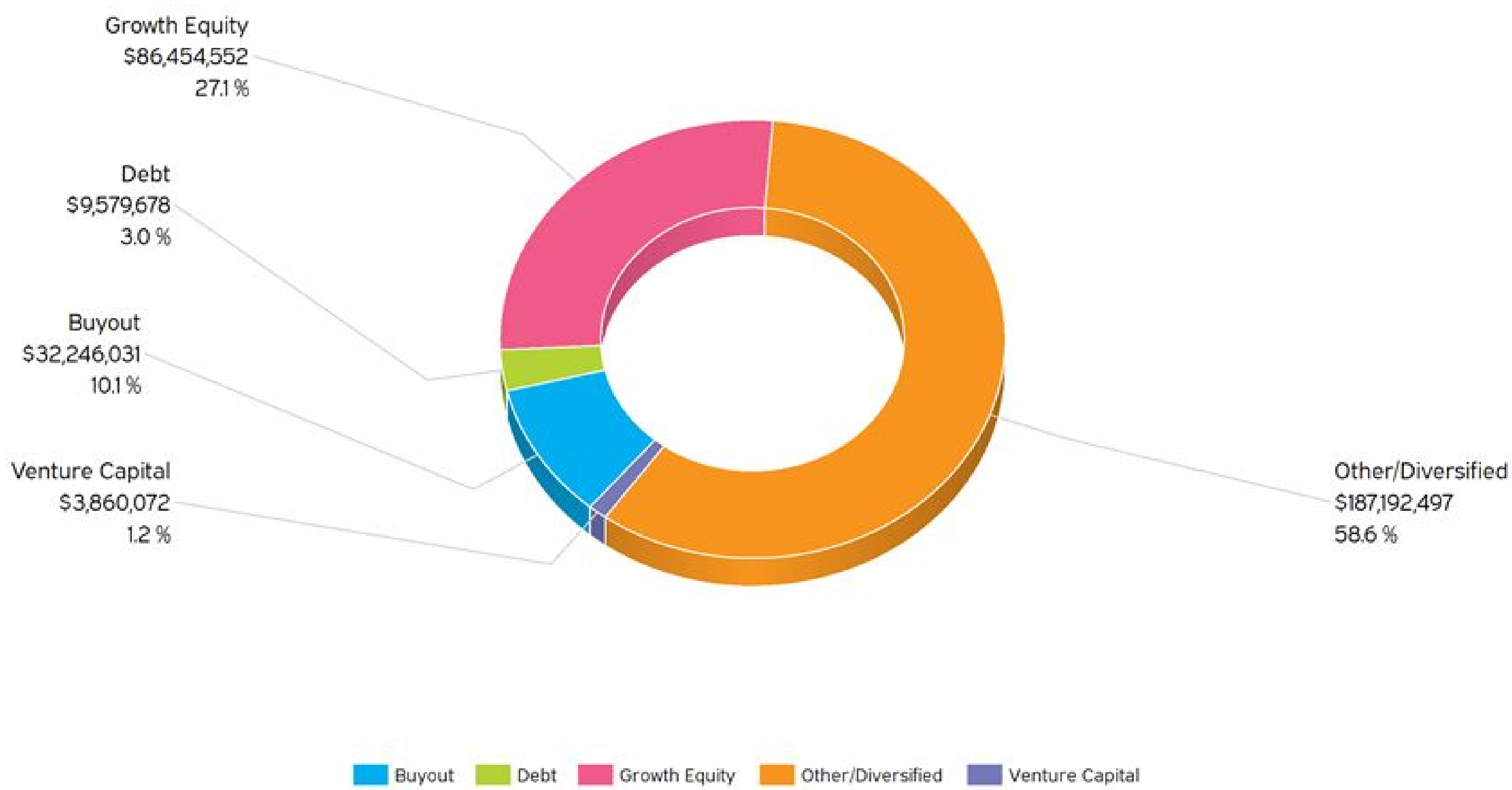
Dallas Police & Fire Pension System

Private Equity and Debt | As of September 30, 2019

Private Equity and Debt Investments as of September 30, 2019
Market Value Allocation by Strategy



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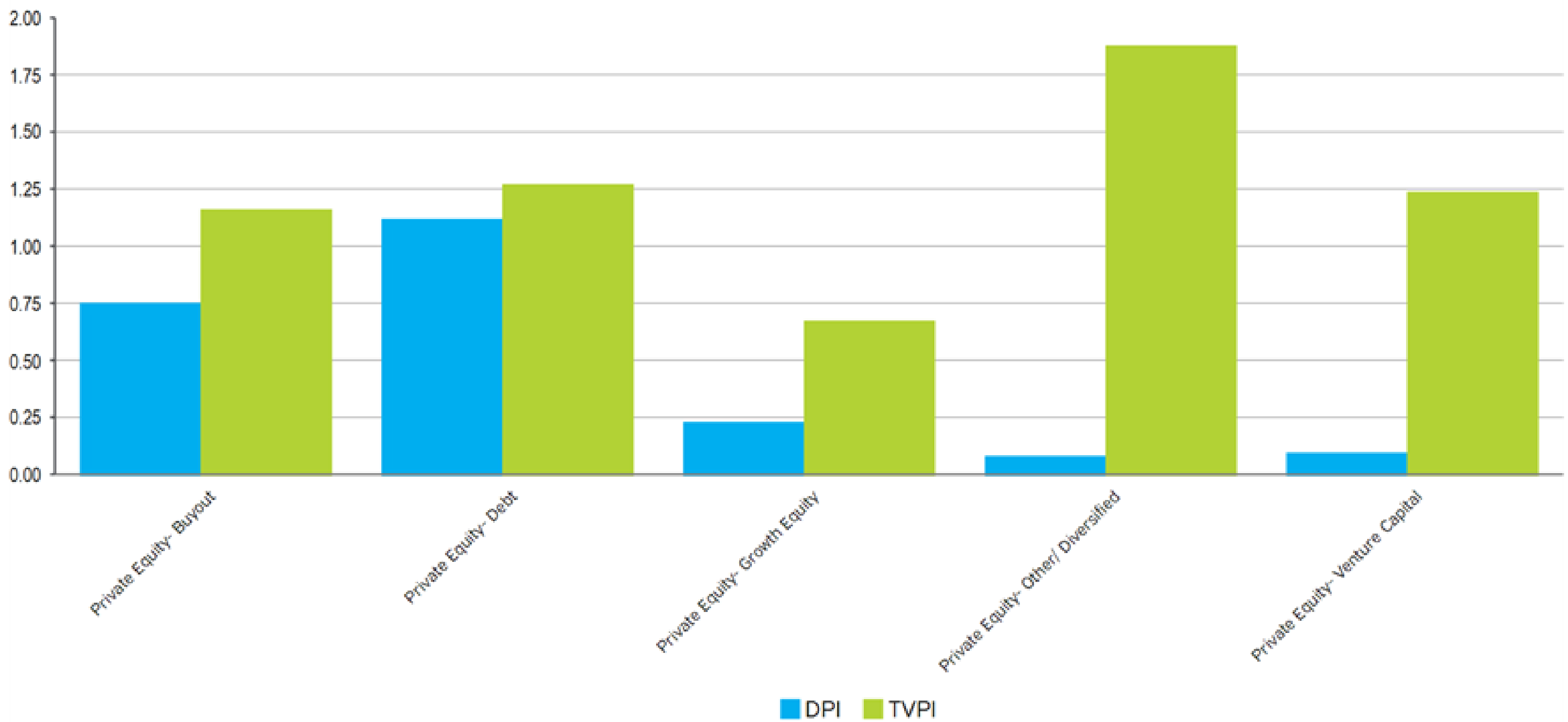
Dallas Police & Fire Pension System

Private Equity and Debt | As of September 30, 2019

Private Equity and Debt Investments as of September 30, 2019
DPI and TVPI by Strategy



1. Private markets performance reflected is composed of active investments only

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Dallas Police & Fire Pension System

Private Equity and Debt | As of September 30, 2019

Private Equity and Debt Investments Overview												
Active Funds		Commitments		Distributions & Valuations				Performance				
Investment Name	Vintage Year	Commitment ($)	Paid In Capital ($)	Distributions ($)	Valuation ($)	Total Value ($)	Gain/Loss ($)	Call Ratio	DPI	TVPI	IRR (%)
Buyout											
Huff Alternative Fund	2000	66,795,718	78,818,394	57,386,716	32,246,031	89,632,747	10,814,353	1.18	0.73	1.14	1.60
Total Buyout		**66,795,718**	**78,818,394**	**57,386,716**	**32,246,031**	**89,632,747**	**10,814,353**	**1.18**	**0.73**	**1.14**	**1.60**
Debt											
Highland Crusader Fund	2003	50,955,397	50,955,397	63,168,765	1,521,980	64,690,745	13,735,348	1.00	1.24	1.27	4.18
Riverstone Credit Partners LP	2016	10,000,000	12,242,390	6,121,861	8,057,698	14,179,559	1,937,169	1.22	0.50	1.16	9.27
Total Debt		**60,955,397**	**63,197,787**	**69,290,626**	**9,579,678**	**78,870,304**	**15,672,517**	**1.04**	**1.10**	**1.25**	**4.41**
Growth Equity											
Hudson Clean Energy	2009	25,000,000	24,994,470	4,732,352	2,834,556	7,566,908	-17,427,562	1.00	0.19	0.30	-17.59
Lone Star CRA	2008	50,000,000	58,075,361	12,928,698	59,026,786	71,955,484	13,880,123	1.16	0.22	1.24	7.46
Lone Star Growth Capital	2006	16,000,000	26,560,000	12,800,000	8,937,751	21,737,751	-4,822,249	1.66	0.48	0.82	-10.42
Lone Star Opportunities V	2012	75,000,000	75,000,000	531,444	14,148,181	14,679,625	-60,320,375	1.00	0.01	0.20	-45.88
North Texas Opportunity Fund	2000	10,000,000	10,000,000	9,127,239	1,507,278	10,634,517	634,517	1.00	0.91	1.06	0.70
Total Growth Equity		**176,000,000**	**194,629,831**	**40,119,733**	**86,454,552**	**126,574,285**	**-68,055,546**	**1.11**	**0.21**	**0.65**	**-14.67**
Other/Diversified											
Huff Energy Fund LP	2006	100,000,000	98,932,684	4,477,394	187,192,497	191,669,891	92,737,207	0.99	0.05	1.94	7.06
Yellowstone Capital	2008	5,283,254	5,112,307	1,458,572	0	1,458,572	-3,653,735	0.97	0.29	0.29	-32.45
Total Other/Diversified		**105,283,254**	**104,044,991**	**5,935,966**	**187,192,497**	**193,128,463**	**89,083,472**	**0.99**	**0.06**	**1.86**	**6.65**
Venture Capital											
Industry Ventures Partnership IV	2016	5,000,000	3,380,000	244,921	3,860,072	4,104,993	724,993	0.68	0.07	1.21	14.08
Total Venture Capital		**5,000,000**	**3,380,000**	**244,921**	**3,860,072**	**4,104,993**	**724,993**	**0.68**	**0.07**	**1.21**	**14.08**
Unclassified											
Miscellaneous Private Equity Expenses	2016		200,473								
Total Unclassified			**200,473**								
Total		**414,034,369**	**444,271,476**	**172,977,962**	**319,332,830**	**492,310,792**	**48,039,316**	**1.07**	**0.39**	**1.11**	**1.74**

1. Private Markets performance reflected is composed of active investments only.
2. Lone Star valuations directed by Dallas Police and Fire investment staff.
3.Current quarter valuation for Huff Alternative Fund not yet available. 6/30/2019 valuation shown.

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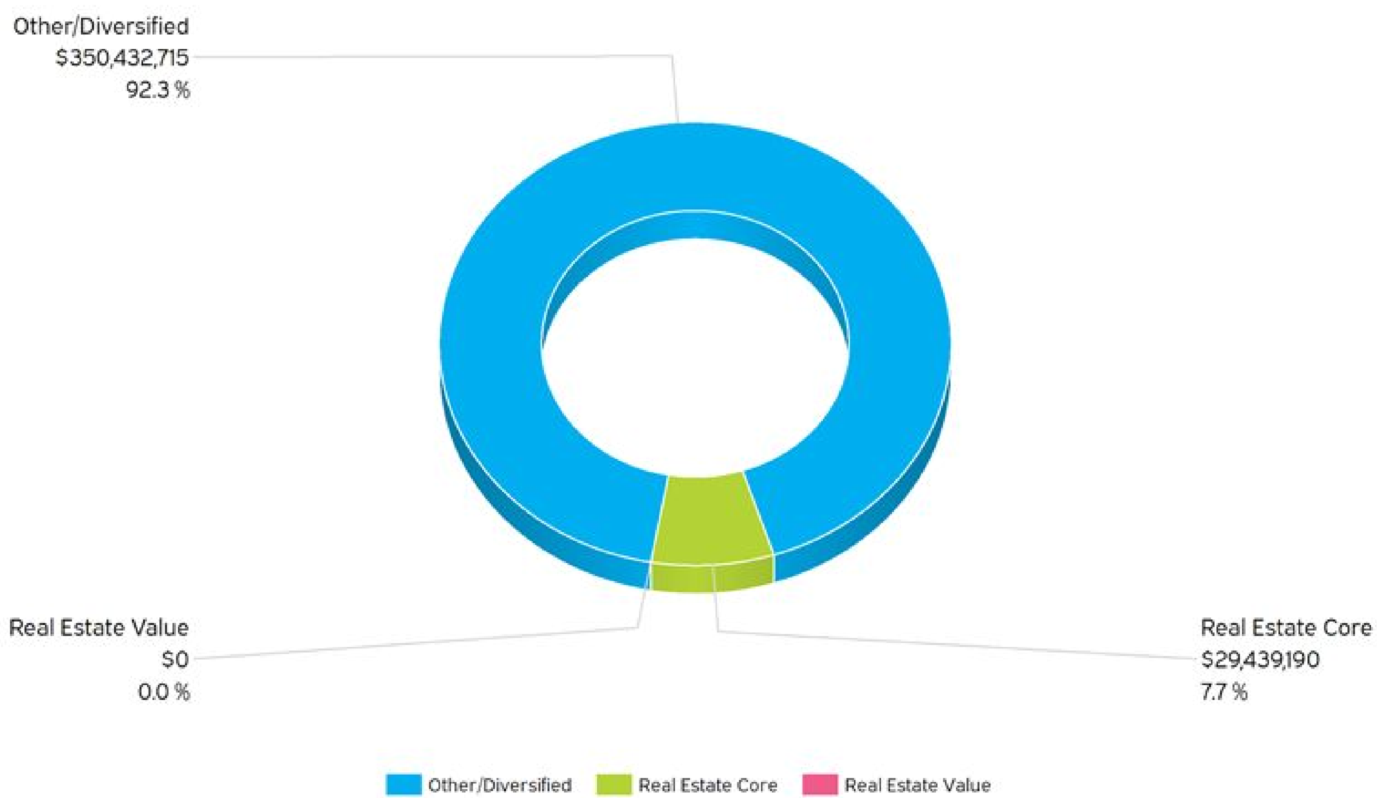
Dallas Police & Fire Pension System

Real Estate | As of September 30, 2019

Real Estate Investments as of September 30, 2019
Market Value Allocation by Strategy



1. Other/Diversified is composed of direct real estate investments made by the fund

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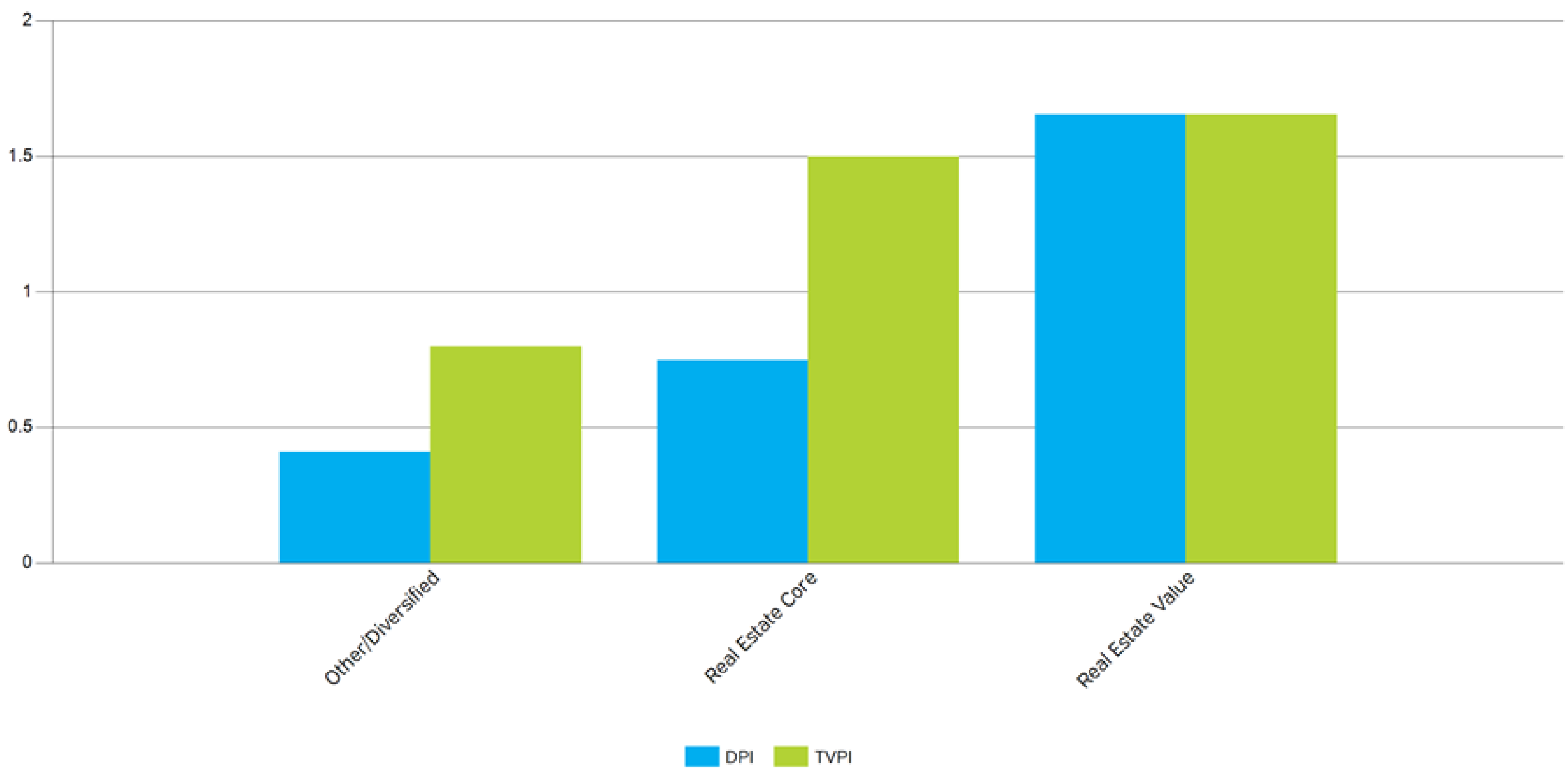
Dallas Police & Fire Pension System

Real Estate | As of September 30, 2019

Real Estate Investments as of September 30, 2019
DPI and TVPI Call Ratio by Strategy



1. Other/Diversified is composed of direct real estate investments made by the fund
2. Private markets performance reflected is composed of active investments only

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Dallas Police & Fire Pension System

Real Estate | As of September 30, 2019

Real Estate Investments Overview											
Active Funds	Commitments		Valuations				Performance				
Investment Name	Commitment ($)	Paid In Capital ($)	Distributions ($)	Valuation ($)	Total Value ($)	Gain/Loss ($)	Call Ratio	DPI	TVPI	IRR (%)
Total Other/Diversified	905,231,636	905,231,636	369,726,981	350,432,715	720,159,697	-185,071,939	1.00	0.41	0.80	-3.21
Real Estate Core										
Total Real Estate Core	39,391,884	39,391,884	29,477,265	29,439,190	58,916,455	19,524,571	1.00	0.75	1.50	5.91
Real Estate Value										
Total Real Estate Value	20,000,000	9,194,504	15,206,576	0	15,206,576	6,012,072	0.46	1.65	1.65	25.93
Total	**964,623,520**	**953,973,999**	**415,083,690**	**379,871,905**	**794,955,596**	**-159,018,404**	**0.99**	**0.44**	**0.83**	**-2.63**

1. Private markets performance reflected is composed of active investments only
2. Commitment value is equal to paid in capital for direct investments made outside of a traditional Limited Partnership fund structure

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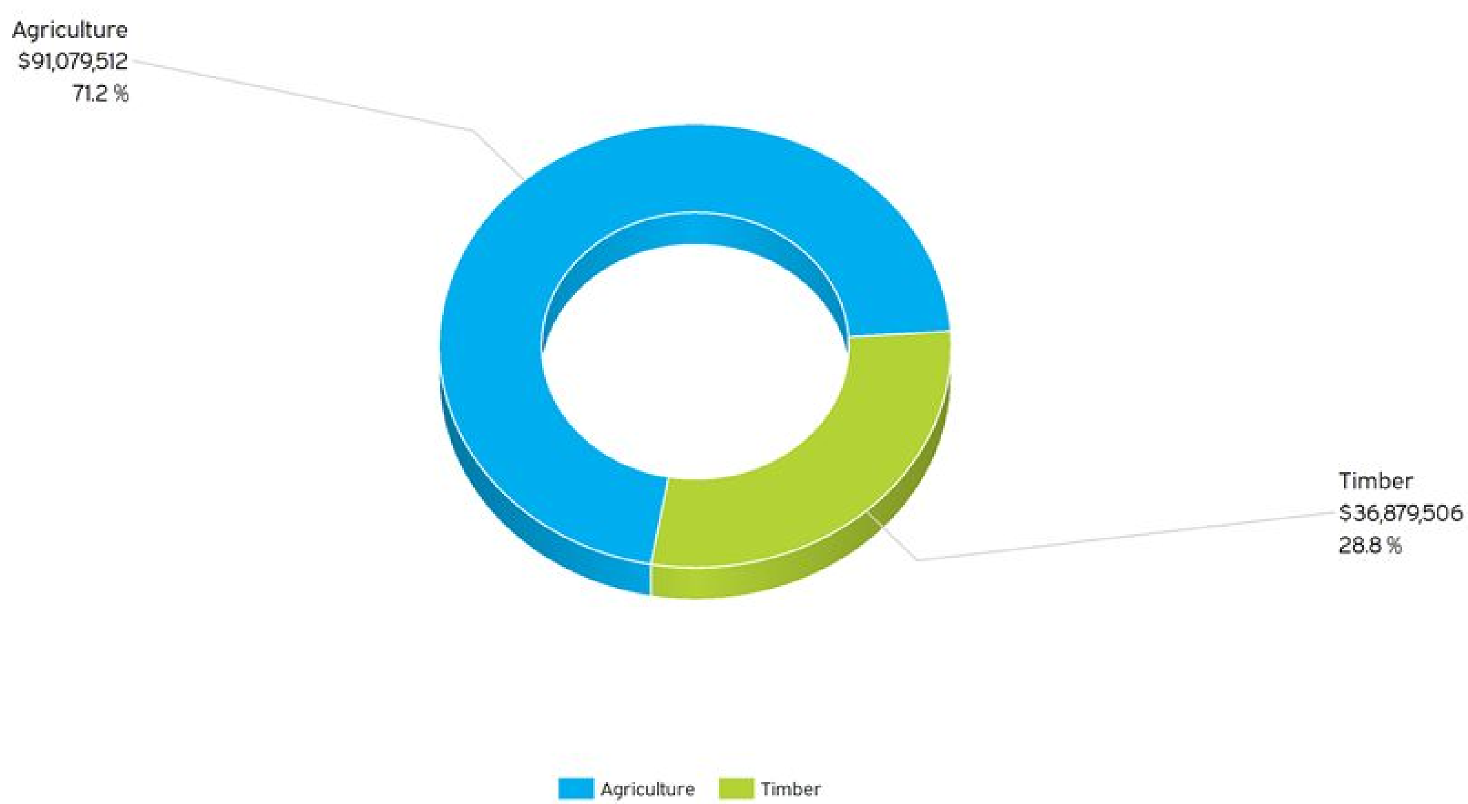
Dallas Police & Fire Pension System

Natural Resources | As of September 30, 2019

Natural Resources Investments as of September 30, 2019
Market Value Allocation by Asset Class



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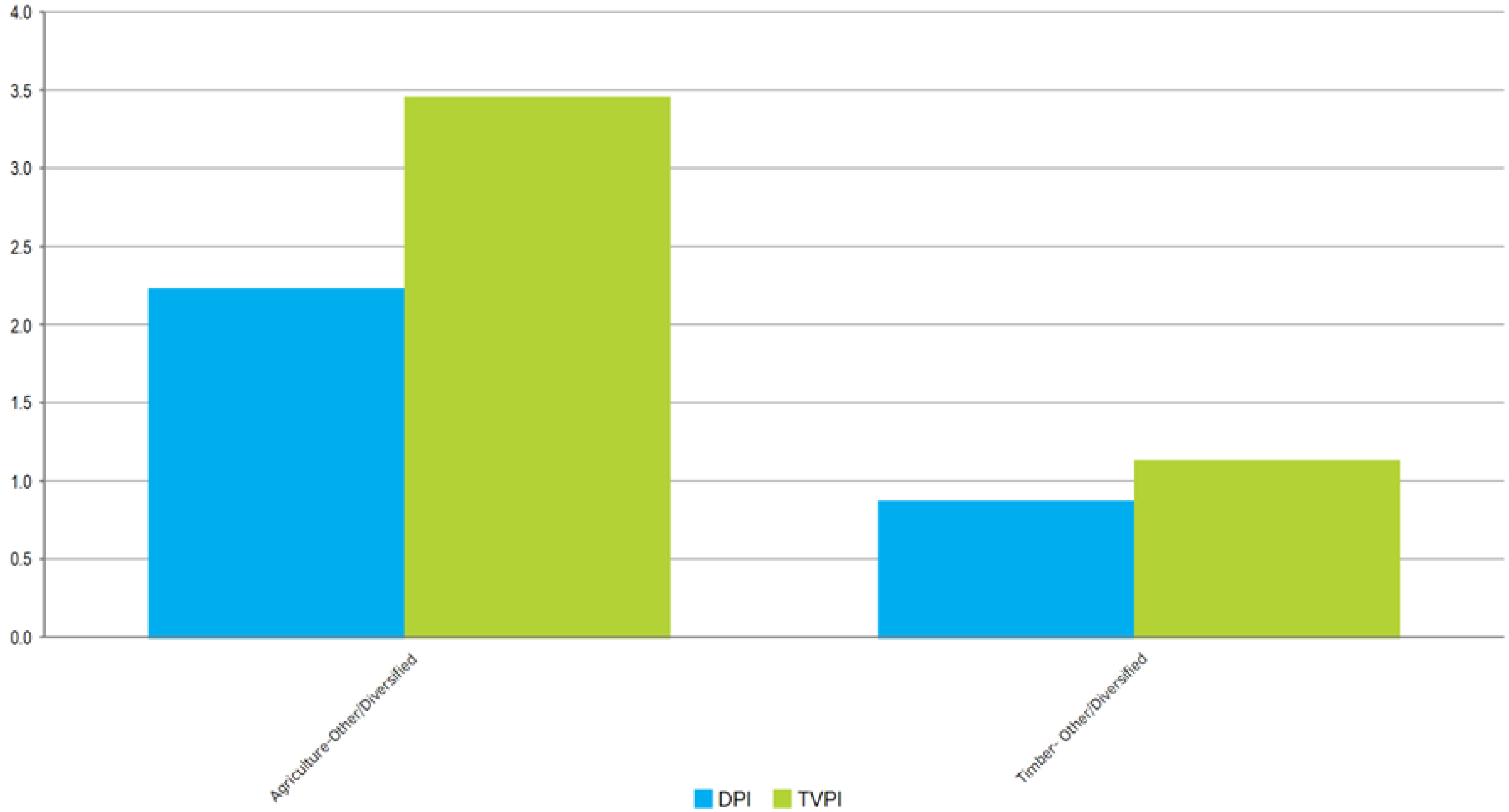
Dallas Police & Fire Pension System

Natural Resources | As of September 30, 2019

Natural Resource Investments as of September 30, 2019
DPI and TVPI by Strategy



1. Agriculture 'Other/Diversified' is composed of permanent and row crops exposure.
2.Timber 'Other/Diversified' is composed of domestic and global timber exposure.
3. Private markets performance reflected is composed of active investments only

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Dallas Police & Fire Pension System

Natural Resources | As of September 30, 2019

Natural Resource Investments Overview												
Active Funds		Commitments		Valuations				Performance				
Investment Name	Vintage Year	Commitment ($)	Paid In Capital ($)	Distributions ($)	Valuation ($)	Total Value ($)	Unrealized Gain/Loss ($)	Call Ratio	DPI	TVPI	IRR (%)
Agriculture											
Hancock Agricultural	1998	74,420,001	74,420,001	163,842,840	91,079,512	254,922,352	180,502,351	1.00	2.20	3.43	14.99
Total Agriculture		**74,420,001**	**74,420,001**	**163,842,840**	**91,079,512**	**254,922,352**	**180,502,351**	**1.00**	**2.20**	**3.43**	**14.99**
Timber											
BTG Pactual	2006	81,985,533	81,985,533	18,300,000	28,400,042	46,700,042	-35,474,482	1.00	0.22	0.57	-8.08
Forest Investment Associates	1992	59,649,696	59,649,696	100,930,209	8,479,464	109,409,673	49,759,977	1.00	1.69	1.83	7.71
Total Timber		**141,635,229**	**141,635,229**	**119,230,209**	**36,879,506**	**156,109,715**	**14,285,496**	**1.00**	**0.84**	**1.10**	**1.77**
Total		**216,055,230**	**216,055,230**	**283,073,049**	**127,959,018**	**411,032,067**	**194,787,847**	**1.00**	**1.31**	**1.90**	**8.91**

1. Private markets performance reflected is composed of active investments only
2. Commitment value is equal to paid in capital for direct investments made outside of a traditional limited partnership fund structure.

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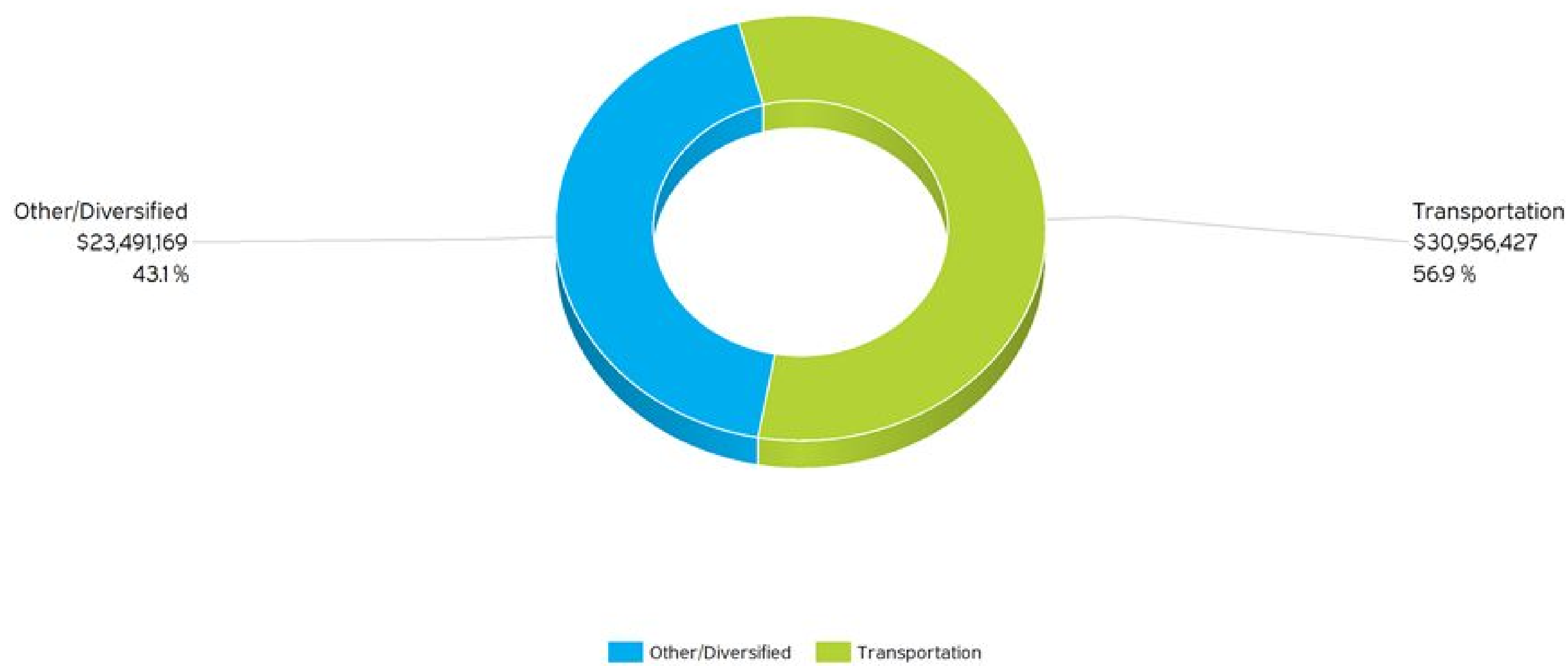
Dallas Police & Fire Pension System

Infrastructure | As of September 30, 2019

Infrastructure Investments as of September 30, 2019
Market Value Allocation by Strategy



1.'Other/Diversified' is composed of various operating and developing infrastructure project exposure

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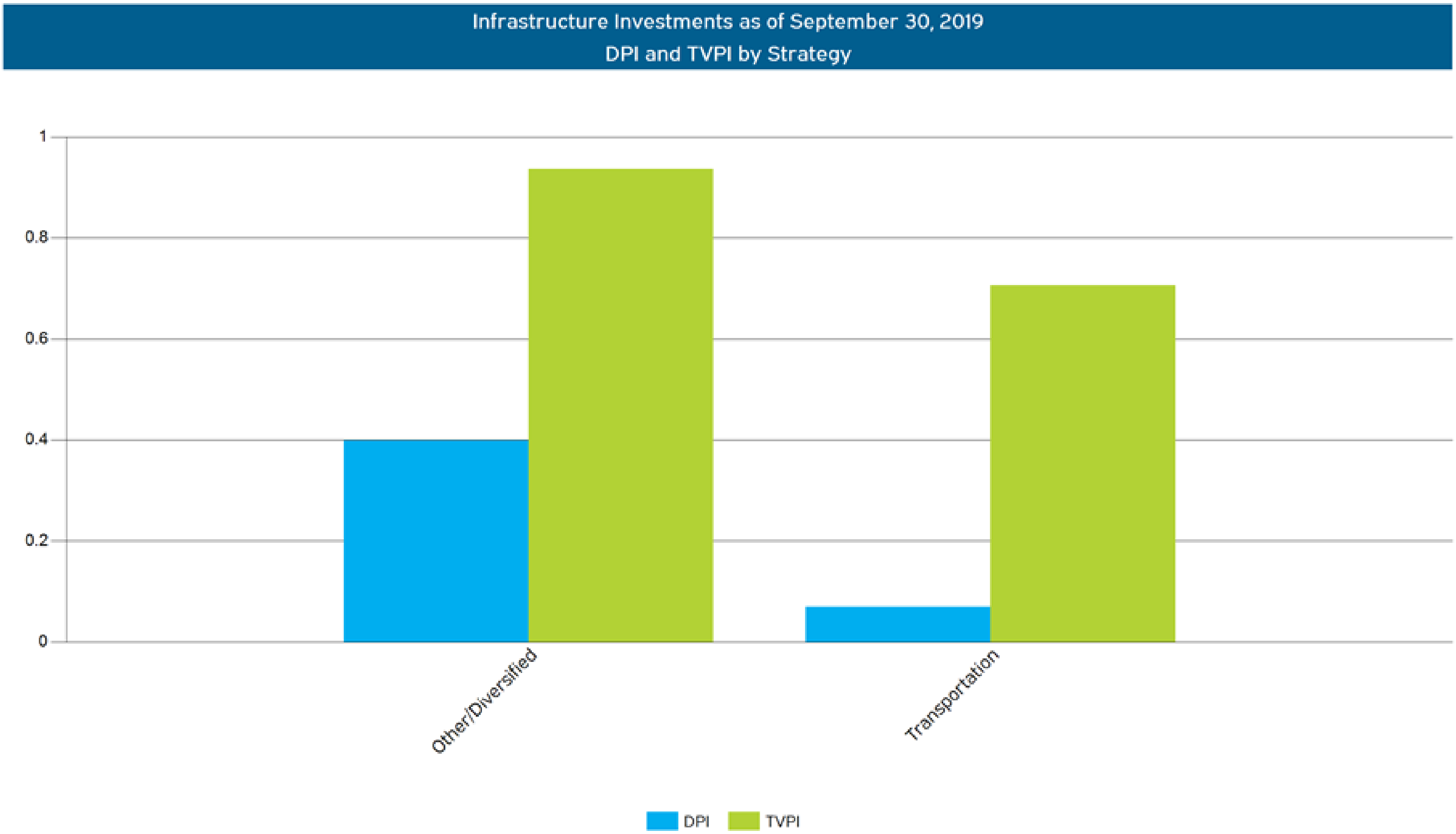
Dallas Police & Fire Pension System

Infrastructure | As of September 30, 2019



1. Other/Diversified' is composed of various operating and developing infrastructure project exposure
2. Private markets performance reflected is composed of active investments only

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Dallas Police & Fire Pension System

Infrastructure | As of September 30, 2019

Infrastructure Investments Overview

Active Funds		Commitments		Distributions & Valuations				Performance			
Investment Name	Vintage Year	Commitment ($)	Paid In Capital ($)	Distributions ($)	Valuation ($)	Total Value ($)	Gain/Loss ($)	Call Ratio	DPI	TVPI	IRR (%)
Infrastructure											
TRG AIRRO	2008	37,000,000	37,038,332	17,873,234	19,310,875	37,184,109	145,777	1.00	0.48	1.00	0.06
TRG AIRRO II	2013	10,000,000	7,133,745	58,731	4,180,294	4,239,025	-2,894,720	0.71	0.01	0.59	-8.80
JPM Maritime Fund, LP	2009	50,000,000	48,584,975	3,416,688	30,956,427	34,373,115	-14,211,861	0.97	0.07	0.71	-7.33
Total Infrastructure		**97,000,000**	**92,757,053**	**21,348,653**	**54,447,596**	**75,796,249**	**-16,960,804**	**0.96**	**0.23**	**0.82**	**-3.80**

1. Private markets performance reflected is composed of active investments only

Private Markets Review

List of Completed Funds

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Dallas Police & Fire Pension System

Private Markets Review | As of September 30, 2019

Total Real Assets Program

Completed Funds	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Addtnl Fees	Cummulative Distributions	Valuation	Total Value	Gain/Loss	DPI Ratio	TVPI Ratio	IRR
AEW Creative Holdings	2007	13,035,849	13,035,849	0	0	0	0	0	-13,035,849	0.00	0.00	N/A
BTG U.S. Timberland	2007	22,230,000	22,230,000	0	0	33,065,920	0	33,065,920	10,835,920	1.49	1.49	4.82%
CDK Multifamily I	2014	10,559,876	10,617,376	0	0	10,025,434	0	10,025,434	-591,942	0.94	0.94	-1.99%
Clarion 1210 South Lamar	2014	10,500,000	10,201,489	0	0	13,214,065	0	13,214,065	3,012,576	1.30	1.30	12.85%
Clarion 4100 Harry Hines Land	2006	3,088,810	3,092,788	0	0	3,641,946	0	3,641,946	549,158	1.18	1.18	1.69%
Clarion Beat Lofts	2005	8,729,783	8,730,183	0	0	1,137,817	0	1,137,817	-7,592,366	0.13	0.13	-30.76%
Clarion Bryan Street Lofts	2005	5,112,048	5,112,048	0	0	4,163,659	0	4,163,659	-948,389	0.81	0.81	-2.23%
Clarion Four Leaf	2005	16,892,767	16,892,767	0	0	3,733,148	0	3,733,148	-13,159,619	0.22	0.22	-39.69%
Hearthstone Dry Creek	2005	52,303,043	52,303,043	0	0	8,973,059	0	8,973,059	-43,329,984	0.17	0.17	-38.78%
Hearthstone Nampa	2006	11,666,284	11,666,284	0	0	2,562,654	0	2,562,654	-9,103,630	0.22	0.22	-31.90%
JP Morgan Infrastructure Investments Fund	2007	37,000,000	37,000,000	0	-5,658	44,302,131	0	44,302,131	7,307,789	1.20	1.20	2.48%
L&B Realty Advsiors Beach Walk	2006	33,013,796	33,013,796	0	0	36,752,690	0	36,752,690	3,738,894	1.11	1.11	2.19%
L&B Realty Advisors KO Olina	2008	28,609,658	28,609,658	0	0	30,529,136	0	30,529,136	1,919,478	1.07	1.07	1.11%
L&B Realty Advisors West Bay Villas	2007	8,712,411	8,712,411	0	0	3,785,480	0	3,785,480	-4,926,931	0.43	0.43	-8.29%
LBJ Infrastructure Group Holdings, LLC (LBJ)	2009	50,000,000	44,346,229	0	0	77,892,000	0	77,892,000	33,545,771	1.76	1.76	12.77%
Lone Star Fund III (U.S.), L.P.	2000	20,000,000	19,827,576	0	0	40,701,250	0	40,701,250	20,873,674	2.05	2.05	31.88%
Lone Star Fund IV (U.S.), L.P.	2001	20,000,000	19,045,866	0	0	43,898,442	0	43,898,442	24,852,576	2.30	2.30	30.15%
Lone Star Fund V (U.S.), L.P.	2005	22,500,000	22,275,229	0	0	20,605,895	0	20,605,895	-1,669,334	0.93	0.93	-1.41%
Lone Star Fund VI (U.S.), L.P.	2008	25,000,000	20,034,018	0	0	31,712,968	0	31,712,968	11,678,950	1.58	1.58	21.76%
Lone Star Real Estate Fund (U.S.), L.P.	2008	25,000,000	20,743,769	0	0	25,403,707	0	25,403,707	4,659,938	1.22	1.22	5.15%
Lone Star Real Estate Fund II	2011	25,000,000	22,169,907	0	0	32,789,371	0	32,789,371	10,619,464	1.48	1.48	24.73%
Lone Star Real Estate Fund III	2014	25,000,000	23,490,784	0	0	26,638,028	0	26,638,028	3,147,244	1.13	1.13	8.20%
M&G Real Estate Debt Fund II	2013	29,808,841	21,523,663	0	0	17,088,107	0	17,088,107	-4,435,556	0.79	0.79	-15.04%
NTE 3a-3b	2012	50,000,000	23,794,565	0	0	28,186,978	0	28,186,978	4,392,413	1.18	1.18	16.03%
NTE Mobility Partners Holding, LLC (NTE)	2009	50,000,000	43,397,054	0	0	105,890,000	0	105,890,000	62,492,946	2.44	2.44	19.33%
Olympus II-Hyphen Solutions	2007	836,511	836,511	0	0	1,418,149	0	1,418,149	581,638	1.70	1.70	5.96%
P&F Housing IV	2006	134,015,889	134,015,889	0	0	83,179,802	0	83,179,802	-50,836,087	0.62	0.62	-8.44%
RREEF North American Infrastructure Fund	2007	50,000,000	50,000,000	0	846,289	55,238,755	0	55,238,755	4,392,466	1.09	1.09	12.59%
Sungate	2005	6,481,568	6,481,568	0	0	308,624	0	308,624	-6,172,944	0.05	0.05	-22.30%
Tucson Loan	2014	4,500,000	4,500,000	0	0	5,082,785	0	5,082,785	582,785	1.13	1.13	5.75%
Total Completed Funds		**799,597,134**	**737,700,320**	**0**	**840,631**	**791,922,000**	**0**	**791,922,000**	**53,381,049**	**1.07**	**1.07**	

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Dallas Police & Fire Pension System

Private Markets Review | As of September 30, 2019

Private Equity & Debt Funds

Completed Funds	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Addtnl Fees	Cummulative Distributions	Valuation	Total Value	Gain/Loss	DPI Ratio	TVPI Ratio	IRR
Ashmore Global Special Situations Fund IV	2007	70,000,000	70,012,300	0	0	39,652,711	0	39,652,711	-30,359,589	0.57	0.57	-10.12%
BankCap Partners Fund I	2007	20,000,000	20,000,000	0	0	24,960,986	0	24,960,986	4,960,986	1.25	1.25	2.58%
BankCap Partners Opportunity Fund, LP	2013	20,000,000	19,587,052	0	0	18,266,454	0	18,266,454	-1,320,598	0.93	0.93	-5.69%
CDK Southern Cross	2008	1,535,316	1,535,316	0	0	0	0	0	-1,535,316	0.00	0.00	-20.08%
Highland Credit Ops	2006	35,348,165	35,348,165	0	0	29,994,190	0	29,994,190	-5,353,975	0.85	0.85	-2.06%
HM Capital Sector Performance Fund	2008	47,300,000	44,354,248	0	1,933,378	39,792,545	0	39,792,545	-6,495,081	0.86	0.86	-4.01%
Huff Alternative Income Fund	1994	40,000,000	40,000,000	0	2,018,676	66,940,198	0	66,940,198	24,921,522	1.59	1.59	17.82%
Kainos Capital Partners, L.P.	2013	35,000,000	30,316,015	0	0	43,263,688	0	43,263,688	12,947,673	1.43	1.43	24.76%
Levine Leichtman Capital Partners IV	2008	50,000,000	38,009,085	0	0	78,916,788	0	78,916,788	40,907,703	2.08	2.08	20.12%
Levine Leichtman Capital Partners V, L.P.	2013	25,000,000	19,181,272	0	-4,405	24,506,336	0	24,506,336	5,329,469	1.28	1.28	15.26%
Levine Leichtman Deep Value Fund	2006	75,000,000	75,000,000	0	11,025,662	88,688,224	0	88,688,224	2,662,562	1.03	1.03	0.73%
Levin Leichtman Private Capital Solutions II, L.P.	2012	25,000,000	17,961,807	0	-175	18,691,764	0	18,691,764	730,132	1.04	1.04	1.30%
Lone Star Fund IX (U.S.), L.P.	2014	35,000,000	24,241,467	0	0	23,459,730	0	23,459,730	-781,737	0.97	0.97	-3.28%
Lone Star Fund VII (U.S.), L.P.	2011	25,000,000	23,469,024	0	0	41,624,566	0	41,624,566	18,155,542	1.77	1.77	47.54%
Lone Star Fund VIII (U.S.), L.P.	2013	25,000,000	22,564,537	0	0	28,017,551	0	28,017,551	5,453,014	1.24	1.24	16.26%
Merit Energy Partners E-I	2004	7,018,930	7,031,052	0	-1,741	14,975,776	0	14,975,776	7,946,465	2.13	2.13	14.48%
Merit Energy Partners F-I	2005	8,748,346	8,749,275	0	0	3,801,206	0	3,801,206	-4,948,069	0.43	0.43	-17.19%
Merit Energy Partners G, LP	2008	39,200,000	39,320,050	0	0	26,756,651	0	26,756,651	-12,563,399	0.68	0.68	-9.96%
Merit Energy Partners H, LP	2010	10,000,000	10,033,415	0	0	6,870,451	0	6,870,451	-3,162,964	0.68	0.68	-13.78%
Oaktree Fund IV	2001	50,000,000	50,000,000	0	0	82,516,590	0	82,516,590	32,516,590	1.65	1.65	28.36%
Oaktree Loan Fund 2X	2007	60,000,000	60,004,628	0	0	65,066,951	0	65,066,951	5,062,323	1.08	1.08	2.24%
Oaktree Power Fund III	2011	30,000,000	16,167,147	0	0	23,839,959	0	23,839,959	7,672,812	1.47	1.47	12.35%
Pharos Capital Co-Investment, LLC	2007	20,000,000	20,000,000	0	0	10,019,157	0	10,019,157	-9,980,843	0.50	0.50	-9.92%
Pharos Capital Co-Investment, LP	2008	40,000,000	40,000,000	0	0	67,459,271	0	67,459,271	27,459,271	1.69	1.69	8.42%
Pharos Capital Partners IIA, L.P.	2005	20,000,000	20,080,306	0	0	17,715,199	0	17,715,199	-2,365,107	0.88	0.88	-2.39%
Pharos Capital Partners III, LP	2012	50,000,000	28,397,038	0	-54,286	20,196,932	0	20,196,932	-8,145,820	0.71	0.71	-19.95%
Total Completed Funds		**864,150,757**	**781,363,199**	**0**	**14,917,109**	**905,993,874**	**0**	**905,993,874**	**109,713,566**	**1.14**	**1.14**	

DISCUSSION SHEET

ITEM #C10

Topic: **Investment Practices and Performance Review (SB 322)**

Attendees: Leandro Festino, Managing Principal - Meketa Investment Group
Aaron Lally, Principal - Meketa Investment Group

Discussion: Senate Bill 322 modified Section 802.109 of the Texas Government Code to require that a public retirement system shall select an independent firm to evaluate the appropriateness, adequacy, and effectiveness of the retirement system's investment practices and performance and to make recommendations for improving the retirement system's investment policies, procedures, and practices. The initial report specified by the bill must be submitted to the DPFP Board no later than May 1, 2020 and to the Pension Review Board within 31 days of submission to the DPFP Board.

At the October 10, 2019 meeting, the Board approved hiring Meketa to conduct the evaluation. Meketa has completed their evaluation and their report is attached. Meketa will discuss their evaluation and recommendations.

Staff Recommendation: **Approve** the report submitted by Meketa and **authorize** submission of the report to the Texas Pension Review Board.

Regular Board Meeting – Thursday, March 12, 2020

MEKETA INVESTMENT GROUP

Dallas Police and Fire Pension System – Combined Plan

Investment Practices and Performance Evaluation – Consultant Report

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Dallas Police and Fire Pension System

Investment Practices and Performance Evaluation

Background

- To assist Dallas Police and Fire Pension System ("DPFP") with the preparation and filing of the first independent evaluation report required by Texas Government Code Section 802.109(a)(1-5), DPFP has engaged Meketa Investment Group, Inc. (the "Consultant" or "Meketa") to prepare and file with the Board a report (the "Report") that includes the topics required to be analyzed and/or reviewed by the Law
- This report was prepared in January and February 2020. Any references to current exposure, policies, or procedures were accurate or applicable at that time and may not be the same or accurate in the future.

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Investment Practices and Performance Evaluation

Disclosure Statement by Independent Firm

- Meketa is a corporation organized in the Commonwealth of Massachusetts and which is owned entirely by its senior professionals. Meketa has no parent organization.
- Meketa does not have any affiliations with brokerage firms, nor any broker-dealer relationships. Meketa does not receive soft dollars, finder fees, commissions, or third-party marketing fees. Meketa's line of business is providing investment consulting and advisory services. Meketa works only for its clients.
- Effective April 16, 2018, Meketa entered into an agreement with DPFP to serve as its general investment consultant ("Agreement").
- Under the Agreement, Meketa receives its fees for the services it provides to DPFP from DPFP directly and does not receive any fees other than those set forth in the Agreement.
- Meketa does not (directly or indirectly) manage DPFP's investments. Meketa's role is strictly limited to non-discretionary advice.

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Investment Practices and Performance Evaluation

Qualifications

- Meketa is a full-service independent investment-consulting firm.
- Meketa has been providing consulting services for over four decades (since 1978) and currently consults on over $1.4 trillion for over 200 institutional clients.
- Meketa has over 198 full-time employees and operates out of seven offices.
- Investment professionals at Meketa average 11 years with the firm and 21 years of investment experience. Meketa currently has 40 CFA Charter holders and 24 CAIA Charter holders.
- Meketa's mission is to provide the highest quality investment advisory services. Meketa aims to utilize, and continuously hone, the best practices that have been developed over its 40-year plus history. Meketa seeks to be a thought leader by evaluating investment industry information with healthy skepticism and performing value-added original research.

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Investment Practices and Performance Evaluation

Scope

- Sec. 802.109. INVESTMENT PRACTICES AND PERFORMANCE REPORTS.
- (a) Except as provided by Subsection (e) and subject to Subsections (c) and (k), a public retirement system shall select an independent firm with substantial experience in evaluating institutional investment practices and performance to evaluate the appropriateness, adequacy, and effectiveness of the retirement system's investment practices and performance and to make recommendations for improving the retirement system's investment policies, procedures, and practices.
- Each evaluation must include:

  (1) an analysis of any investment policy or strategic investment plan adopted by the retirement system and the retirement system's compliance with that policy or plan;

  (2) a detailed review of the retirement system's investment asset allocation, including:

  (A) the process for determining target allocations;

  (B) the expected risk and expected rate of return, categorized by asset class;

  (C) the appropriateness of selection and valuation methodologies of alternative and illiquid assets; and

  (D) future cash flow and liquidity needs;

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Investment Practices and Performance Evaluation

Scope (continued)

(3) a review of the appropriateness of investment fees and commissions paid by the retirement system;

(4) a review of the retirement system's governance processes related to investment activities, including investment decision-making processes, delegation of investment authority, and board investment expertise and education; and

(5) a review of the retirement system's investment manager selection and monitoring process.

Section 802.109 – Subsection (a) 1

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Investment Practices and Performance Evaluation

Section 802.109 – Subsection (a) 1

Law	Requirement
Sec. 802.109, Subsection (a) 1	*"an analysis of any investment policy or strategic investment plan adopted by the retirement system and the retirement system's compliance with that policy or plan"*

Criteria or Topic	DPFP Status
Most Recent Investment Policy Statement Review?	• Started in December 2019. Minor changes were adopted in February 2020. • The Investment Policy Statement (the "IPS") was reviewed by DPFP Staff, the Investment Advisory Committee ("IAC"), investment consultant, and the Board.
Most Recent Significant Modifications?	• 4Q18 • Significant modifications were implemented after hiring a new Chief Investment Officer and new investment consultant (Meketa). • During 4Q18 the Board reviewed and discussed multiple rounds of edits including red-lined versions. • The IPS was formally adopted by the Board of Trustees on January 10, 2019. • The IPS was submitted to the Texas Pension Review Board on January 14, 2019. It was further amended in March 2019 to include modest changes regarding the IAC.

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Investment Practices and Performance Evaluation

Section 802.109 – Subsection (a) 1 (continued)

Criteria or Topic	DPFP Status
Requirement for (at least) annual review?	• Yes
Compliance with annual review?	• Yes
Current IPS Structure?	Section 1 - Introduction and Purpose Section 2 - Goals, Objectives, and Constraints Section 3 - Ethics, Standards of Conduct, and Fiduciary Responsibility Section 4 - Core Beliefs and Long-Term Acknowledgements Section 5 - Roles and Responsibilities Section 6 - Strategic Asset Allocation and Rebalancing Section 7 - Investment Manager Search, Selection, and Monitoring Section 8 - Risk Management Section 9 - Approval and Effective Date Appendix A - Asset Class Descriptions Appendix B - Strategic Asset Allocation and Rebalancing Ranges Appendix B1 - Asset Allocation Implementation Plan Appendix C - Investment Consultant Reporting Requirements Appendix D - Alternative Investments

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Dallas Police and Fire Pension System

Investment Practices and Performance Evaluation

Section 802.109 – Subsection (a) 1 (continued)

Consultant Analysis

- The IPS is well thought-out and in line (or better) than industry standards.
- It is consistent with guidance from the CFA Institute.
- Roles and responsibilities of all key parties involved are clearly outlined (Board of Trustees, Investment Advisory Committee, Executive Director, Investment Staff, Consultants, Investment Managers, Custodian).
- The document is written in "plain-English" and easy for a layperson to understand.
- There is no evidence of any known compliance violations with the IPS at this time (other than asset class range threshold violations as the portfolio is undergoing a transition from a legacy allocation with substantial exposure to illiquid private markets investments to a more traditional asset allocation profile).
- DPFP is not meeting most of its investment return objectives. (As noted above, and multiple times throughout this Report, the portfolio is undergoing a multi-year transition period as it seeks to exit a number of legacy non-performing illiquid investments made at a time when there were different Board of Trustees, Staff, and investment consultant).
- It is our opinion that the Board of Trustees and Staff will be able to stay committed to the guidance detailed in the IPS during a stressed or prolonged market scenario.
- Overall: The existing Investment Policy Statement appears appropriate, adequate, and effective in our opinion.

Recommendations

- The "Core Beliefs and Long Term Acknowledgments" is thoughtful and should be reviewed any time significant investment changes are considered. It offers good guidance without being overly prescriptive or prohibitive.
- DPFP Staff and the Consultant should continue to conduct an annual review of the IPS.

Section 802.109 – Subsection (a) 2

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Investment Practices and Performance Evaluation

Section 802.109 – Subsection (a) 2

Law	Requirement
Sec. 802.109, Subsection (a) 2	*"a detailed review of the retirement system's investment asset allocation, including:* *(A) the process for determining target allocations;* *(B) the expected risk and expected rate of return, categorized by asset class;* *(C) the appropriateness of selection and valuation methodologies of alternative and illiquid assets; and* *(D) future cash flow and liquidity needs"*

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Investment Practices and Performance Evaluation

Section 802.109 – Subsection (a) 2.A

Criteria or Topic	DPFP Status
Written policy for asset allocation development?	• Yes, outlined in the IPS.
Who has formal approval authority of the strategic policy asset allocation?	• Board of Trustees
Frequency of review?	• According to the IPS, "a formal asset allocation study will be conducted as directed by the Board, but at least every three years. Asset allocation targets will be reviewed annually for reasonableness in relation to significant economic and market changes or to changes in the investment objectives" (Section 6 Strategic Asset Allocation and Rebalancing, Subsection A.2-3)
Tactical vs. Strategic?	• Minimal tactical decisions have been implemented in the past two years. • According to the IPS "the Strategic asset allocation determines the risk reward profile of the portfolio and thus drives overall portfolio performance and volatility"

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Dallas Police and Fire Pension System

Investment Practices and Performance Evaluation

Timeline of Most Recent Asset Allocation Review and Adoption

- DPFP's approach to asset allocation is detailed in Section 6 of its IPS.
- The most recent significant asset allocation review was conducted over the second half of 2018. A detailed review of the timeline and process is listed below:
- March 2018 – During the hiring process, Meketa shared preliminary observations and recommendations on DPFP's asset allocation with a subcommittee of the Board of Trustees.
- April 2018 – Meketa presented additional thoughts to the full Board of Trustees during a Board meeting. The message focused on preservation of capital, downside risk protection, and preliminary potential long term return expectations for DPFP given its exposure to "legacy assets" as defined by Staff as illiquid investments made by the prior Board of Trustees with minimal return expectations going forward.
- May 2018 – In the first Board meeting since being formally retained, Meketa presented the concept of a Safety Reserve®. A Safety Reserve® portfolio is a mix of high quality, low volatility, short duration fixed income instruments and cash. It was established to meet ongoing expenses and benefit payments (for at least 2.5 years), ensuring that no other assets would need to be sold at a potentially inopportune time/price during a market correction. It was recommended to DPFP because of a combination of the following that limit DPFP's ability to rebound from a significant market correction: weak funded status, negative net benefit payments per year of approximately 5-6%, and illiquid legacy assets comprising approximately 25% of the Fund, with potentially binary outcomes. Meketa recommended, and the Board and Staff agreed, to source the proceeds for the Safety Reserve® from the termination of DPFP's global asset allocation ("GAA") asset class. This led to the recommendation and termination of four strategies. The decision to terminate the GAA program and move the proceeds into short-term core bonds was expected to reduce DPFP's standard deviation.
- August 2018 – DPFP Staff and Meketa conducted weekly conference calls and evaluated numerous potential asset allocation mixes that incorporated the themes and goals outlined from discussions with the Board of Trustees earlier in the year.

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Dallas Police and Fire Pension System

Investment Practices and Performance Evaluation

Timeline of Most Recent Asset Allocation Review and Adoption (continued)

- September 2018 – Meketa presented a comprehensive asset allocation policy review and risk analysis to the Board of Trustees. The report included Mean Variance Optimization analysis, probability testing, stress testing, historical market testing, liability stress testing, Value at Risk analysis, liquidity analysis, and details on Meketa Investment Group's annual asset class capital markets assumption development. The Board evaluated the tradeoffs of three different asset mixes presented that each had varying degrees of exposure to private market assets.
- October 2018 – With feedback from the Board of Trustees, DPFP Staff and Meketa conducted additional analysis and prepared a unified recommendation for the Board to consider. The recommendation was the product of numerous discussions with DPFP Staff as well as the DPFP's actuary in regards to the projected future liabilities of DPFP. It included a policy mix for adoption that had 15% target to private market investments (relative to the ~ 50% exposure at the time). Other asset allocation mixes were shown for the Board to compare/contrast. The Board evaluated the expected impact on total DPFP standard deviation, risk budgeting, liquidity, manager transitions required, expected costs, expected timeframe, etc. With data from DPFP's actuary, Meketa conducted various stress tests to DPFP's short term returns and the potential impact on future funded status. The Board evaluated different implementation plans and discussed the potential pros/cons of four different approaches of rebalancing to target.
- November 2018 – Additional discussions ensued with DPFP Staff and Meketa on the recommended implementation plan. Meketa presented an Implementation Plan to the Board of Trustees that focused on rebalancing to the new asset allocation based on expected risk of underweight asset classes. As proceeds from the private markets are distributed to DPFP, the cash would be redeployed into lower standard deviation asset classes first (up to target weight) then into higher standard deviation asset classes. The Board had some reservations on emerging markets and recommended minor modifications to the plan.
- December 2018 – Meketa presented recommended asset class ranges and asset class benchmarks with corresponding rationale. Staff presented a revised Investment Policy Statement that included the agreed upon new policy asset allocation and implementation plan. The Board provided feedback to DPFP staff.
- January 2019 – The Board approved the new IPS inclusive of the asset allocation policy, ranges, benchmarks and implementation plan. The implementation plan is detailed below for reference in Exhibit #1.

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Investment Practices and Performance Evaluation

Exhibit #1 – Asset Allocation Implementation Plan

Order of Reallocation Allocate up to Target, then Proceed to the Next Asset Class
1. Safety Reserve – Cash
2. Safety Reserve – Short-Term Investment Grade Bonds
3. Global Equity, only if current exposure is less than 22% of DPFP[1]
4. Emerging Market Equity, only if current exposure is less than 2.5% of DPFP[2]
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] 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.

[2] 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.

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Investment Practices and Performance Evaluation

Section 802.109 – Subsection (a) 2.B

Criteria or Topic	DPFP Status
Active vs. Passive - Policy	• According to the IPS (Section 4 Core Beliefs and Long-Term Acknowledgements, Subsection C): *"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."*
Active vs. Passive -Implementation	• DPFP has been 100% active over the recent history. • DPFP recently funded its first passive mandate (on a temporary basis).

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Section 802.109 – Subsection (a) 2.B (continued)

Criteria or Topic	DPFP Status
Asset Class Return and Standard Deviation Expectations Development	• DPFP uses capital markets assumptions developed by its Consultant. • A summary of Meketa's process is listed below. • Meketa recommends its client use the 20 year projections. – Each year Meketa Investment Group conducts an Asset Study to attempt to forecast future expected returns, future expected risk and correlation measures for over 65 asset classes and sub-asset classes. – The process relies on both quantitative and qualitative methodologies. – First, a large set of quantitative models are used to arrive at a set of baseline expected ten-year annualized returns for major asset classes. – These models attempt to forecast a gross "beta" return for each public market asset class; that is, it does not model "alpha," nor does it apply an estimate for management fees or other operational expenses[1]. – The models are fundamentally based (based on theoretically defined return relationship with current observable factors).

[1] Our expectations are net of fees where passive management is not available (e.g., private markets and hedge funds).

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Section 802.109 – Subsection (a) 2.B (continued)

Criteria or Topic	DPFP Status
Asset Class Return and Standard Deviation Expectations Development (Continued)	– Some of the models are more predictive than others. For this reason, a qualitative overlay is required, which takes the form of a data-driven deliberation among the research team at Meketa and the Investment Policy Committee at Meketa. – Return assumptions for hard-to-predict asset classes as well as those with limited data are influenced more heavily by the qualitative analysis. – As a result of this process, ten-year annualized return expectations are calculated, which serve as the foundation of the longer-term, twenty-year expectations. – The twenty-year annualized return expectations are formed by systematically considering historical returns on an asset class by asset class level. Qualitative assessments are made on the value of the historical data and the confidence we have (or lack thereof) that the historical average return is representative of future returns – Specifically, a weighted average of the ten-year expectations and average historical returns in each asset class is calculated.

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Section 802.109 – Subsection (a) 2.B (continued)

Criteria or Topic	DPFP Status
Asset Class Return and Standard Deviation Expectations Development (Continued)	– The weights are determined by a qualitative assessment of the value of the historical data. Generally, if there is little confidence that the historical average return is representative of what an investor can expect,[1] the weight of the ten-year forecast will be greater. Therefore, the weight on the ten-year forecasts ranges from 0.5 to 0.9. – Volatility and correlation expectations are developed differently. These assumptions rely primarily on historical averages, with an emphasis given to the experience of the trailing ten years. – Qualitative adjustments, when applied, usually serve to increase the correlations and volatility over and above the historical estimates (e.g., using the higher correlations usually observed during a volatile market). – Adjustments to volatility are made based on the historical skewness of each asset class (e.g., increasing the volatility for an asset class that has been negatively skewed). – In the case of private markets and other illiquid asset classes where historical volatility and correlations have been artificially dampened, public market equivalents are used as a base for estimates before applying any qualitative adjustments.

[1] For example, Meketa has less confidence in historical data that do not capture many possible market scenarios or that are overly polluted by survivorship bias.

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Section 802.109 – Subsection (a) 2.B (continued)

Criteria or Topic	DPFP Status
Asset Class Return and Standard Deviation Expectations Development (Continued)	– These volatility and correlation expectations are then combined with our twenty-year return expectations to assist us in subsequent asset allocation work, including mean-variance optimization and scenario analyses.

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Exhibit #2 – Target Asset Allocation and Minimum/Maximum Weights

Strategic Target Asset Allocation[1]	Target Weight (%)	Minimum Weight (%)	Maximum Weight (%)
Equities	55		
Global Equity	40	22	48
Emerging Market Equity	10	2.5	12
Private Equity	5	N/A[2]	N/A[2]
Safety Reserve and Fixed Income	35		
Cash Equivalents	3	0	5
Short-term Investment Grade Bonds	12	5	15
Investment Grade Bonds	4	2	6
High Yield Bonds	4	2	6
Bank Loans	4	2	6
Global Bonds	4	2	6
Emerging Market Bonds (50/50)	4	0	6
Real Assets	10		
Private Real Estate	5	N/A[2]	N/A[2]
Private Natural Resources	5	N/A[2]	N/A[2]
Expected Return (20 years)	*7.2*		
Expected Standard Deviation (20 years)	*12.3*		

[1] Expected return and standard deviation are based upon Meketa Investment Group's 2020 Annual Asset Study. Throughout this document, returns for periods longer than one year are annualized. "Private" is defined by all asset classes not traded on public exchange or broker to broker. Specifically: private equity, private debt, private real estate, private natural resources and private infrastructure.

[2] Rebalancing Ranges are not established for illiquid asset classes.

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Exhibit #3 – Capital Market Assumptions

Asset Classes	20 Year Return Expectations[1] (%)	20 Year Standard Deviation Expectations[1] (%)
Global Equity	7.8	17.0
Emerging Market Equity	9.1	24.0
Private Equity	9.4	26.0
Cash Equivalents	2.4	1.0
Short-term Investment Grade Bonds	2.6	1.0
Investment Grade Bonds	3.0	4.0
High Yield Bonds	5.2	11.0
Bank Loans	5.0	9.0
Global Bonds	2.4	8.0
Emerging Market Bonds	4.7	13.0
Real Estate	7.5	15.0
Natural Resources (Private)	8.8	21.0

[1] Expected return and standard deviation are based upon Meketa Investment Group's 2020 Annual Asset Study. Throughout this document, returns for periods longer than one year are annualized. "Private" is defined by all asset classes not traded on public exchange or broker to broker. Specifically: private equity, private debt, private real estate, private natural resources and private infrastructure.

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Section 802.109 – Subsection (a) 2.C

Criteria or Topic	DPFP Status
Selection process	• DPFP has not made a new alternative investment since July 2016. • The most recent private market investment was a private equity fund of funds (Industry Ventures, $5 mm commitment, July 2016). • DPFP requires a 2/3 approval of the Board for any new investments in alternative assets. DPFP does not plan to make any illiquid or alternative investments for the foreseeable future as it works to rebalance its portfolio to the new policy asset allocation. • We agree with this decision given the funded status, liquidity profile, and estimated net benefit payments.
Valuation approach	• In nearly all cases, DPFP values its alternative investments based on fair value determinations provided by audited financial statements and appraisals provided to DPFP from its alternative investment managers. • DPFP Staff has/will question managers' valuations if they feel it is warranted. • For one private equity relationship, DPFP has engaged its own valuation firm to conduct annual evaluations of DPFP's interests in the private equity funds because DPFP felt the manager (and manager's independent auditor) were overstating the investment value.
Exposure to alternative investments	• The current exposure is high relative to industry averages. • DPFP has a significantly lower target weight to illiquid investments (relative to current exposure) and has been working hard over the past few years to reduce its exposure. • The IPS outlines target weights to alternatives but does not put rebalancing ranges on illiquid assets because such assets cannot be easily traded.

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Section 802.109 – Subsection (a) 2.D

Criteria or Topic	DPFP Status
Annual expected contributions	• Annual contributions into the plan (both employee and City) are expected to average $224 million per year over the next five years (2020-2024), according to the floor established by HB 3158 and the City Hiring Plan[1]. • City contributions have a minimum floor through the end of 2024. • Employees contribute 13.5% of pay[2] • The Employer (City) contributes 34.5% of pay (excluding overtime pay) plus an additional $13 million per year into DPFP through the end of 2024.
Tracking Actual Contributions vs. Hiring Plan	• To be proactive DPFP has been tracking the computation pay relative to the city's hiring plan because if hiring and pensionable compensation do not keep pace with projections less contributions will go into DPFP starting in 2025 after the contribution floor is lifted. • DPFP Staff monitors progress and reports to the Board at each meeting. • Contributions based on pensionable compensation[3] have been 97% of the Hiring Plan contributions estimate since the effective date of HB 3158 and on an improving trend (100% YTD through November 2019 and 104% in the month of November 2019). • This has resulted in $3.2 million less[3] in cumulative employee contributions into DPFP vs. the Hiring Plan estimates. • Meketa (with data from DPFP's actuary) modeled different asset-liability scenarios in 2018 based on different contribution rates.

[1] According to the January 1, 2019 Actuarial Valuation report by actuary Segal Consulting.
[2] According to Article 6243a-1 of the Texas Statutes.
[3] As reported at the December 2019 Board meeting.

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Section 802.109 – Subsection (a) 2.D (continued)

Criteria or Topic	DPFP Status
Annual expected benefit payments	• Annual benefit payments are expected to average approximately $349 million per year[1] over the next five years (2020-2024).
Annual expected administration expenses	• According to the actuary, annual expected administration expenses for DPFP are projected to be the greater of $8.5 million per year[1], or 1% of computation pay. This projection excludes investment expenses.
Annual expected net cash flows	• Net expected cash flows out of DPFP to pay benefit payments are expected to average approximately -$134 million per year over the next five years (based on the contributions, benefit payments and administrative expenses in the actuarial valuation report). • On an average plan size of approximately $2 billion, net expected cash outflows per year are approximately -6.7%. (-$134 / $2,000 ≈ -6.7%).

[1] According to the January 1, 2019 Actuarial Valuation report by actuary Segal Consulting.

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Section 802.109 – Subsection (a) 2.D (continued)

Criteria or Topic	DPFP Status
Asset Liability Analysis	• The most recent actuarial valuation report was published in October 2019, with data as of January 1, 2019. • Meketa included liability analysis during the asset allocation review in 2018. • The actuary (Segal) is expected to conduct a 5-year experience study in 2020 which may result in assumption changes that could positively or negatively affect the funding status and years to fully funded status.
Actuarial Assumed Rate(s) of Return	• The Board of Trustees adopted a laddered assumed rate of return over the next few years as it transitions its portfolio out of the legacy illiquid assets. • The assumed rate of return is 7.25%. However, due to the time to transition the portfolio, the portfolio's expected return is 5.25% in 2019, 5.75% in 2020, 6.25% in 2021, 6.75% in 2022 and 7.25% thereafter.
Actuarial Highlights	• Funded status is 48% based on the actuarial value of assets and 45% based on the market value of assets.[1] • Funding level is expected to drop for the next 12 years even if all assumptions are met (as it will take time for the impact of plan design changes to be fully felt). • According to the actuary, the projected year of full funding is 2057, if all assumptions are met.

[1] According to the January 1, 2019 Actuarial Valuation report by actuary Segal Consulting.

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Section 802.109 – Subsection (a) 2.D (continued)

Criteria or Topic	DPFP Status
Actuarial Highlights (continued)	• The actuary highlighted in its report that funded status could be significantly lower (than forecast) if the City Hiring Plan is not met and contributions (starting in 2025) are based solely on computation of pay going forward (i.e. once the minimum contribution floor is lifted). • Article 6243a-1 requires an analysis in 2024 to gauge whether the funding plan is on track. *"In 2024, an independent actuarial analysis shall be conducted with the actuary making recommendations to the Board for changes to bring the plan in line with funding guidelines set by the Texas Pension Review Board if needed."* • HB 3158 added a requirement to Article 6243a-1 that mandates the Board adopt changes if DPFP is not on track to meet the Texas Pension Review Board funding guidelines in 2024. Potential changes include increases to City contribution rates, increases to member contribution rates, or benefit decreases. • As detailed in the 2018 DPFP CAFR: *"the Board believes it's certain that additional changes will be required. The member contributions are approximately equal to the normal cost of their benefit, therefore the most appropriate option is additional funding from the City. The Board also believes that it is prudent to explore options, including pension obligation bonds, for additional City funding as soon as possible and not wait until 2024."*
Funding Policy	• The Board of Trustees adopted a funding policy in December 2019, as required by SB 2224, which was passed by the Texas Legislature in 2019.

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Section 802.109 – Subsection (a) 2.D (continued)

Criteria or Topic	DPFP Status
Stress Testing	• As noted previously, the Consultant conducted significant stress testing surrounding the anticipated liabilities of DPFP and the impact of not earning the plan's actuarial return. • In response to the analysis, the Board adopted a Safety Reserve® portfolio and is following a risk-based implementation plan designed to minimize the potential impact of a severe near-term market correction. A sample of the analysis conducted in 2018 is included in Exhibits #4 – 6 on the following pages.

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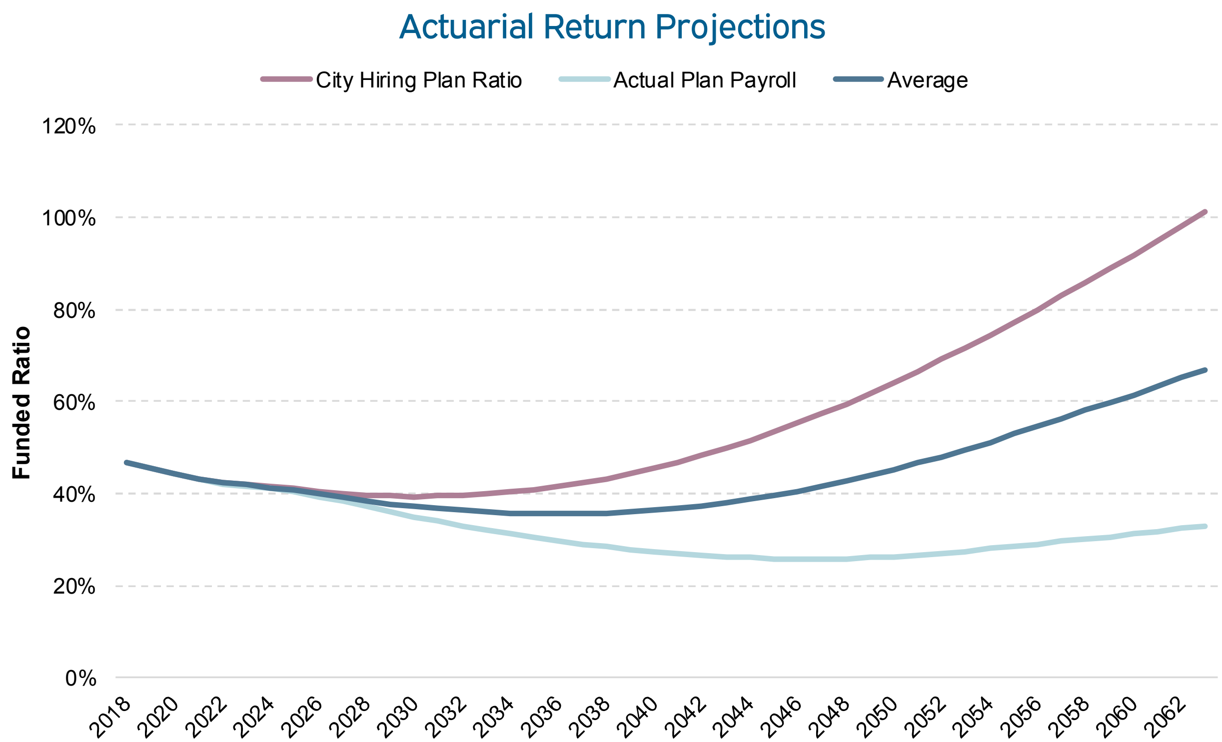
Investment Practices and Performance Evaluation

Exhibit #4 - Example of Stress Testing Conducted in 2018



- The chart above projects the funded status (under different contribution rates) with the assumption DPFP earns the actuarial return every year.
- With higher contributions into the plan, the funded status is expected to improve faster.

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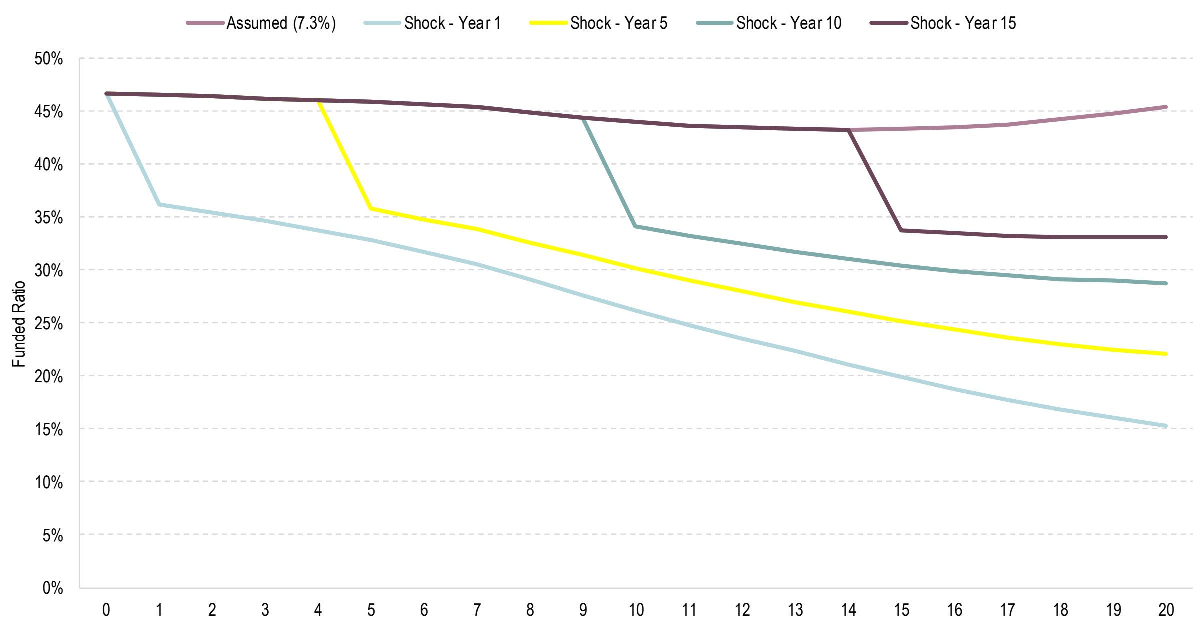
Exhibit #5 - Example of Stress Testing Conducted in 2018

Funded Status[1] Under Different "Shock" Time Points



- The timing of a potential equity shock is impactful. A shock now is much worse than a shock in the future.
- All the "shock" lines above have the exact same total annualized return[2].

[1] Model assumes the average contribution rate of the city payroll forecast and the actual payroll contributions net of expected benefit payments.
[2] Returns modeled as 7.3% in 19 of 20 years, but one year of -15.8%. The total twenty-year return decreases to 6.0%, annualized.

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Exhibit #6- Example of Stress Testing Conducted in 2018

Scenario Analysis

- Meketa analyzed several scenarios for DPFP over the next 20 years.
- In each case we modeled different return paths in years 1-5.
- In each case[1] we assume that DPFP earns the expected return rate for the recommended long-term mix (7.3%) in years 6-20.
- The most optimistic scenario evaluated is the baseline actuarial return assumption.
- The most dire (worst case) scenario is a full write-off all the legacy assets over the five years with the rest of the Fund generating a zero percent return.
- Each scenario is detailed below.

"Grade"	Scenario Description	2018 DPFP Return	2019 DPFP Return	2020 DPFP Return	2021 DPFP Return	2022 DPFP Return	*Years 6-20*
A	Actuarial Base Line	5.0%	5.25%	6.25%	7.25%	7.25%	*7.25%*
B	Bond-like performance for 5 years	4.0%	4.0%	4.0%	4.0%	4.0%	*7.30%*
C	Legacy assets negate performance of rest of portfolio for 5 years	0.0%	0.0%	0.0%	0.0%	0.0%	*7.30%*
D	1/2 of legacy assets is written off over next 5 years	-2.5%	-2.5%	-2.5%	-2.5%	-2.5%	*7.30%*
F	All legacy assets are written off over next five years	-5.0%	-5.0%	-5.0%	-5.0%	-5.0%	*7.30%*

- A chart on the following page details the expected impact of each scenario on funded status.

[1] For Path A "Actuarial Base Line" we used 7.25% instead of the recommended long-term mix 7.3% assumed return for years 6-20.

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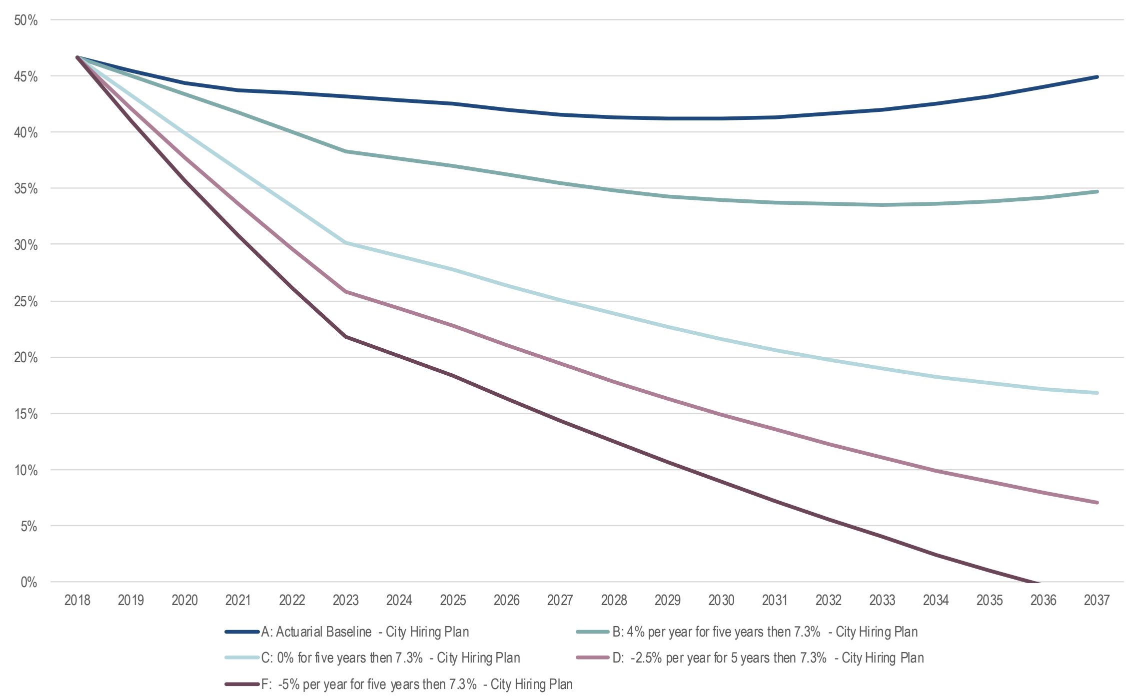
Exhibit #6 (continued)

- If DPFP earns the actuarial baseline return for the next five years or 4% annualized for the next five years (Paths A and B), the funded status takes a moderate hit but begins to eventually rebound.
- Flat or negative returns in years 1-5 could put DPFP into a severe unfunded situation (paths C, D, F below).

Funded Status with City Hiring Plan Contributions



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Section 802.109 – Subsection (a) 2

Consultant Analysis

- DPFP staff and Board recognize their current exposure is very different from policy weights and have been working very hard to shift the portfolio (out of illiquid investments).
- DPFP's current approach to asset allocation (2018) is thorough and robust.
- It is on par (or better) than industry standards.
- In our opinion, the approach DPFP takes to formulate asset allocation is sound, consistent with best practices, and leads to a well-diversified portfolio.
- The existing exposure is very different than target weights, but that is a residual of past decisions made many years ago by Trustees, Staff and Consultants that are no longer a part of DPFP.
- Current DPFP Staff is doing a commendable job with a very challenging situation, as it works to liquidate private market investments at the best possible price.
- The Board is kept informed on all progress, challenges, and general developments.

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Section 802.109 – Subsection (a) 2 (continued)

Consultant Analysis (continued)

- The current asset allocation targets are consistent with peer systems of similar size. The existing exposure of DPFP is an outlier relative to peers (as it pertains to private markets exposure) but all constituents involved recognize this and are working to move DPFP closer to its new target weights in a prudent and measured fashion.
- DPFP's Board of Trustees acknowledgement and understanding of the plan's funded status and cash flow situation were crucial data points that helped guide the overriding theme of the most recent asset allocation decision-making process.
- The Board is mindful of adopting a return expectation that is realistic given capital market return expectations.
- The target asset allocation is well diversified and built with a global perspective in mind given the globally investable universe.
- DPFP's approach to passive management makes it an outlier among other public pension plans.
- DPFP has less than 2% total passive exposure (in an Investment Grade Bond index) that is only a temporarily place holder while an active core bond manager search is conducted.

Section 802.109 – Subsection (a) 2 (continued)

Recommendations

- We recommend the Board consider increasing passive exposure in efficient asset classes where the likelihood of risk-adjusted outperformance, net of fees, is lowest. A recent survey[1] of similar sized public pension plans showed that the average passive exposure is 18% of total plan assets.
- We recommend DPFP Staff continue its process of working with the Board of Trustees and external advisors to prudently exit illiquid investments to the extent possible.
- We recommend the Board remains patient with asset allocation as the portfolio is transitioned and doesn't feel obligated to conduct comprehensive asset allocation overhaul every year. (Surveys have shown many large state plans are moving towards once every three - five years).
- We recommend the Board and Staff closely monitor contribution levels and maintain constructive and open dialogue with the City.
- If (based on the actuary's advice) it becomes likely that DPFP is not on track to meet targets by 2024, we encourage the Board to act as soon as reasonably possible to discuss and implement additional plan design changes to avoid delaying and compounding any known shortfalls.
- We recommend DPFP consider adjusting actuarial valuation assumptions as necessary based on the outcomes and advice of the actuary upon conclusion of the experience study expected in 2020.

[1] Greenwich Associates 2018 U.S. Institutional Market Trends Survey. Universe is public defined benefit plans with assets between $1 - $5 billion. Majority of the passive exposure is from U.S. equities.

Section 802.109 – Subsection (a) 3

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Section 802.109 – Subsection (a) 3

Law	Requirement
Sec. 802.109, Subsection (a) 3	*"a review of the appropriateness of investment fees and commissions paid by the retirement system"*

Criteria or Topic	DPFP Status
Policy Language	• According to the IPS, *"Investment costs will be monitored and minimized with the context of maximizing net return."* (Section 4 Core Beliefs and Long Term Acknowledgements, Subsection B.2).
Internal process for paying and monitoring fees	• Fees that are paid via invoice are reviewed by the appropriate DPFP analyst based on the assigned asset class coverage. • According to conversations with Staff, the analyst will typically calculate the expected quarterly fee via an excel spreadsheet and reconcile with what is billed by the investment manager. • Any external wire to pay fees requires a three person authorization. • DPFP Staff keeps an excel sheet with all investment related fees paid (direct investment management fees, incentive fees, commissions, custodian fees, investment consultant fees, legal related investment fees). • DPFP publishes summary fee information in its annual CAFR in a clear and understandable way.

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Section 802.109 – Subsection (a) 3 (continued)

Criteria or Topic	DPFP Status
Public Markets Fees	• DPFP Staff and Consultant monitor investment manager fees and appropriateness relative to similar investment strategies. • The Consultant provided a fee review as part of its Initial Fund Review of DPFP in the summer of 2018. • Each public markets manager fee was calculated (in annual terms, in dollars) and compared relative to peer percentiles (Source: eVestment). • In total, nine of the eleven public markets managers charge less than the median manager for their respective peer groups. Of the two that were more expensive than median, DPFP restructured one of those fee arrangements to a performance-based fee within the past year.
Private Markets Fees	• As is expected in the industry, private market strategies represent a larger proportion of fees than their pro-rata market value exposure. • DPFP has little to no control on the fee arrangements of private market strategies that were committed to many years ago with contractually required fees detailed in previously executed Limited Partnership Agreements or other governing documents. • Where possible, DPFP Staff and the Board of Trustees have been able to receive discounted fee (or no fees) on extension periods for select private markets strategies. • DPFP has incurred additional legal costs the past few years related to litigation and/or disposition of private market investments. • These costs are communicated by DPFP staff to the Board and are included in annual budgets.

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Investment Practices and Performance Evaluation

Subsection 802.109 – Subsection (a) 3 (continued)

Criteria or Topic	DPFP Status
Total Fees Paid	• DPFP paid a blended average fee of 0.74% bps in calendar year 2018. This is above the industry average of 0.60% (according to the latest available NCPERS survey conducted)[1]. • The biggest source of fees was in private real estate and private equity. • Fees for calendar year 2019 are still being invoiced and paid but are expected to be lower due to the elimination of the Global Asset Allocation strategies and a decrease in private market investments. • Total fees paid for calendar year 2018 are detailed in Exhibit #7 (sourced from 2018 CAFR Report).
Communication to the Board	• Total fees paid are detailed to the Board of Trustees as part of the annual budget. • The Board of Trustees has access to a summary fee grid that lists each investment strategy's fee schedule.
Brokerage Fees and Commissions	• The public market equity managers pay explicit commission costs and implicit opportunity costs inherent in bid-ask spread differentials (equity and fixed income strategies). • These cost are shared by all investors in a commingled trust or specific to DPFP in the investments that are structured as separately managed accounts. • Commission costs are tracked by Staff (from data provided by the custodian JP Morgan). • Total commissions paid are listed in DPFP's annual CAFR. • 2018's brokerage fees and commissions are detailed below in Exhibit #8.
Legal Review	• Internal DPFP legal counsel reviews all legal contracts and fee arrangements for new investments.

[1] The 2018 NCPERS Public Retirement Systems Study includes responses from 167 state and local government pension funds with more than 18.7 million active and retired members and total assets of $2.6 trillion. Roughly half the survey participants were Police/Fire pension plans.

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Exhibit #7 –Investment Management Fees Paid in 2018

Asset Class	Total Investment Management Fee Paid (000's)[1]	2018 Average Market Value (000's)	Total Management Fee Paid as a Percent of Average Market Value
Equity (public and private)	$7,303	$736,922	0.99%
Fixed Income and Cash	$1,506	$538,634	0.28%
Real Assets	$5,734	$724,561	0.79%
Global Asset Allocation	$736	$51,786	1.42%
Total	$15,279	$2,051,903	0.74%

[1] All dollar are expressed in thousands, sourced from DPFP 2018 CAFR. According to the CAFR, investment management fees includes incentive, performance and/or disposition fees.

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Exhibit #8 – Brokerage and Commissions Paid in 2018

Brokerage Firm	Number of Shares Traded (000' s)[1]	Total Fees and Commissions (000's)	Fees and Commissions Per Share ($)
J.P. Morgan Securities, Ltd.	1,752	44	0.025
Citigroup Global Markets, Ltd.	635	28	0.044
Credit Suisse Securities (USA) LLC	846	16	0.019
Citigroup Global Markets Inc, NY	1,362	15	0.011
Jefferies International London	132	10	0.080
Morgan Stanley and Co International	67	8	0.125
Stifel Nicolaus & Co Inc	253	8	0.031
Morgan Stanley and Co., Inc.	279	7	0.026
Goldman Sachs New York	249	7	0.028
Davy Stockbrokers	73	7	0.092
All other firms	9,466	158	0.017
Total	15,114	$308	$0.020

[1] All dollar are expressed in thousands, sourced from DPFP 2018 CAFR.

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Subsection 802.109 – Subsection (a) 3 (continued)

Consultant Analysis

- DPFP has done a good job of identifying public market's managers with competitive fees.
- DPFP's process for reconciling and paying fees appears in-line with industry standards.
- DPFP's tracking and monitoring of fees appears in-line with industry standards.
- The private markets related fees are expensive but not surprising.
- Private market fees will decrease as exposure to the asset class decreases.
- The commissions paid appear reasonable and in-line with industry norms.
- The transparency and disclosure of fees in the annual CAFR are clear and unambiguous.

Recommendations

- Passive strategies could reduce overall investment related fees for DPFP.
- We recommend that Staff, the Board, and the Consultant all remain diligent in monitoring fees.
- We recommend continued efforts on seeking no fee or discounted fee arrangements on private market investments that enter extension periods.
- We recommend DPFP staff document its internal process for fee reconciliation and payment in a formal procedure document or memo.

Section 802.109 - Subsection (a) 4

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Section 802.109 - Subsection (a) 4

Law	Requirement
Sec. 802.109, Subsection (a) 4	*"a review of the retirement system's governance processes related to investment activities, including investment decision-making processes, delegation of investment authority, and board investment expertise and education"*

Criteria or Topic	DPFP Status
Website and transparency	• The website is easy to navigate and user friendly. • DPFP is as transparent, if not more, than most similar sized pension public plans. • The website includes (non-exhaustive list): – Board meeting calendar – Board meeting agendas – Board meeting materials – Board meeting minutes – Trustee biographies – Investment Advisory Committee ("IAC") biographies – DPFP Staff information – Consultant performance reports

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Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	DPFP Status
Website and Transparency (continued)	– Actuarial valuation reports – Comprehensive Annual Financial Reports – Investment Policy Statement – Contractor's Statement of Ethics – DROP Policy – Uniformed Services Leave and Payback Policy – Governance and Board Conduct Policy – Trustee Election Procedures – Annual budgets – Plan documents – Description of 2017 plan design changes and ancillary documents – Frequently Asked Questions links – Recent events and news – Notification of trustee elections

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Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	DPFP Status
Delegation of Investment Authority?	• The Board of Trustees has investment authority. • Any action by the Board, except those where the Plan specifically requires approval by 2/3 of all the Trustees of the Board (e.g. benefit or contribution changes), is required to be approved by a majority of all the Trustees of the Board, i.e. at least six Trustees must approve any Board action regardless of the number Trustees present. • DPFP Staff is authorized to rebalance the portfolio. • DPFP staff is responsible for submitting a rebalancing recommendation to the Consultant and must receive signoff from the Consultant before implementing. • All rebalancing recommendations and activity shall be reported to the Board and IAC.
Investment Decision Making Process	• Most investment decisions are based on the recommendation of DPFP Staff and/or Consultant upon the guidance of the Board of Trustees. • The Board of Trustees frequently debates the pros-and-cons of each investment decision in open public meetings. • All investments (except one) are managed by external investment managers. See directly below. • DPFP owns three condo units (that it has been seeking to exit) in a condo building in downtown Dallas. The assets are not managed by an external institutional real estate manager. DPFP has been selling its interest in the property over the past few years.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	DPFP Status
Investment Decision Making Process (continued)	• For all other directly owned real estate investments DPFP has hired external institutional quality real estate experts to manage the operations, and/or disposition of the assets.
Investment Consultant	• DPFP hired Meketa Investment Group in May 2018 after conducting a national RFP process. • Prior to the hire of Meketa, the most recent investment consultant search occurred in 2006. • Currently, there is requirement for the Board to conduct a competitive selection process for each Advisor to the board at least once every five years (on a rotational basis). However the Board has the authority to postpone or waive the five year requirement. • Meketa Investment Group receives a hard dollar fee (specified in advance) from DPFP and does not receive any additional fees (unless pre-approved by the Board of Trustees for projects beyond the scope of the investment advisory agreement). • Meketa's fee is included in the annual budget disclosure to the Trustees and reported in the annual CAFR. • Meketa Investment Group is an independent employee owned organization with no affiliation to investment managers or brokerage firms.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	DPFP Status
Board Composition	• 11 member Board of Trustees • Six are appointed by the Mayor, one police representative is elected by active members, one fire representative is elected by active members, three non-members are selected by a nominations committee representing various associations in the city and elected by active members and pensioners. • Term limits of 6 consecutive years apply to non-police and firefighter trustees. • Election notices (and the Trustee election procedures) are posted on the DPFP website. • A new board of Trustees was appointed following House Bill 3158 in September 2017, with the exception of one police trustee and one fire trustee from the prior Board of Trustees. • The Board went through quite a bit of turnover in late 2019, with only five trustees remaining from the 11 appointed/elected just two years ago. • Six board members have less than six months tenure on the Board (as of the start of 2020).
Board Leadership and IAC Appointment	• Board leadership appointments (Chairman, Vice Chairman and Deputy Chairman) are conducted in an open and transparent manner during board members upon the vote of fellow Trustees. • Investment Advisory Committee members are appointed by the board of Trustees. (Additional information to follow on role of the IAC).

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	DPFP Status
Board Investment Expertise	• Numerous board members have significant investment expertise across asset classes. • Some board members sit on other pension trustee boards. • Board member specialties include: equities, fixed income, private equity, and hedge funds. • A number of trustees have legal experience. • According to Article 6243a-1 Trustees must have demonstrated financial, accounting, business, investment, real estate or actuarial experience.
Board Education	• The Board is expected to be educated on investment matters applicable to overseeing a pension fund such as DPFP. • DPFP Staff typically meets with new trustees and provides a primer on DPFP history and recent activity.
Governance and Conduct Policy	• The Board is expected to abide by the Board of Trustees Governance and Conduct Policy. • The policy was last amended February 2018. • It summarizes the expected conduct and procedures Trustees are expected to follow in their role as Trustees to DPFP both during Board meetings and communication outside of meetings. • It states that Trustees should refrain from communicating directly with DPFP staff other than through the Executive Director, the Chief Investment Officer, the Chief Financial Officer, the General Counsel or another designee of the Executive Director.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	DPFP Status
Governance and Conduct Policy (continued)	• It also provides guidance on communication with external parties and plan participants. • Trustees are entitled to information necessary to make informed decisions relating to their role and responsibilities as Trustees to DPFP.
Contractor's Statement of Ethics	• The Board of Trustees has a policy that provides guidance on the dealings between Trustees and all contractors who provide, or actively seek to provide, goods or services to DPFP. • Contractor must be honest in their dealings with DPFP, comply with applicable laws, and maintain proper ethical standards of behavior. • Trustees and Staff are prohibited from receiving any gifts or anything of substantial/material value where the clear purpose of such expense is to affect the determination of the selection of a new contractor or continuation, or additional business to an existing contractor. • It is expected that at all contracts with Contractors will have the Statement of Ethics as an exhibit to said contract. • While Meketa has not independently verified all contracts DPFP has on file, we confirm that the contract with Meketa does include this Statement of Ethics as an exhibit.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	DPFP Status
Frequency of board meetings	• Monthly meetings are required.
Board meeting dynamics	• Most Board meetings contain a mix of investment and non-investment related agenda items. • Most investment related decisions are accompanied by spirited debate between Trustees, Staff and Consultant. • There is very little (to no) "rubber stamping." • The agenda for each Board meeting is set by the Executive Director. • The Executive Director is required to consult with the Chairman on the agenda. • Any Trustee may file a written request with the Chairman asking that a particular item be placed on the agenda for a future meeting.
Role of the IAC	• The IAC meetings are still in a development phase. All positions on the IAC were recently filled in 4Q19. Its roles and responsibilities are detailed in the IPS but its interplay with the broader Board of Trustees is still yet to be applied in practice.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	DPFP Status
Frequency of IAC Meetings	• Quarterly
Transparency of Board Activities	• Board meeting agendas (with open session meeting materials) are posted to the DPFP website at least 72 hours prior to board meetings. • Materials include minutes from prior meetings. The minutes are sufficiently detailed.
House Bill 3158	• Effective September 2017, resulted in numerous plan design changes.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4

Consultant Analysis

- Monthly meetings are common for public pension plans.
- DPFP's website and transparency are better than most similar sized public pension plans.
- The meeting minutes (posted to the website) are sufficiently detailed to get a good sense of the discussion and decisions conducted at a meeting.
- They are also published in a reasonable amount of time following each meeting (typically within 30 days).
- Not granting investment authority to staff is common for a $2 billion pension with investment staff of four people.
- DPFP's Staff is appropriately following the rebalancing protocol and does a great job of conveying all rebalance recommendations with appropriate supporting data and rationale.
- DPFP's board members are more sophisticated and knowledgeable than most similar sized public pension plans.
- The Board composition appears sufficiently diversified in terms of subject matter expertise.
- DPFP's meeting frequency is standard for public pension meetings. We have conducted surveys of large public pension plans and found that many are moving towards less frequent meetings but more in depth (lengthy) meetings.

Recommendations

- To the extent possible, we would like to see increased continuity of Trustees on the Board.

Section 802.109 - Subsection (a) 5

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 5

Law	Requirement
Sec. 802.109, Subsection (a) 5	*"A review of the retirement system's investment manager selection and monitoring process"*

Criteria or Topic	DPFP Status
Responsibility for selecting investment managers?	• Board of Trustees, with the advice and recommendation of the Investment Advisory Committee, Staff, and investment consultant. • According to the IPS, *"The Board…prudently hires, monitors, and terminates key investment service providers including: Consultant(s), Investment Managers and Custodian"* (IPS Section 5, A. Board of Trustees, subsection 3). • *"The IAC will advise regarding the search and selection process for investment managers"* (IPS Section 5, B. Investment Advisory Committee (IAC), subsection 2.b).

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 5 (continued)

Criteria or Topic	DPFP Status			
Last Five Manager Hires	**Date[1]**	**Strategy**	**Funding Amount ($ mm)**	**Asset Class**
	09/2019	Vanguard Total Bond	37	Fixed income- IGB
	12/2017	RBC Emerging Mkts	50	Public Equity- EM
	11/2017	Ashmore EMD	20	Fixed Income- EMD
	7/2017	Pacific Bank Loans	50	Fixed Income- Bank Loans
	6/2017	IR+M 1-3Yr	50	Fixed Income- Short Term IGBs

Evaluation process

- No active managers have been hired since the formation of the Investment Advisory Committee and the hiring of the current investment consultant.
- Investment manager search and selection criteria is detailed in Section 7 of the IPS
- According to the IPS, *"Staff and Consultant shall define and document the search process, including evaluation criteria, prior to initiating the search process."*
- The Consultant *"Assists in the selection process and monitoring of Investment Managers"* (IPS Section 5, E. Consultant(s), subsection 7).

[1] Dates in the table above are inception/ funding dates. Each strategy was funded intra-month so performance start dates are the first of the next month.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 5 (continued)

Criteria or Topic	DPFP Status
Evaluation Process (Continued)	• In addition the Consultant "*documents and delivers to Staff written recommendations on Investment Manager new hire, hold and termination reviews*" (IPS Section 5, E. Consultant(s), subsection 8). • Meketa has a process where it continuously monitors and reviews investment managers in the industry. From this work, Meketa creates a "bullpen" of high conviction products that have been thoroughly vetted through Meketa's multi-phase process. • According to the IPS, each hiring recommendation will include information on Investment Manager's organization, key people, investment process, philosophy, past performance, future expectations, risks, proper time horizon for evaluation, comparative measures such as benchmarks and peer groups, role within the relevant asset class and expected costs. • While no active managers have been hired during Meketa's tenure as DPFP's current consultant, the Consultant typically produces a "search document" that compares and contrasts eligible strategies on the basis of firm ownership/structure, investment teams, investment philosophies, processes/risk management, performance, fees, and strengths & weaknesses.
Benchmarking	• Policy benchmarks for each asset class and the total DPFP are included in the IPS. • The Consultant identified recommended benchmarks, per asset class, which were presented and discussed with DPFP Staff in 4Q18.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 5 (continued)

Criteria or Topic	DPFP Status
Benchmarking (continued)	• Individual manager benchmarks are determined based on each investment strategy's mandate and will generally, but not always, match the recommended benchmark identified by the investment manager. • Example: in April 2019, the Consultant conducted a comprehensive review of the four global equity strategies and each manager's recommended benchmark. In one case, Walter Scott, the Consultant recommended a different benchmark due to subtle (but potentially significant) regional weight differences between the historic exposure in the strategy and the manager's recommended benchmark.
Performance measurement	• DPFP's total fund performance and individual manager performance is monitored by Staff, Consultant, IAC and the Board of Trustees. • The Consultant produces a quarterly performance report that is shared with Staff, Board of Trustees, and IAC. • Among other things, the report includes: – Net of fees performance – Executive Summary with a one page green/red flash summary (for the quarter) along with similar metrics for trailing one-year and three-year periods – Quarterly cash flow summary – Summary of asset classes absolute and relative performance for the quarter

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 5 (continued)

Criteria or Topic	DPFP Status
Performance Measurement (continued)	– Total fund performance relative to peer pension plans (InvestorForce Public Pension net performance for plans between \$1 bb- \$5 bb) as well as multiple fund level benchmarks (Policy Index, Allocation Index, Total Fund Ex- Private Markets, and a 60% MSCI ACWI IMI Net/40% Barclays Global Aggregate Index) – Total exposure vs. target weights – Asset allocation history over trailing five years – Trailing time weighted returns for investment managers, and asset classes, over recent trailing time periods (QTD, FYTD, 1 YR, 3 YR, 5 YR, 10 YR and Since Inception) relative to benchmarks and peer groups – Attribution effects for the quarter vs. policy benchmarks – Risk statistics over trailing five year period including annualized standard deviation, information ratio, share ratio, beta and tracking error
Performance monitoring	• DPFP Staff and investment consultant are primarily responsible for monitoring the performance of the investment managers and reporting to the Board of Trustees and IAC. • Over the course of calendar year 2019 DPFP staff presented an overview and deep dive into each asset class (and investment managers) at the majority of the Board of Trustees meetings. • The Consultant conducts periodic meetings, conference calls and constant oversight of the investment managers.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 5 (continued)

Criteria or Topic	DPFP Status
Investment Manager Termination/Replacement	• DPFP staff and investment consultant discuss individual strategies in more depth, as warranted. • Discussions are also held with the IAC. • In the past two years, only four investment managers were terminated (prior to the formation of the IAC). • The Consultant prepared a written recommendation citing the reasons for the termination recommendation. It was primarily an asset allocation decision that led to the elimination of the global asset allocation ("GAA") portfolio. At the time, a report was prepared that detailed the terminated strategies' collective exposure, historical performance, fees, forward looking return/risk expectations, and forward looking correlation expectations to global equities and global bonds. • It was discussed with DPFP Staff and went through a round of edits and further evaluation. • The Board evaluated the expected total Fund return expectations pre- and post- termination and rebalance. The decision to terminate the GAA program and move the proceeds into short-term core bonds was expected to reduce the standard deviation of DPFP. • The recommendation to terminate, and reallocate, was approved by the Board of Trustees in May 2018.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 5

Consultant Analysis

- The evaluation process for new investment manager hires is untested in its current form, but appears adequate (as written on paper) and in-line with industry best practices.
- DPFP Staff is very knowledgeable and informed on the investment activities of its individual investments and investment managers.
- Performance monitoring and benchmarking is in-line with industry best practices.
- Evaluation (and thoughtful discussion) by DPFP Staff on performance drivers and considerations for need for any portfolio adjustments is measured, well thought out, and more complete than typical for similar sized pension plans.

Recommendations

- We recommend Staff continue to prepare deep dive reviews into each asset class with the goal of covering the entire portfolio in each calendar year.
- We recommend DPFP formally documents the rationale for all hiring and firing decisions.

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Investment Practices and Performance Evaluation

Conclusions

Subsection	Overall Status	Adhering to established policies?
1. Investment Policy Statement analysis	Meets Industry Best Practices	Yes
2. Asset allocation (and liability) process review and execution	Meets Industry Best Practices	Yes
3. Fees review and procedures	Meets Industry Best Practices	Yes
4. Governance processes	Meets Industry Best Practices	Yes
5. Investment manager selection and monitoring	Meets Industry Best Practices	Yes

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Investment Practices and Performance Evaluation

Summary of Recommendations

Subsection (a) 1

- The "Core Beliefs and Long Term Acknowledgments" is thoughtful and should be reviewed any time significant investment changes are considered. It offers good guidance without being overly prescriptive or prohibitive.
- DPFP Staff and the Consultant should continue to conduct an annual review of the IPS.

Subsection (a) 2

- We recommend the Board considers increasing passive exposure.
- We recommend DPFP Staff continues its process of working with the Board of Trustees and external advisors to prudently exit illiquid investments to the extent possible.
- We recommend the Board remains patient with asset allocation as the portfolio is transitioned and doesn't feel obligated to conduct comprehensive asset allocation overhaul every year. (Surveys have shown many large state plans are moving towards once every three years.
- We recommend the Board and Staff closely monitor contribution levels and maintain constructive and open dialogue with the City.
- If (based on the actuary's advice) it becomes likely that DPFP is not on track to meet targets by 2024, we encourage the Board to act as soon as reasonably possible to discuss and implement additional plan design changes to avoid delaying and compounding any known shortfalls.
- We recommend DPFP consider adjusting actuarial valuation assumptions as necessary based on the outcomes and advice of the actuary upon conclusion of the experience study expected in 2020.

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Subsection (a) 3

- Passive strategies could reduce overall investment related fees for DPFP.
- We recommend that Staff, the Board, and the Consultant all remain diligent in monitoring fees.
- We recommend continued efforts on seeking no fee or discounted fee arrangements on private market investments that enter extension periods.
- We recommend DPFP staff documents its internal process for fee reconciliation and payment in a formal procedure document or memo.

Subsection (a) 4

- To the extent possible, we would like to see increased continuity of Trustees on the Board.

Subsection (a) 5

- We recommend staff continue to prepare deep dive reviews into each asset class with the goal of covering the entire portfolio in each calendar year.
- We recommend DPFP formally documents the rationale for all hiring and firing decisions.

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Investment Practices and Performance Evaluation

Sources Reviewed in Creation of the Report

Files	Files
Investment Policy Statement	Texas PRB Guidance for Inv. Practices and Perf. Evaluations
Annual CAFR reports	Conversations with Staff
Board Meeting minutes	Segal Actuarial Valuation Report
IAC Meeting Minutes	DROP policy
DPFP website	Board of Trustees Governance and Conduct Policy
Meketa performance reports	Trustee Election Procedures
Meketa attendance at Board meetings	Contractors Statement of Ethics
Meketa attendance at IAC meetings	Funding Policy
Statute Article 6243a-1	
HB 3158 Pension Changes presentation	

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C11

Topic: **Asset Allocation Review**

Attendees: Leandro Festino, Managing Principal - Meketa Investment Group
Aaron Lally, Principal - Meketa Investment Group

Discussion: Meketa and Staff will review DPFP's strategic asset allocation, capital market assumptions, and expectations for performance and volatility.

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2020 Capital Markets Expectations and Asset Allocation Review

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Asset Allocation

Background

- The current asset allocation was approved in late 2018 by the Board after nearly a six month iterative process with the Board, Staff and Meketa.
- Key dates and milestones in the process are detailed below:
- May 2018 – discussion and approval of the Safety Reserve concept (see next page) along with decision to terminate Global Asset Allocation (GAA) program. .
- Summer 2018 – intensive work between Staff and Meketa evaluating multiple different possible asset allocation policies.
- September 2018 – Meketa presented a comprehensive asset allocation policy review and risk analysis to the Board which included three different asset mixes with varying degrees of exposure to private market assets. The report included Mean Variance Optimization analysis, probability testing, stress testing, historical market testing, liability stress testing, Value at Risk analysis, liquidity analysis, and details on Meketa Investment Group's annual asset class capital markets assumption development.
- October 2018 - With feedback from the Board of Trustees, from the September meeting, DPFP Staff and Meketa conducted additional analysis and prepared a unified recommendation for the Board to consider. With data from DPFP's actuary, Meketa conducted various stress tests to DPFP's short term returns and the potential impact on future funded status. The Board adopted the recommended asset allocation policy.

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Asset Allocation

Safety Reserve

- A Safety Reserve® portfolio is a mix of high quality, low volatility, short duration fixed income instruments and cash. It was established to meet ongoing expenses and benefit payments, ensuring that no other assets would need to be sold at a potentially inopportune time/price during a market correction. The Safety Reserve® is designed to meet ongoing expenses and net benefit payments (for 2.5 years).
- As discussed with the Board in March and April 2018, DPFP may not tolerate large drawdowns without a hit to its corpus (as assets go down and withdrawals take place, the corpus becomes much smaller, so any rebound may not be meaningful in dollar terms). The higher the net cash outflow projection and the lower the funded status, the greater the downside protection needed.
- As a result, DPFP established a Safety Reserve® based on Meketa's recommendation in May 2018, because the Fund's weak funded status, negative net benefit payments per year in excess of 6%, and illiquid legacy assets comprising approximately 25% of the Fund limit DPFP's ability to rebound from a significant market correction.
- The expectation then was to revisit the role of the Safety Reserve® once the majority of the Legacy Assets are redeemed.

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Asset Allocation

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Target Asset Allocation & Roles of Asset Classes

ROLES:		Target (%)
	Global Equity	40
55% GROWTH	Emerging Market Equity	10
	Private Equity	5
19% RISK	Cash	3
MITIGATION	Short Term Investment Grade Bonds	12
	Investment Grade Bonds	4
	High Yield Bonds	4
16% CREDIT	Bank Loans	4
	Global Bonds	4
	Emerging Market Debt	4
10% INFLATION	Real Estate	5
HEDGES	Natural Resources	5

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Asset Allocation

Implementation Plan – Rebalancing to Target Asset Mix

- Given the significant difference between the actual portfolio and the target asset mix, the Board evaluated different implementation plans in October 2018 and discussed the potential pros/cons of four different approaches of rebalancing to target.
- In November 2018 additional discussions ensued with DPFP Staff and Meketa on the recommended implementation plan. Meketa presented an Implementation Plan to the Board of Trustees that focused on rebalancing to the new asset allocation policy based on expected risk of underweight asset classes.
- As proceeds from the private markets are distributed to DPFP, the cash is redeployed into lower standard deviation asset classes first (up to target weight) then into higher standard deviation asset classes.
- The Board had some reservations on emerging markets and recommended minor modifications to the plan. Minimum floors were also instituted for the public equity exposure.
- The implementation plan was subsequently approved as part of the Investment Policy Statement formal adoption in January 2019.
- Significant progress was made during 2019, as seen in the following slides.

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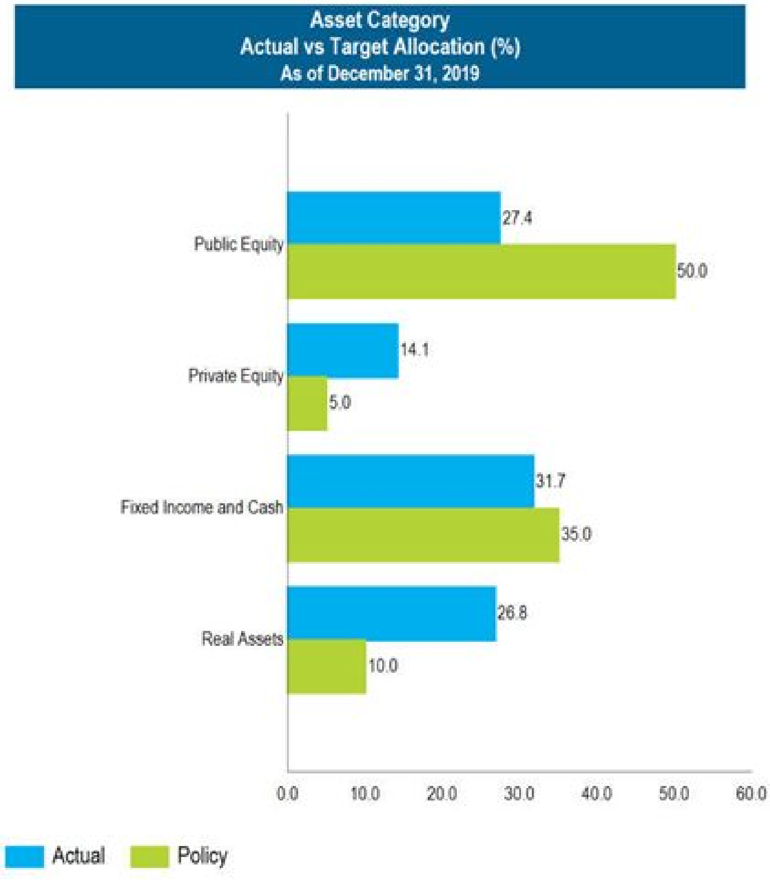
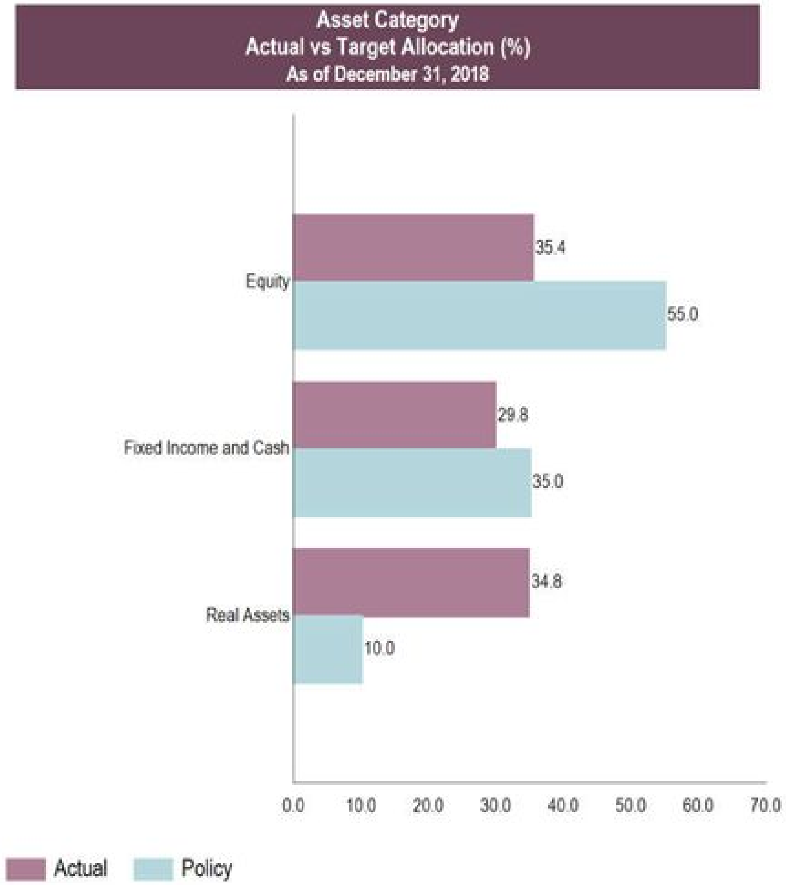
Asset Allocation

Asset Allocation – 4Q2019 vs 4Q2018 – Major Asset Classes





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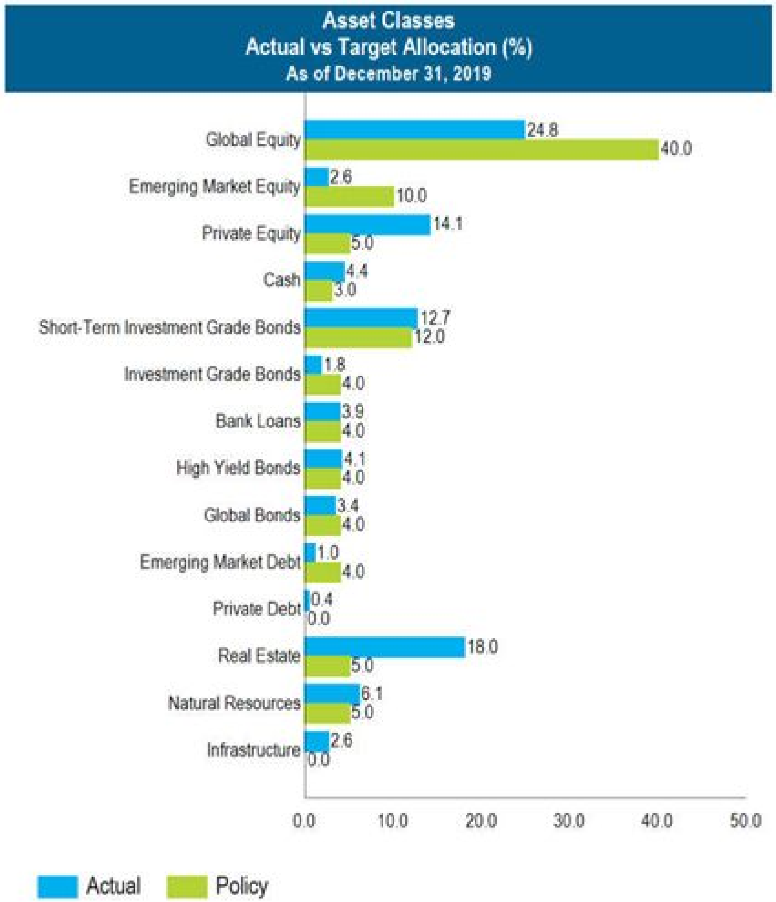
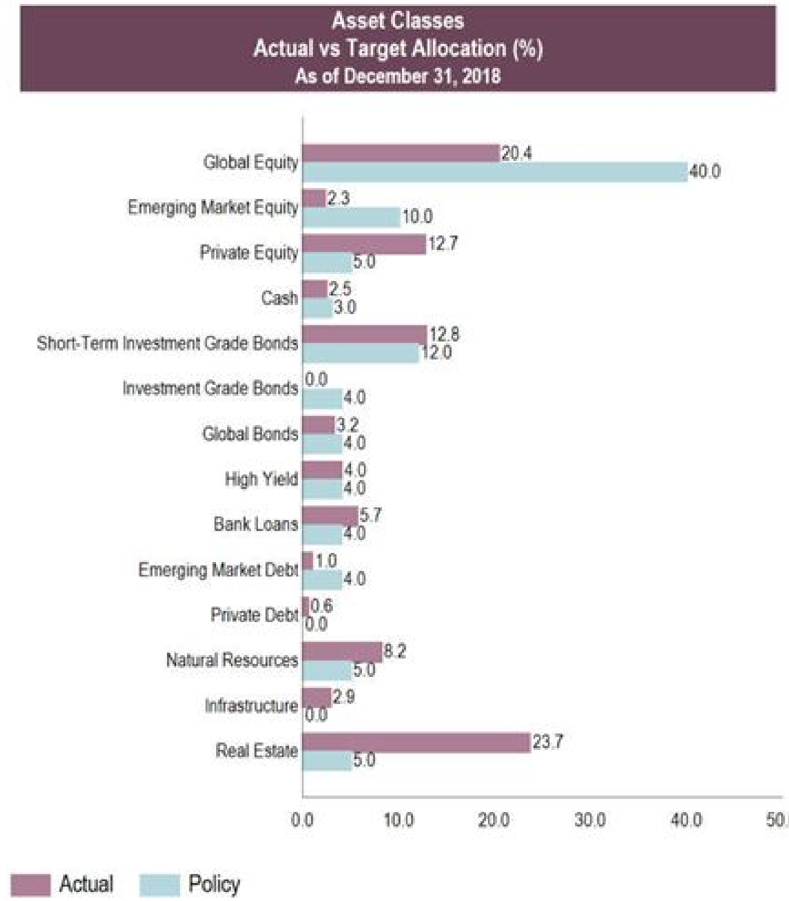
Asset Allocation

Asset Allocation – 4Q2019 vs 4Q2018





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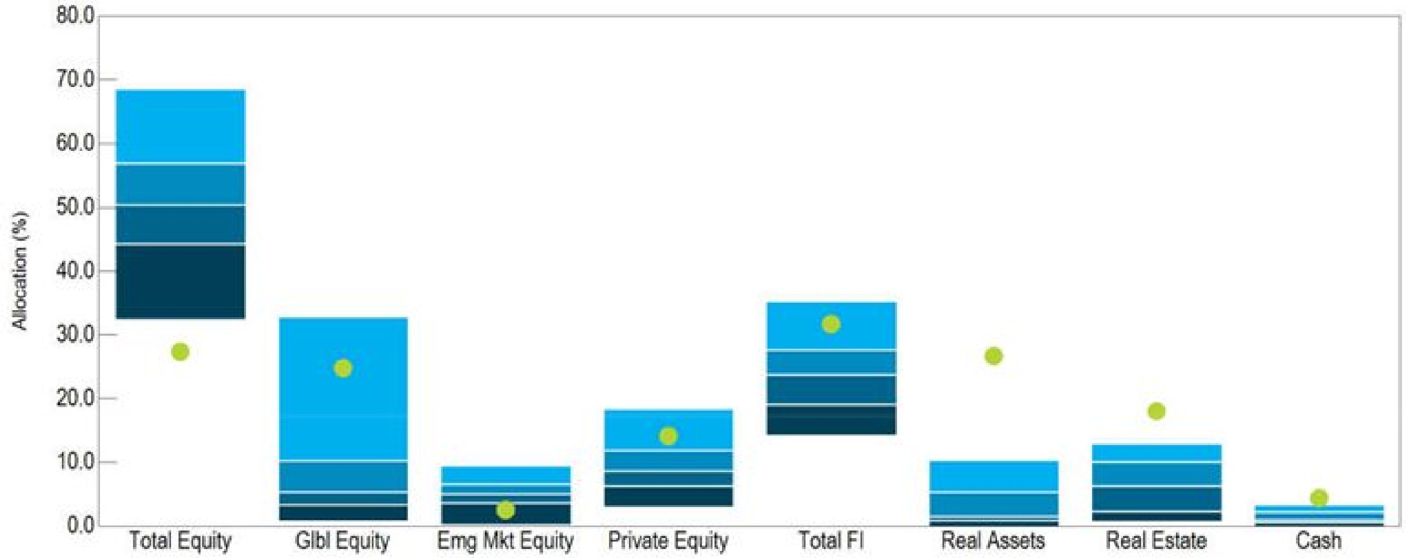
Current Allocation vs. Peers

Total Plan Allocation vs. InvestorForce Public DB $1-5B Net
As of December 31, 2019



Allocation (Rank)	Total Equity		Glbl Equity		Emg Mkt Equity		Private Equity		Total FI		Real Assets		Real Estate		Cash	
5th Percentile	68.6		32.9		9.5		18.4		35.3		10.3		13.0		3.3	
25th Percentile	57.0		10.3		6.6		11.9		27.7		5.4		10.1		2.2	
Median	50.5		5.4		5.1		8.7		23.9		1.6		6.3		1.1	
75th Percentile	44.4		3.5		3.7		6.4		19.2		0.9		2.4		0.7	
95th Percentile	32.5		0.9		0.3		3.0		14.3		0.0		0.7		0.1	
# of Portfolios	39		19		29		34		39		17		35		39	
DPFP	27.4	(98)	24.8	(14)	2.6	(88)	14.1	(17)	31.7	(10)	26.8	(1)	18.0	(1)	4.4	(2)

'Total Equity' in the Plan Allocation chart and table above refers to total publicly traded equity only.

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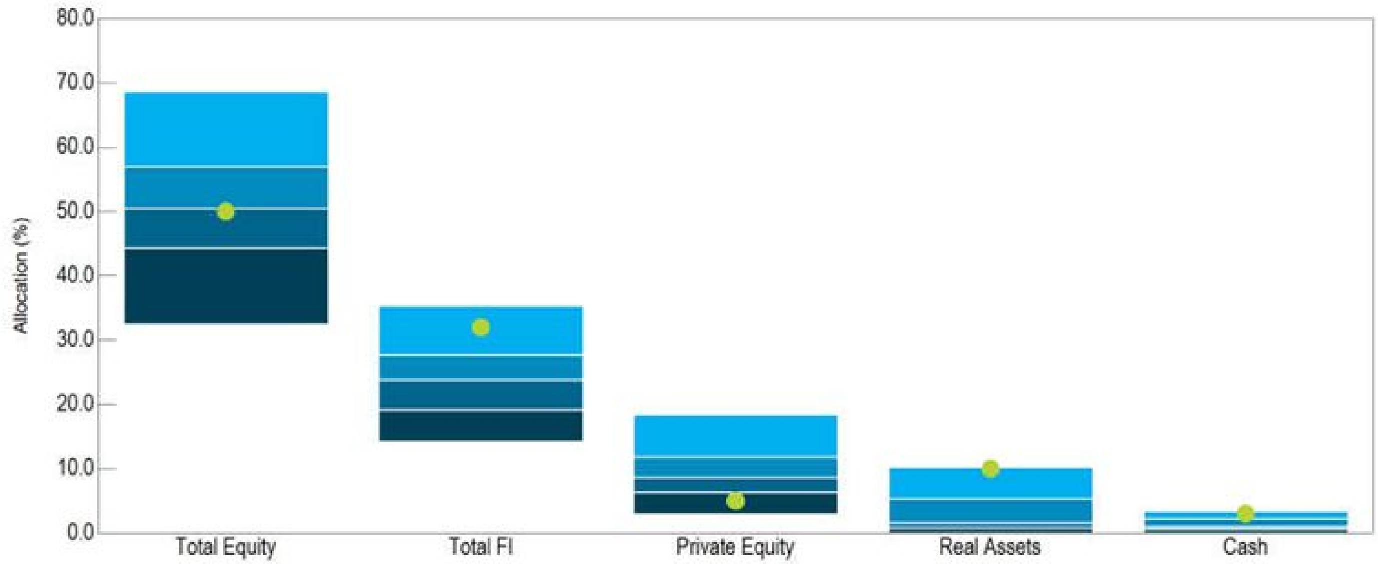
Policy Allocation vs. Peers

Total Plan Allocation vs. InvestorForce Public DB $1-5B Net
As of December 31, 2019



Allocation (Rank)	Total Equity		Total FI		Private Equity		Real Assets		Cash	
5th Percentile	68.6		35.3		18.4		10.3		3.3	
25th Percentile	57.0		27.7		11.9		5.4		2.2	
Median	50.5		23.9		8.7		1.6		1.1	
75th Percentile	44.4		19.2		6.4		0.9		0.7	
95th Percentile	32.5		14.3		3.0		0.0		0.1	
# of Portfolios	39		39		34		17		39	
DPFP Policy Allocation	50.0	(53)	32.0	(10)	5.0	(87)	10.0	(8)	3.0	(11)

Rebalancing to Target Asset Mix – Commentary

- Significant progress was made during 2019, as allocations of real assets declined about 8 percentage points while equities and fixed income increased by approximately 6 and 2 percentage points, respectively.
- Further progress is expected to occur in 2020.
- With respect to the current asset allocation, presently the Fund has an underweight to equities, which is expected given the large overweight to private assets. As these are redeemed, the allocation to public equities will increase, as described in the implementation plan.
- The current allocation's equity position is primarily through global equity funds. The majority of peers invest with US, non-US developed and emerging markets sub asset classes. The global vs. regional approach to investing in public equities is fluid, and at other times may favor global mandates. We are not concerned by this deviation.
- The long term policy is in line with that of peer public funds with assets between one and five billion dollars. We note DPFP's mix plots squarely in the median for total allocation to public equities. Given the weaker than average funding status and cash flow situation, it is prudent for DPFP to have a larger weight to fixed income. This overweight comes at the expense of alternative investments, which healthier funds may invest in more aggressively.

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Capital Market Expectations

Asset Allocation Process Recap: Setting Capital Market Expectations

- Consultants (including Meketa) generally set Capital Market Expectations once a year.
  - Our results are published in January, based on December 31 data.
- Capital Markets Expectations are the inputs needed to conduct Mean Variance Optimization ("MVO").
  - MVO is the traditional starting point for determining asset allocation.
  - MVO mathematically determines an "efficient frontier" of policy portfolios with the highest risk adjusted returns.
- This involves setting long-term expectations for a variety of asset classes for:
  - Returns
  - Standard Deviation
  - Correlations (i.e. covariance)
- The MVO model assumes:
  - Normal return distribution
  - Stable volatility and covariance over time
  - Returns are not serially correlated
- Our process relies on both quantitative and qualitative methodologies.

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Capital Market Expectations: Our Process

Asset Class Definitions

- We identify asset classes and strategies that are appropriate for long-term allocation of funds, and that also are investable.
- Several considerations influence this process:
  - Unique return behavior
  - Observable historical track record
  - A robust market
  - And client requests.
- We then make forecasts for each asset class.
  - We created inputs for 81 "asset classes" in 2020.

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Dallas Police and Fire Pension System

Capital Market Expectations: Our Process

Building 10-year forecasts

- Our first step is to develop 10-year forecasts based on fundamental models.
  - Each model is based on the most important factors that drive returns for that asset class:

Asset Class Category	Major Factors
Equities	Dividend Yield, GDP Growth, Valuation
Bonds	Yield to Worst, Default Rate, Recovery Rate
Commodities	Collateral Yield, Roll Yield, Inflation
Infrastructure	Public IS Valuation, Income, Growth
Natural Resources	Price per Acre, Income, Public Market Valuation
Real Estate	Cap Rate, Yield, Growth
Private Equity	EBITDA Multiple, Debt Multiple, Public VC Valuation
Hedge Funds and Other	Leverage, Alternative Betas

  - The common components are income, growth, and valuation.

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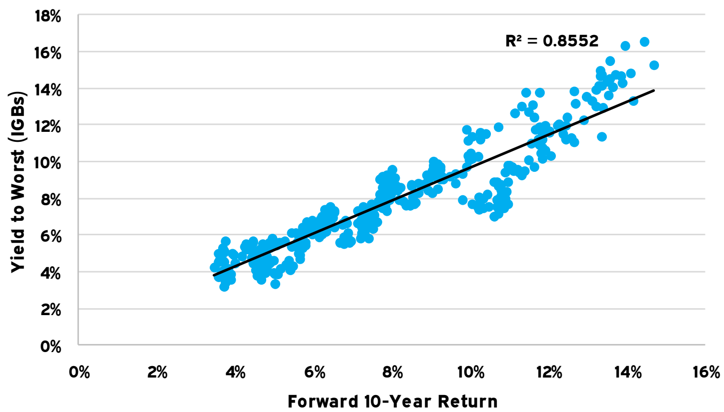
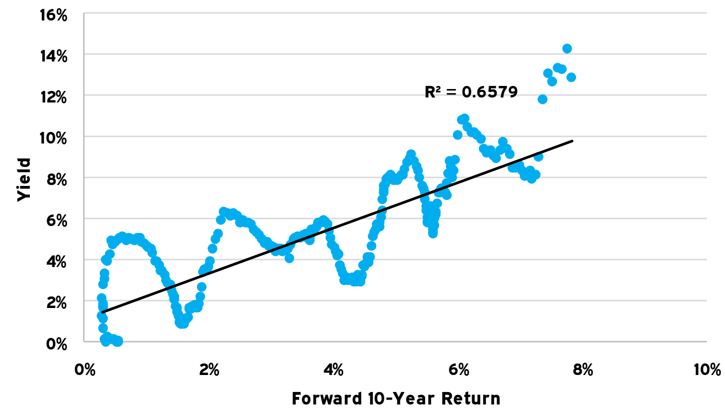
Capital Market Expectations: Our Process

Some factors are naturally more predictive than others

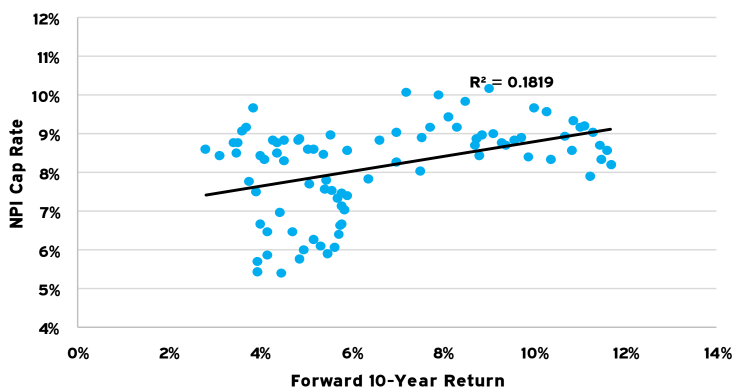
Investment Grade Bonds
Yield to Worst vs. Forward 10-Year Returns



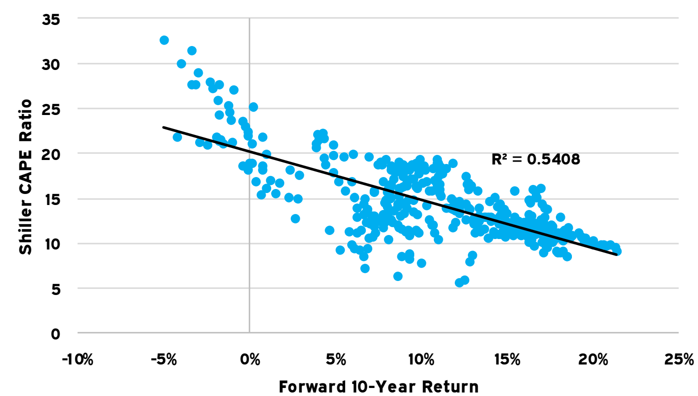
Cash (90-day T-Bill)
Yield vs. Forward 10-Year Returns



Core Real Estate
Cap Rates vs. Forward 10-Year Returns



US Equities
Shiller CAPE vs. Forward 10-Year Returns



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Capital Market Expectations: Our Process

Moving from 10-year to 20-year Forecasts

- Our next step is to combine our 10-year forecasts with the historical returns for each asset class.
  - How much we weight each depends on our confidence in them (both the model and the data).
    - The 10-year model weighting varies between 50% and 100%.
    - It only hits 100% when there is a lack of reliable historical data.
- We then infer a forecast of 10-year returns in ten years (i.e., years 11-20).
  - This allows us to test our assumptions with finance theory.
  - Essentially, we assume mean-reversion over the first ten years (where appropriate), and consistency with CAPM thereafter.
- The final step is to make any qualitative adjustments.
  - The Investment Committee reviews the output and may make adjustments.

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Capital Market Expectations: Our Process

The other inputs: standard deviation and correlation

- Standard deviation:
  - We review the trailing fifteen-year standard deviation, as well as skewness.
  - Historical standard deviation serves as the base for our assumptions.
  - If there is a negative skew, we increased the volatility assumption based on the size of the historical skewness.

Asset Class	Standard Deviation	Skewness	Assumption
Bank Loans	6.6%	-2.3	9.0%

  - We also adjust for private market asset classes with "smoothed" return streams.
- Correlation:
  - We use trailing fifteen-year correlations as our guide.
  - Again, we make adjustments for "smoothed" return streams.
- Most of our adjustments are conservative in nature (i.e. they increase the standard deviation and correlation).

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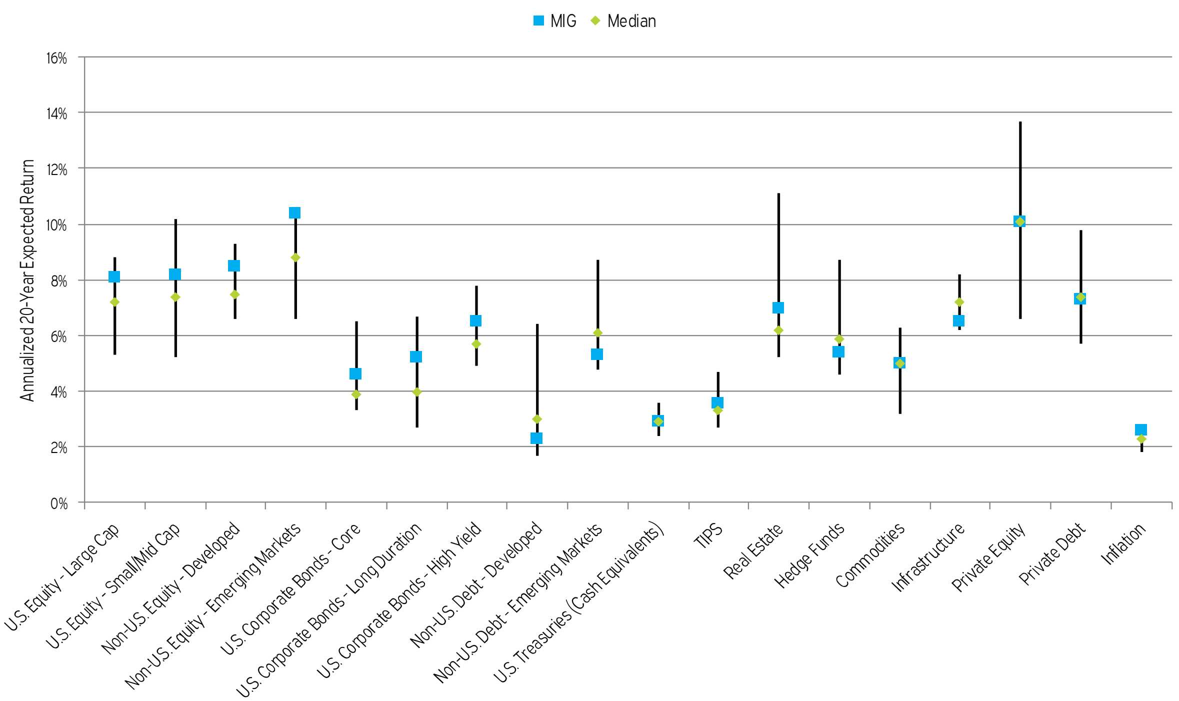
Comparison to Peers

Peer Study (2019 Horizon survey)

- Annually, Horizon Actuarial Services, LLC publishes a survey of capital market assumptions that they collect from various investment advisors.[1]
- The analysis is a good "sanity-check" to compare Meketa Investment Group's asset class forecasts to the forecasts of our industry peers.



[1] In the 2019 survey there were 34 respondents. The 10-year horizon included all 34 respondents, and the 20-year horizon included 16 respondents. Figures based on Meketa 2019 Asset Study.

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Comparing 2020 Projections to 2019 Projections

Summary of Major Asset Classes

	2020 E(R) (%)	2019 E(R) (%)	Δ from 2019 (%)	Notes
Short-term Investment Grade Bonds	2.6	3.4	-0.8	Lower yields
Investment Grade Bonds	3.0	3.9	-0.9	Lower yields
Global Equity	7.8	8.6	-0.8	Higher prices, lower dividend yield
Private Equity	9.4	10.1	-0.7	Higher prices, partly offset by lower borrowing costs
Real Estate	7.5	7.0	0.5	Lower cost of borrowing for private Real Estate

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Comparing the Expectations Year-over-Year

Dallas Police and Fire Pension System

Target Asset Allocation Expected Return and Expected Standard Deviation

	Based on 2018 Asset Study capital market assumptions (%)	Based on 2019 Asset Study capital market assumptions (%)	Based on 2020 Asset Study capital market assumptions (%)
Expected Return[1] (over 10 years)	6.28	7.41	6.49
Expected Return[1] (over 20 years)	7.28	7.94	7.20
Expected Standard Deviation (over 20 years)	13.38	12.27	12.27

[1] Annualized geometric nominal return

Comments

- Despite larger than normal year-over-year changes in expectations, forward looking return expectations are very similar today (2020 Asset Study) vs. two years ago (2018 Asset Study).
- Expectations increased broadly in the 2019 Asset Study because it came on the heels of calendar year 2018, when:
  - Equity valuations dropped in 2018 - which increased forward looking return expectations. Bond yields rose in 2018 – which increased forward looking return expectations.
- Expectations decreased broadly in the 2020 Asset Study as 2019 calendar year returns were nearly the exact opposite of the prior year.
  - Equity valuations increased in 2019 – which decreased forward looking returns. Bond yields decreased in 2019 – which decreased forward looking returns.
- Peer public pension plans have been conducting deep asset studies every three to five years precisely to avoid making changes to the policy target mix as a result of year over year return fluctuations, which often can cancel each other out over a multi-year period.
- The next few pages provide expected performance of the target portfolio under different scenarios.

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Capital Market Expectations

Historical Negative Scenario Analysis (*Cumulative* Return)

Scenario	Target Asset Allocation Policy (%)
Taper Tantrum (May - Aug 2013)	-1.5
Global Financial Crisis (Oct 2007 - Mar 2009)	-29.4
2008 Calendar Year	-27.4
Popping of the TMT Bubble (Apr 2000 - Sep 2002)	-16.5
LTCM (Jul - Aug 1998)	-10.2
Asian Financial Crisis (Aug 1997 - Jan 1998)	-2.3
Rate spike (1994 Calendar Year)	3.0
Crash of 1987 (Sep - Nov 1987)	-11.7
Strong dollar (Jan 1981 - Sep 1982)	2.5
Stagflation (Jan - Mar 1980)	-4.3
Stagflation (Jan 1973 - Sep 1974)	-21.1

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Capital Market Expectations

Historical Positive Scenario Analysis
(*Cumulative* Return)

Scenario	Target Asset Allocation Policy (%)
Global Financial Crisis Recovery (Mar 2009 - Nov 2009)	42.6
Best of Great Moderation (Apr 2003 - Feb 2004)	33.3
Peak of the TMT Bubble (Oct 1998 - Mar 2000)	41.9
Plummeting Dollar (Jan 1986 - Aug 1987)	69.3
Volcker Recovery (Aug 1982 - Apr 1983)	31.8
Bretton Wood Recovery (Oct 1974 - Jun 1975)	29.1

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Capital Market Expectations

Stress Testing: Impact of Negative Market Movements (Expected Return under Stressed Conditions)

Scenario	Target Asset Allocation Policy (%)
10-year Treasury Bond rates rise 100 bps	4.9
10-year Treasury Bond rates rise 200 bps	2.0
10-year Treasury Bond rates rise 300 bps	-0.7
Baa Spreads widen by 50 bps, High Yield by 200 bps	-0.3
Baa Spreads widen by 300 bps, High Yield by 1000 bps	-22.6
Trade Weighted Dollar gains 10%	-4.0
Trade Weighted Dollar gains 20%	-5.3
U.S. Equities decline 10%	-5.8
U.S. Equities decline 25%	-16.9
U.S. Equities decline 40%	-27.7

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Dallas Police and Fire Pension System

Capital Market Expectations

Stress Testing: Impact of Positive Market Movements (Expected Return under Stressed Conditions)

Scenario	Target Asset Allocation Policy (%)
10-year Treasury Bond rates drop 100 bps	3.2
10-year Treasury Bond rates drop 200 bps	12.9
Baa Spreads narrow by 30bps, High Yield by 100 bps	7.4
Baa Spreads narrow by 100bps, High Yield by 300 bps	16.5
Trade Weighted Dollar drops 10%	8.9
Trade Weighted Dollar drops 20%	22.5
U.S. Equities rise 10%	6.7
U.S. Equities rise 30%	17.2

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Asset Allocation Summary

Summary

- DPFP has made good progress in 2019 moving towards its long term policy target.
  - Real assets weight declined 8 percentage points during the year;
  - Equities increased 6 percentage points, while fixed income increased 2.
- DPFP has a solid policy target, and over the coming years as the illiquid legacy positions are worked out, shall reach its target. We do not have any recommendations to adjust the policy mix at this point in time.
- In the meantime, DPFP shall continue to work through the Implementation Plan approved in January 2019. The 4% allocation to investment grade bonds is essentially complete, and the timing appears to be fortuitous at this time, as rates have fallen significantly recently, resulting in early material gains in the positions (core bonds up over 4% YTD).
- The Safety Reserve® and more defensive posture of the Fund should help to mitigate the drawdowns experienced in the equity markets the past few weeks.
- We will be working with Staff to rebalance the portfolio should the allocations to broad asset classes fall outside their respective ranges.

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Appendix

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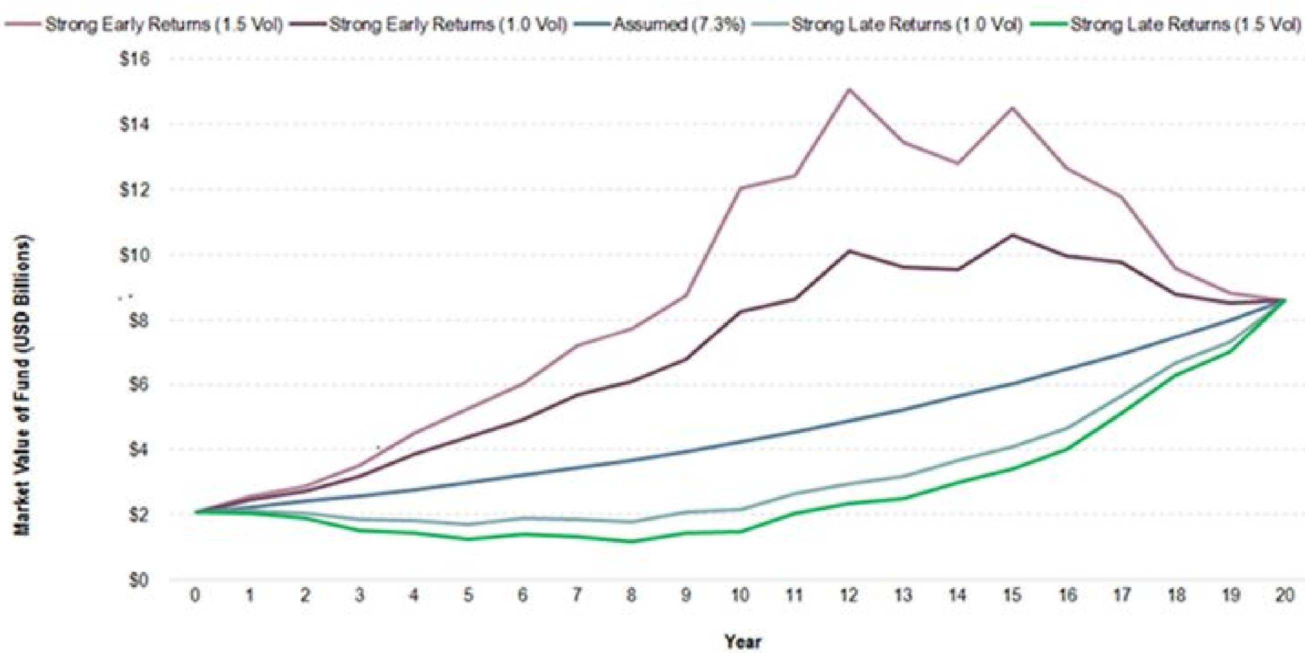
Excerpt from 2018 Asset Allocation Study

The Order of Returns Does Not Matter When There Are No Cash Flows

- If DPFP was cash flow neutral, the order of the returns would not matter.
- The chart shows various return paths over 20 years that all result in the same long-term return: 7.3% annualized.
- The ending market value after 20 years is the same regardless of the path of returns.



Model assumes no cash flows and the recommended long-term mix returns and volatility.

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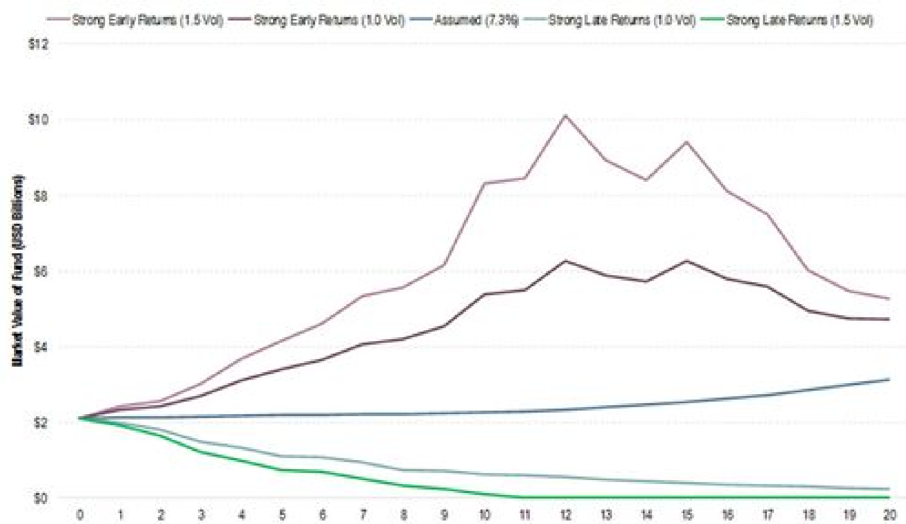
Excerpt from 2018 Asset Allocation Study

The Order of Returns Matters When There are Significant Cash Flows

- The chart below shows various return paths that all result in the same long term return: 7.3% annualized.
- Unlike the prior chart, DPFP's asset growth is permanently impaired if negative/low returns occur in the near term. The path of returns is very significant because of the negative cash outflows.

Market value under the predicted cash out flows under the City Hiring Plan



Model assumes city payroll forecast net of expected benefit payments and the recommended long-term mix returns and volatility.

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Dallas Police and Fire Pension System

Comparing the results from 2020 to 2019

DPFP Target vs. Actual Exposure as of 12/31/19

	Asset Allocation Target Policy (%)	Actual Weight – assuming all healthy assets	Actual Weight – incorporating zero return for legacy assets
Global Equity	40	25	25
Emerging Market Equity	10	3	3
Private Equity	5	14	0
Cash	3	4	4
Short Term Investment Grade Bonds	12	13	13
Investment Grade Bonds	4	2	2
High Yield Bonds	4	4	4
Bank Loans	4	4	4
Global Bonds	4	4	4
Emerging Market Debt	4	1	1
Real Estate	5	18	8
Natural Resources	5	6	6
Infrastructure	-	3	1
Legacy Assets[1]	-	-	26
Expected Return[1] (over 20 years)	7.20	7.90	4.49
Expected Standard Deviation (over 20 years)	12.27	12.70	13.55

[1] Legacy assets modeled with zero percent return expectation, but with private equity like standard deviation and private equity like correlation to other asset classes.

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Dallas Police and Fire Pension System

Comparing the Results from 2020 to 2019

Fixed Income

	2020 E(R) (%)	2019 E(R) (%)	Δ from 2019 (%)	Notes
Cash Equivalents	2.4	2.9	-0.5	Lower rates
Short-term Investment Grade Bonds	2.6	3.4	-0.8	Lower yields
Investment Grade Bonds	3.0	3.9	-0.9	Lower yields
Intermediate Government Bonds	2.4	3.1	-0.7	Lower yields
Long-term Government Bonds	3.2	3.7	-0.5	Lower yields
TIPS	2.9	3.6	-0.7	Lower real yields
High Yield Bonds	5.2	6.5	-1.3	Lower yields and much tighter spreads
Bank Loans	5.0	6.1	-1.1	Lower yields
Foreign Bonds	2.4	2.3	0.1	Slightly lower yields offset by currency tailwind
Emerging Market Bonds (major)	4.5	5.2	-0.7	Lower yields
Emerging Market Bonds (local)	4.8	5.3	-0.5	Slightly lower yields
Private Debt Composite	6.9	7.3	-0.3	Lower yield
Direct Lending – First Lien	6.2	6.7	-0.5	Lower yields and tighter spreads
Direct Lending – Second Lien	7.5	7.9	-0.4	Lower yields
Mezzanine Debt	7.0	7.2	-0.2	Lower yield
Distressed Debt	7.0	7.3	-0.3	Lower yield

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Dallas Police and Fire Pension System

Comparing the Results from 2020 to 2019

Equities

	2020 E(R) (%)	2019 E(R) (%)	Δ from 2019 (%)	Notes
US Equity	7.4	8.1	-0.7	Higher prices
US Large Cap	7.2	8.1	-0.9	Higher prices
US Mid Cap	7.6	8.1	-0.5	Higher prices, partially offset by higher future PE assumption
US Small Cap	7.9	8.3	-0.4	Higher prices, offset by higher future PE assumption
Dev. Market Equity (non-US)	7.9	8.5	-0.6	Lower dividend, higher prices, offset by slight currency effect
Developed Market Small Cap	7.8	7.7	0.1	Higher prices but Higher future PE assumption
Emerging Market Equity	9.1	10.4	-1.3	Higher prices, lower DY
Emerging Market Small Cap	9.0	9.9	-0.9	Lower DY, higher prices, offset by higher PE assumption
Frontier Market Equity	10.0	10.3	-0.3	Lower DY, higher prices, offset by higher PE assumption
Global Equity	7.8	8.6	-0.8	Higher prices, lower DY
Private Equity	9.4	10.1	-0.7	Higher prices, partly offset by lower borrowing costs
Buyouts	9.4	10.1	-0.7	Higher prices, partly offset by lower borrowing costs
Venture Capital	9.3	10.0	-0.7	Higher prices

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Dallas Police and Fire Pension System

Comparing the Results from 2020 to 2019

Real Assets

	2020 E(R) (%)	2019 E(R) (%)	Δ from 2019 (%)	Notes
Real Estate	7.5	7.0	0.5	Lower cost of borrowing for private Real Estate
REITs	7.0	7.0	0.0	
Core Private Real Estate	6.3	5.8	0.5	Lower cost of borrowing; slightly better cap rates
Value-Added Real Estate	8.4	7.5	0.9	Lower cost of borrowing
Opportunistic Real Estate	9.9	9.1	0.8	Lower cost of borrowing
Natural Resources (Public)	8.3	9.0	-0.7	Higher prices
Natural Resources (Private)	8.8	9.5	-0.7	Higher prices
Commodities	4.3	5.0	-0.7	Lower collateral return due to lower yields
Infrastructure (Public)	7.5	8.2	-0.7	Higher prices
Infrastructure (Core Private)	6.7	6.5	0.2	Lower cost of borrowing
Infrastructure (Non-Core Private)	9.1	8.8	0.3	Lower cost of borrowing

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Dallas Police and Fire Pension System

Comparing the Results from 2020 to 2019

Alternative Strategies (Other)

	2020 E(R) (%)	2019 E(R) (%)	Δ from 2019 (%)	Notes
Hedge Funds	4.9	5.4	-0.6	Higher prices, lower yields
Long-Short	4.3	5.0	-0.7	Higher prices, lower cash return
Event Driven	5.8	6.3	-0.5	Higher prices, lower cash return
Global Macro	4.6	5.2	-0.6	Higher prices, lower yields
CTA – Trend Following	4.8	5.4	-0.6	More emphasis on long-term efficacy of signals
Fixed Income/L-S Credit	4.0	4.9	-0.9	Lower yields
Relative Value/Arbitrage	5.3	5.5	-0.2	Lower yields, partly offset by higher carry
Insurance Linked Strategies	4.1		N/A	New Asset Class
Risk Parity (10% vol)	5.4	6.2	-0.9	Higher prices, lower yields
TAA	4.4	5.1	-0.7	Higher prices, lower yields
US Inflation	2.6	2.6	0.0	

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C12

Topic: **Real Estate Overview – Clarion Partners Portfolio**

Portions of the discussion under this topic may be closed to the public under the terms of Section 551.072 of the Texas Government Code.

Attendees: Bohdy Hedgcock, Senior Vice President

Discussion: Clarion will update the Board on the status and plans for DPFP's investment in CCH Lamar. Clarion was engaged in October 2015 to take over the investment management of DPFP's interest in several Dallas area real estate assets, with only one asset remaining.

DALLAS POLICE AND FIRE PENSION SYSTEM

| DPFP BOARD | MARCH 2020

CLARION PARTNERS

REAL ESTATE INVESTMENT MANAGEMENT

Clarion Partners

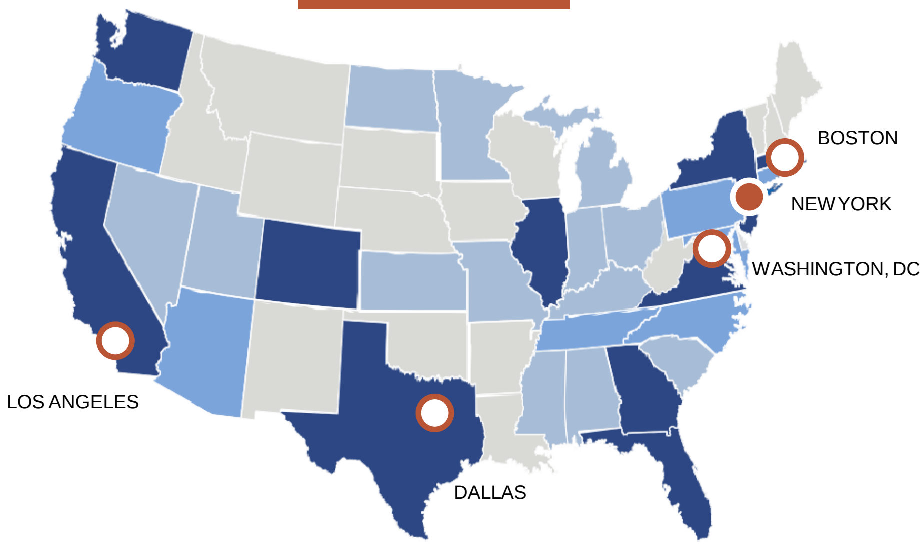
AUM ($bn)
$54.9

Assets
1,272

Offices
7

Employees
304

UNITED STATES



EUROPE

< $500 M · $500 M - $1,500 M · $1,500 M +

REGIONAL · HEADQUARTERS

Investment Research
10 Team Members

Proprietary research informs all investment decisions

Acquisitions
37 Team Members

Regional teams based in New York, Dallas, Los Angeles, and London.

Asset Management
75 Team Members

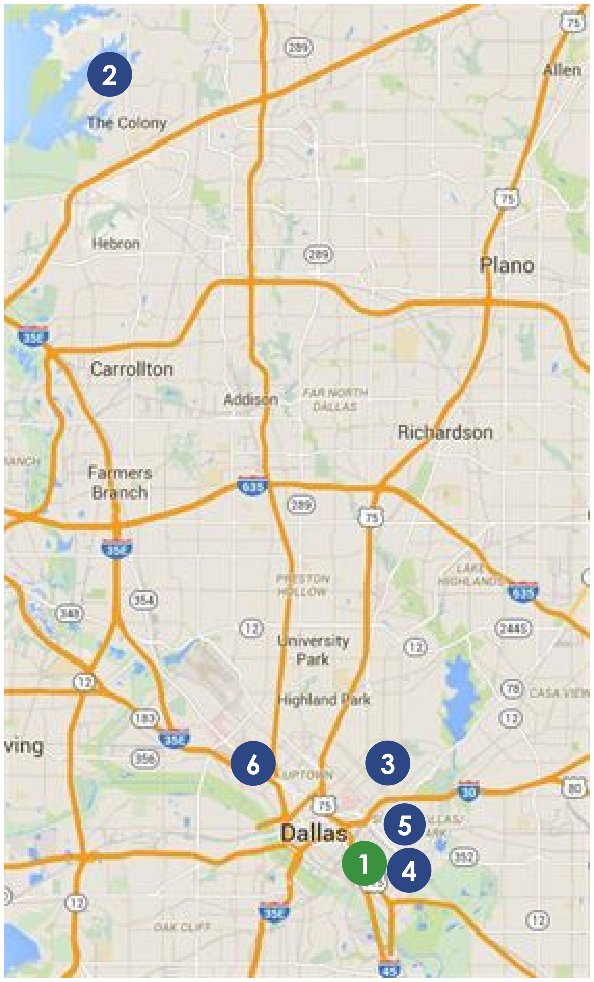
Property sector specialists positioned regionally

As of December 31, 2019.
Geographic information represents GRE; compared to Firm-level GAV. Please see Important Legal Information at the end of this presentation.

CLARION PARTNERS

Portfolio Overview

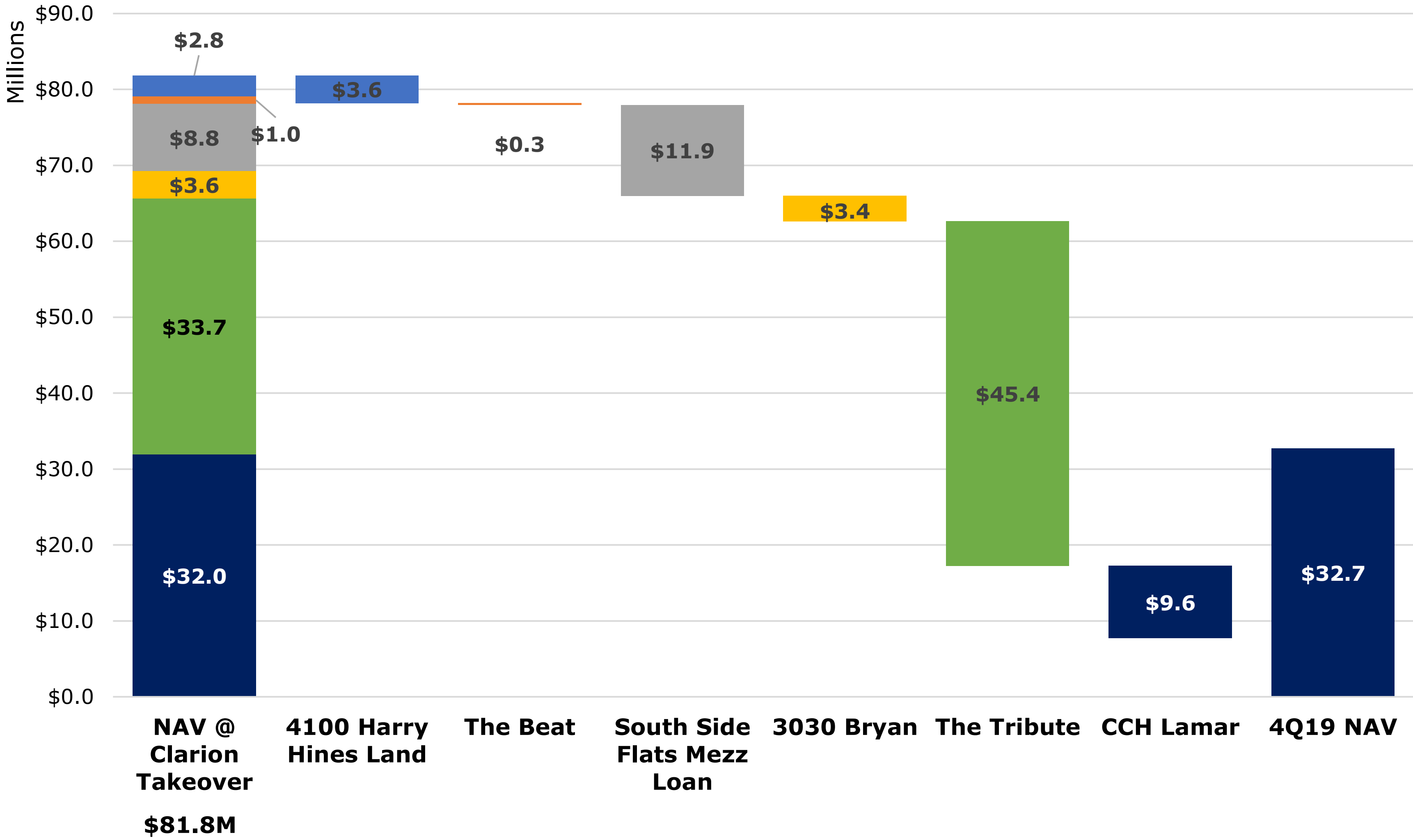
Take Over Assignment Awarded October 2015



Property	Property Type	Location	Partner	Status
1 CCH Lamar	**Mixed Use**	**Cedars**	**MSW**	**Active**
2 The Tribute	Residential Lots & Land; Golf Courses	The Colony	MSW	Realized November 2019
3 3030 Bryan	Condos	East Dallas	Reeder/ Smith	Realized June 2018
4 South Side Flats Mezz. Loan	Multifamily	Cedars	Buitte Againn	Realized June 2017
5 The Beat	Condos	Cedars	MSW	Realized February 2017
6 4100 Harry Hines Land	Vacant Land	Uptown	None	Realized December 2016

Portfolio Distributions Since Clarion Takeover

Gross distributions of $74.2 million since takeover; $32.7 million current NAV



DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C13

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

Discussion 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 #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.

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.

DISCUSSION SHEET

ITEM #D1

Topic: **Public Comment**

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

Regular Board Meeting – Thursday, March 12, 2020

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #D2

Topic: **Executive Director's report**

a. Associations' newsletters
- NCPERS Monitor (February 2020)
- NCPERS PERSist (Winter 2020)

b. Open Records

c. Staffing Update

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

THE NCPERS

MONITOR

The Latest in Legislative News

February 2020

In This Issue

NIRS Study Underscores Powerful Role Social Security and Pensions Play in Tandem

A new study from the National Institute on Retirement Security paints a vivid picture of the powerful tandem role that defined benefit pensions and Social Security income play in keeping older households out of poverty.

"Examining the Nest Egg: The Sources of Retirement Income for Older Americans" shows that only 7 percent of older Americans enjoyed the trifecta of retirement security—the so-called three-legged stool of Social Security, a defined benefit pension, and a defined contribution account. Forty percent of older Americans, meanwhile, were completely dependent on Social Security.

The study analyzed the most recent Census Bureau data – gathered in 2014 – on sources of retirement income for people age 60 and older who worked 30 or fewer hours per week. A slightly greater percentage of older Americans received income from defined benefit pensions (27.3 percent) than from defined contribution plans (25.7 percent), but the gap was closing as access to defined benefit plans diminish, the study found.

The study noted that while defined benefit coverage has declined in recent decades, 22 percent of U.S. workers participated in a pension plan in 2017, and 64 percent of private sector works had access to defined contribution plans in 2018.

Defined benefit pensions had a much greater poverty-reducing effect than defined contribution plans, the study found. This may be partly due to the fact that recipients of

CONTINUED ON PAGE 6

NCPERS Executive Directors Corner

Got Benchmarking? Webinar on NCPERS Public Retirement Systems Study Set for February 4

Benchmarking is one of the most effective ways for organizations to evaluate and improve operations and performance. For public pension systems, the NCPERS Public Retirement Systems Study has emerged as an indispensable peer comparison and benchmarking tool.

Photo illustration © 2020, shutterstock.com

Now in its ninth year, the NCPERS Study is one of the best ways to compare performance, assumptions and expenses as well as a range of business practices and trends. NCPERS members use the study's interactive dashboard to create customized comparisons and peer groups that can help inform their decision making.

Whether you're using the NCPERS Study interactive dashboard for the first time or the ninth time, we think you'll find lots of value in our explanatory webinar on Tuesday, February 4, at 1 P.M. eastern time. This session will introduce you to the dashboard's features and review the highlights of this year's study. Access to the dashboard is included with your NCPERS membership, and we want you to take advantage of it! Signup is available now, at no cost, on the NCPERS website. And you can register an individual or an entire team for this webinar—the choice is yours.

> *Now in its ninth year, the NCPERS Study is one of the best ways to compare performance, assumptions and expenses as well as a range of business practices and trends.*

The NCPERS Study is packed with quantitative as well as qualitative information. You'll find measurable facts for making comparisons in quantitative areas such as expenses, actuarial assumptions, cost-of-living adjustments, funding levels, investment returns and asset allocation. And you'll gain insight into reasons, opinions and motivations – in other words, qualitative data and trends -- in areas such as confidence, plan changes, retirement benefits including health plans, business practices, engagement, communication, and oversight.

The study also shines a spotlight on how pension funds are managing risks and what innovations and best practices they are embracing. It is a rich database that you can mine to answer your questions.

This year's study was based on responses from 155 state and local pension systems, representing 12.6 million active and retired

CONTINUED ON PAGE 6

NCPERS Comments on SEC Rules

By Tony Roda

NCPERS recently submitted two comment letters to the Securities and Exchange Commission (SEC) on proposed rules affecting shareholder rights. NCPERS is concerned that the SEC's proposed changes will have a negative impact on pension plans and their beneficiaries.

Photo illustration © 2020, istock.com

The first proposed rule is entitled "Procedural Requirements and Resubmission Thresholds under Exchange Act Rule 14a-8." Below is a summary of some of our key concerns:

- Eligibility Requirements – The SEC is seeking to adjust the eligibility threshold for shareholder proposals for inclusion in a company's proxy statement, arguing that the current threshold of holding $2,000 worth of stock for a single year does not strike the right balance between allowing shareholders to engage with a company and burdening the company. However, the SEC fails to provide any evidence of increasing abuse of the shareholder proposal process. In fact, the data included in the proposal shows that requests have decreased over the past several years.

- One Proposal Limit – The SEC would limit the number of proposals submitted by a shareholder or representative to one per proxy statement for each company. What is unclear from this proposal is how the limit will impact shareholders that rely on a representative. Pension plan administrators frequently employ investment and proxy advisors to assist with the management of funds and ensure compliance. Plan administrators may also rely on their representative to submit proposals on their behalf.

- Resubmissions – NCPERS does not believe that further restrictions on resubmissions are warranted. The current restrictions prevent abuse of the shareholder proposal process and ensure consideration of proposals important to all shareholders. The current limits already prohibit resubmission of proposals that are not gaining traction with shareholders and fail to increase the level of shareholder support on subsequent submissions. All shareholders benefit from a company controlling its expenses, thereby boosting the profits and value of shares. However, these savings should not come at the expense of shareholders exercising their right to submit proposals. The SEC fails to provide a financial justification in its rule that shows any savings generated by limiting the number of proposals submitted to a proxy statement. It also fails to provide necessary data on the current level of abusive behavior it addresses or the consequences for shareholders.

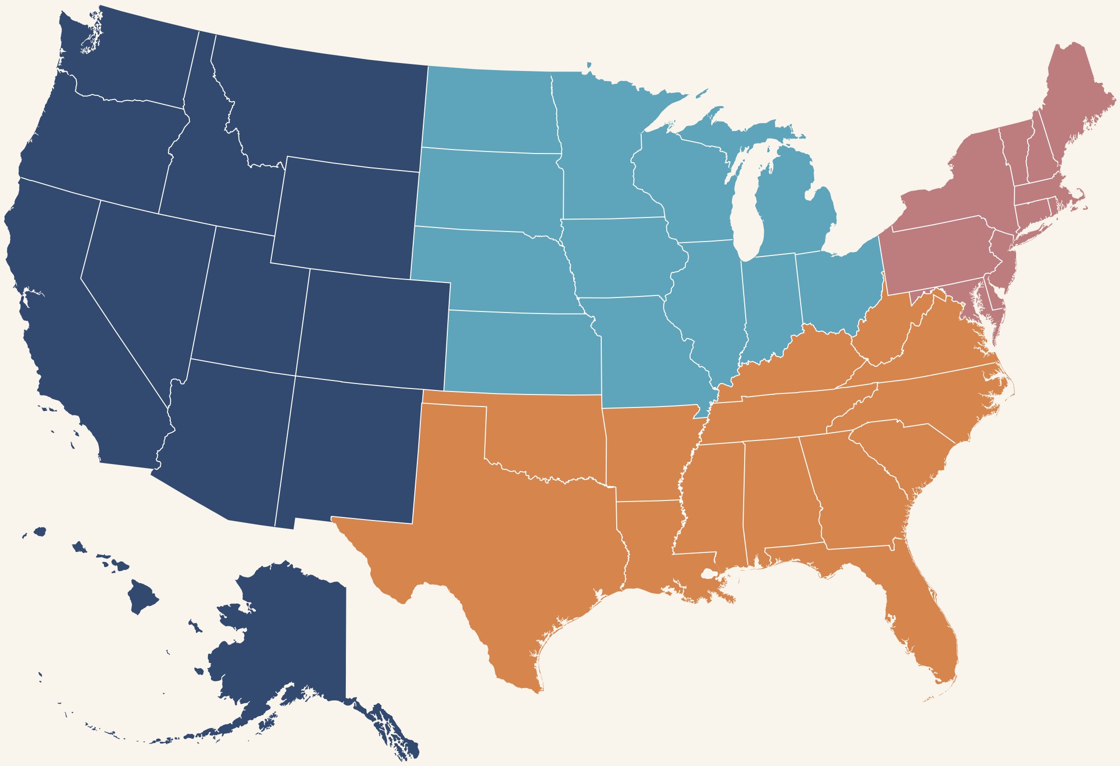
The second proposed rule is entitled "Amendments to Exemptions from the Proxy Rules for Proxy Voting Advice." We are concerned that the SEC's proposed changes to the exemptions for proxy voting advice will have a detrimental effect on state and local governmental pensions' access to timely, independent corporate governance research.

Pension plan administrators frequently work with investment advisors or proxy advice firms to provide them with independent analysis of corporate governance and proxy voting policies. Administrators use this information as part of their due diligence in managing investments. It is critical that this information be unbiased.

CONTINUED ON PAGE 7

NCPERS Around the Regions

This month, we will highlight Maine, California, Kansas, and Oklahoma.



NORTHEAST: Maine

Maine's Assistant Senate Majority Leader, Democrat Eloise Vitelli, has kicked off a legislative effort to promote retirement savings and financial security for workers who don't have access to a program at work.

Sen. Vitelli is sponsoring "An Act to Promote Individual Savings Accounts through a Public-Private Partnership," also known as the Work and Save bill. It would offer a state-run retirement savings plan to Maine workers who do not have one available through their employer.

The bill was carried over from last year, when it was introduced in the first regular session of the 129th legislature, which adjourned in June 2019. During the adjournment, stakeholders met to improve and strengthen the bill, and it is now poised for consideration during the second regular session, which began January 8.

"Not too long ago, a person who worked their whole life could retire with the security of a reliable pension. But now, more and more retirees are trying to live on Social Security payments alone. It's not enough," Sen. Vitelli said. "We have an opportunity to turn the tide and help all Maine workers save for retirement. Our goal is to create a program that's as easy to use as possible, for both employers and workers. With the help of both local and national experts, I believe we'll be able to achieve that goal."

Several states, including California, Illinois, and Oregon, have already implemented similar retirement programs. According to AARP Maine, more than 235,000 private sector workers in Maine don't have access to a retirement plan through their workplace.

CONTINUED ON PAGE 5

NCPERS Around the Regions

AROUND THE REGIONS CONTINUED FROM PAGE 4

WEST: California

In its first six months of operations, California's Secure Choice auto-IRA program pulled in 628 employers and combined asset of $1.4 million—even before any companies were required to participate.

The program known as CalSavers is still in its infancy. CalSavers went live on a strictly voluntary basis on July 1, 2019. Employers may sign up at any time, but the first mandatory registration deadline—for employers with more than 100 employees—won't occur until June 30, 2020. Those with more than 50 to 100 employees must register by June 30, 2021, and employers with five to 50 employees must register by June 30, 2022.

The early signs show that opt-out provisions are working. As of year-end 2019, 30 percent of employees who were automatically enrolled in the program had withdrawn, a development that underscores out, underscoring the voluntary nature of auto-IRA programs designed to encourage retirement savings by private sector workers.

As of December 31, 3,762 accounts were funded, and 4,033 were awaiting their first contribution. The average account balance was $377.95 and the average contribution rate was 5 percent.

More time will be needed to draw conclusions about whether the opt-outs are a meaningful trend or a blip. A total of 258 account holders made full withdrawals within 120 days of the initial contribution. In total, 382 participants have made full withdrawals and 60 have made partial withdrawals. CalSavers did not probe the reasons for the withdrawals—for example, whether hardship had been a consideration or whether people simply preferred other savings options.

A more seasoned program to the north provides some clues as to what is possible as auto-IRA programs take root and begin to thrive. OregonSaves has demonstrated considerable success since its launch two years ago. Workers are saving a higher percentage of pay than expected, adding $2.5 million per month, and the program has already pulled in $25 million. Most program participants are first-time retirement savers.

MIDWEST: Kansas

A storm is brewing in Kansas over Democratic Governor Laura Kelly's proposal to pay off $477 million in debt owed to the Kansas Public Employee Retirement System and refinance the pension systems long-term liabilities.

"We must act decisively to meaningfully reduce state debt, rebuild the state savings account and protect Kansas' ability to pay its bills in the long term," Kelly said in a statement issued shortly before the legislature reconvened in early January. Under current law, the state's debt to KPERS wouldn't be eradicated for 20 years. A bulk payment would save the state treasury $200 million in interest payments, the *Topeka Capital-Journal* reported. She noted that key elements of her plan were previously advanced by Republican leaders. "After reviewing carefully, I concluded that their idea merits consideration," she said.
Kelly's plan has encountered opposition on Friday from KPERS leaders, however, because it extends the time the state will take to pay off the system's unfunded liability. As a result, the state would pay less now and pay more later.

The KPERS Board of Trustees voted unanimously on January 17 to send a letter to Kelly and lawmakers expressing their disapproval. They voiced concern that the plan could make the pension system more vulnerable to an economic downturn, the *Wichita Eagle* reported.

Under current law, only the KPERS board—chaired by Kelly Arnold, who is also the chairman of the Kansas Republican Party —can make the financial changes that Kelly wants, but the Legislature could change the law to mandate the refinancing.

In the short term, refinancing would trim $145 million a year from the state budget. Currently, KPERS projections show that annual state contributions to the pension system would rise until they hit a peak of $900 million in 2035, then fall to less than $100 million per year in the decades after. Currently, the state contributes less than $600 million a year. Kelly's plan would keep state contributions under $600 million a year through 2031. By 2049, annual contributions would approach nearly $1 billion, according to KPERS.

CONTINUED ON PAGE 8

NIRS STUDY CONTINUED FROM PAGE 1

defined contribution income tend to have much higher net worth than the recipients of defined benefit income.

“Defined benefit income meaningfully reduces the number of poor and near-poor older households,” the study said. “It is clear from the data that pensions serve an important function in keeping working families in the middle class in retirement.” Without defined benefit plans, an additional 4 million older Americans would have been plunged into poverty, the study found.

For people who had all three major income sources in retirement, Social Security was the largest contributor, providing $19,680 in median income, followed by defined benefit plans with $18,000 and defined contribution plans at $5,000. Their median total income was $37,440.

For those who had income from a pension and a 401(k) or similar plan but not from Social Security, the median income was $30,000 for the defined benefit portion and $8,000 for the defined contribution portion. Their median total income was $35,811.

The study underscored that the more sources of retirement income a household has, the more total retirement income they are likely to have. Having all three—Social Security, defined benefits and defined contribution—is “the most surefire way to achieve a secure retirement,” said Dan Doonan, NIRS executive director.

Doonan added that protecting and expanding Social Security should be a top priority if policymakers want to keep middle class Americans from falling into poverty during retirement. “Our analysis indicates that if Social Security income had been just ten percent higher in 2013, there would have been about 500,000 fewer poor older households,” he said.

But, he added, pensions are vital, too. “Social Security alone is not enough to provide a secure retirement. It is clear from the data that pensions serve an important function in keeping working families in the middle class in retirement, more so than defined contribution accounts that disproportionately benefit higher income Americans.” ◆

EXECUTIVE DIRECTOR’S CORNER CONTINUED FROM PAGE 2

members. Their combined assets exceeded $1.4 trillion in actuarial and market value. The majority—62 percent—were local pension systems while the remaining 38 percent were statewide systems. NCPERS conducted the ninth annual survey from September through December 2019 in partnership with Cobalt Community Research. It covered the most recently concluded fiscal year, which for most pension systems was calendar year 2018.

One of this year’s key findings was that public retirement systems are squeezing down their expenses to operate more efficiently. During their most recent fiscal year, pension systems reduced their costs to administer funds and pay investment managers to an average of 55 basis points (0.55 percent), down from 60 basis points (0.6 percent) a year earlier. (One hundred basis points equal one percentage point.)

The survey also found that 59 percent of all responding funds said they lowered their assumed rate of return, and 23 percent were considering this measure. Funded levels dipped to 71.7 percent, down from 72.6 percent a year earlier, largely due to weaker than expected one-year returns.

Some 45 percent set higher benefit age and service requirements, and 6 percent were considering doing so. And 34 percent of respondents increased employee contributions, while 12 percent were considering this option.

There’s far more inside. You’ll gain insight into trends regarding including or excluding overtime pay from benefits calculations, and handling cost-of-living adjustments. And you’ll get the lowdown on average investment returns across a range of time horizons and asset mixes.

The NCPERS Study is, simply put, a major perk of NCPERS membership. We hope you’ll take the time to explore it, learn about it during the webinar, and give us your feedback. Because every year, with member input, we have the ability to make it better. ◆

SEC RULES CONTINUED FROM PAGE 3

First, the rule proposes additional detailed requirements for disclosure of any material conflict of interest which, in our view, would add an unnecessary step as many proxy advisory firms already have policies and procedures to address conflicts. Second, the proposal would threaten the independence of proxy voting advice by allowing corporations to review and suggest edits to reports before they are delivered to clients. This will allow corporations to interfere with a transaction between the shareholder and the proxy advice firm. Finally, the SEC proposes a new requirement for final proxy voting advice to include a hyperlink the leads to the corporation's statement about the proxy voting advice. This is completely unnecessary as corporations are already permitted to file supplemental material under existing proxy rules.

State and local pensions play an important role in their local communities. Their ability to continue this role depends on responsible management and investment of the pension fund assets. As part of their fiduciary duty, fund administrators use the expert advice of investment advisers and proxy advice firms to provide timely analysis of proxy voting policies. The SEC's proposal will undermine this relationship while providing no real additional protections for shareholders. The SEC's proposed rules would add new burdens that will only increase the cost of this advice for plans and threaten the independence of the information they receive.

NCPERS has asked the SEC to reconsider its proposed changes to Rule 14a-8 and to not pursue the changes to proxy advice rules. ◆

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, 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.

AROUND THE REGIONS CONTINUED FROM PAGE 5

SOUTH: Oklahoma

The Oklahoma Firefighters' Pension & Retirement System is ready to rumble.

The $2.8 billion pension fund has filed a lawsuit against World Wrestling Entertainment Inc., alleging the corporation may have breached its fiduciary duties when it relaunched the XFL professional football league. The pension fund owns 107 shares of WWE stock, according to the complaint filed on December 26 with the Delaware Chancery Court. (WWE shares closed at $62.30 on January 30, making the pension fund's stake worth $6,666.10 as of that date.)

The pension fund, which said it has owned stock in World Wrestling Entertainment continuously since February 2018, argued that the corporation's chairman, Vince McMahon, had usurped corporate opportunities and diverted resources to the XFL, which is owned by his company, Alpha Entertainment, *Pensions & Investments* reported.

Furthermore, directors of World Wresting Entertainment may have breached their fiduciary duties by "failing to conduct oversight to ensure that those corporate opportunities were not usurped, that those resources were not diverted and that McMahon did not engage in transactions that constitute a conflict of interest," according to *Pensions & Investments*.

XFL is a professional American football league that originally launched in 2001 and ran for a single season, *Chief Investment Officer* reported. The publication added that McMahon recently disclosed plans to revive the league with a 10-week season beginning in 2020. ◆

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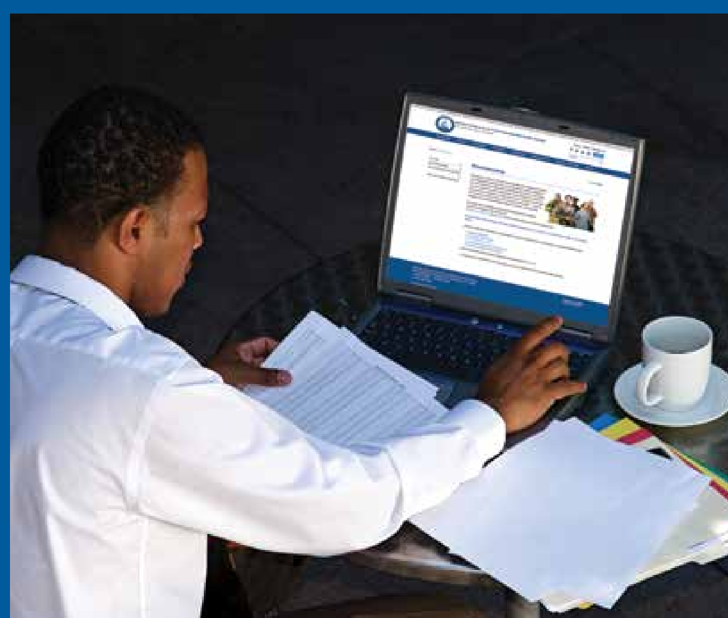

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2020 Conferences

May

Trustee Educational Seminar (TEDS)
May 9 – 10
Las Vegas, NV

Program for Advanced Trustee Studies (PATS)
May 9 – 10
Las Vegas, NV

NCPERS Accredited Fiduciary Program (All modules)
May 9 – 10
Las Vegas, NV

Annual Conference & Exhibition (ACE)
May 10 – 13
Las Vegas, NV

July

Chief Officers Summit (COS)
July 22 - 24
Chicago, IL

August

Public Pension Funding Forum
August 23 - 25
Chicago, IL

October

NCPERS Accredited Fiduciary Program (All modules)
October 24 - 25
Location TBD

Public Safety Conference
October 25 - 28
Location TBD

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Message from the President

Daniel Fortuna
NCPERS President

NCPERS has a robust online and onsite educational program lined up for the new decade. NCPERS has hosted three webinars and the NCPERS Legislative Conference already in the first quarter. In the second quarter we will host the NCPERS University, which includes Trustee Educational Seminar (TEDS), the Program for Advanced Trustees (PATS), and NCPERS Accredited Fiduciary (NAF), along with the Annual Conference & Exhibition (ACE) programs in May and the Chief Officers Summit workshops in July.

The first webinar of 2020 discussed NCPERS latest research, Ensuring Funding for Public Pensions: A Guide to Raising Revenues and Closing Tax Loopholes. Held on January 9, Susan Kennedy, principal and owner of Kennedy Consulting, LLC, and Richard Sims, CEO of RGS Economics, presented state tax revenue trends and the implications those trends have on public pension funding, along with a toolkit for challenging corporate tax loopholes and subsidies.

The second webcast of 2020 reviewed legislative activities at the state and federal levels including predictions of the 116th Congress, the upcoming national election, and upcoming state legislation that will impact public pension plans. Held on January 14, NCPERS executive director, Hank Kim, moderated the live webcast, with Bridget Early, executive director of the National Public Pension Coalition (NPPC), and Anthony Roda, principal at Williams & Jensen.

The annual NCPERS Legislative Conference took place on January 26 to 28, 2020, where members met in Washington, D.C. for two and half days of advocacy, strategy, and networking on the most pressing policy issues facing public pensions funds in 2020. You can view two presentations through Facebook Live. Congressman Tom Malinowski accepted the NCPERS 2019 Policymaker of the Year Award, and gave an acceptance speech on his humble beginnings and the importance of public pension plans. Returning to the NCPERS stage, Bridget Early, executive director of NPPC, gave a state-by-state analysis of public pensions.

On the second day of the Legislative Conference, NCPERS hosted Policy Day, where members met face-to-face with their elected officials to discuss the legislative issues affecting their pension funds. Meeting with elected officials is the most important part of the annual Legislative Conference; personal interaction and stories from constituents is a vital part of the democratic process. You can view photos of Policy Day on the NCPERS Facebook page.

NCPERS Center for Online Learning continued with educational opportunities in February. On February 4, NCPERS hosted a webinar on the 2019 NCPERS Public Retirement Systems Study and its dashboard. Williams SaintAmour, from Cobalt Community Research, discussed the findings of the new survey and demonstrated how to use the dashboard to wield and search the survey results so that the data is refined to your specification.

To view or register for any of our webinars or conferences, please click on the links inside the article. We look forward to "seeing you" at our online and in person events. ◆

The Voice for Public Pensions

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