AGENDA

Date: June 8, 2018

The regular meeting of the Dallas Police and Fire Pension System Board of Trustees will be held at **8:30 a.m. on Thursday, June 14, 2018, 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

a. Required public meeting of May 10, 2018
b. Regular meeting of May 10, 2018

2. Approval of Refunds of Contributions for the Month of May 2018

3. **Approval of Estate Settlements**

4. **Approval of Survivor Benefits**

5. **Approval of Service Retirements**

6. **Approval of Alternate Payee Benefits**

7. **Approval of Earnings Test**

8. **Approval of Payment of DROP Revocation Contributions**

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

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

C. DISCUSSION AND POSSIBLE ACTION REGARDING ITEMS FOR INDIVIDUAL CONSIDERATION

1. **Chief Investment Officer Confirmation**

   Portions of the discussion under this topic may be closed to the public under the terms of Section 551.074 of the Texas Government Code.

2. Chief Financial Officer update

Portions of the discussion under this topic may be closed to the public under the terms of Section 551.074 of the Texas Government Code.

3. Repeal of Board Resolution Relating to Section 6.063 of Article 6243a-1 and Amendment of DROP Policy

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.

4. Actuarial Minimum Educational Training (MET)

5. Investment Advisory Committee

Portions of the discussion under this topic may be closed to the public under the terms of Section 551.074 of the Texas Government Code.

6. Legal issues

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.

a. Claims against fiduciaries and other third-party advisors
b. Eddington et.al. v. DPFP
c. Degan et.al. v. DPFP

7. **First Quarter 2018 Investment Performance Analysis and Fourth Quarter 2017 Private Markets & Real Assets Review**

8. **Private Asset Cash Flow Projection Update**

   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.

9. **2017 Financial Audit Status**

10. **Qualified Domestic Relations Order Policy Revision**

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

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

12. **Board Members' reports on meetings, seminars and/or conferences attended**

    Harvard Business School: HBX CORe

13. **Hardship Requests from DROP Members**

    Portions of the discussion under this topic may be closed to the public under the terms of Section 551.078 of the Texas Government Code.

D. BRIEFING ITEMS

1. Reports and concerns of active members and pensioners of the Dallas Police and Fire Pension System

2. Executive Director's report

Associations' newsletters

- NCPERS Monitor (May 2018)
- NCPERS Monitor (June 2018)

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

(April 26, 2018 – May 11, 2018)

NAME	ACTIVE/ RETIRED	DEPARTMENT	DATE OF DEATH
William L. Holbrook	Retired	Police	Apr. 26, 2018
Thomas E. Knighten	Retired	Police	May 5, 2018
Kevin C. Young	Retired	Police	May 5, 2018
John V. Smith	Retired	Fire	May 11, 2018

Regular Board Meeting – Thursday, June 14, 2018

Dallas Police and Fire Pension System
Thursday, May 10, 2018
1:00 p.m.
4100 Harry Hines Blvd., Suite 100
Second Floor Board Room
Dallas, TX

Required Public Meeting, William F. Quinn, Chairman, presiding:

ROLL CALL

Board Members

Present at 1:04 p.m. William F. Quinn, Nicholas A. Merrick, Samuel L. Friar, Ray Nixon, Gilbert A. Garcia, Frederick E. Rowe, Tina Hernandez Patterson, Robert C. Walters, Joseph P. Schutz, Kneeland Youngblood

Present at 1:08 p.m. Blaine Dickens

Absent: None

Staff Kelly Gottschalk, Josh Mond, John Holt, Damion Hervey, Cynthia Thomas, Ryan Wagner, Milissa Romero, Greg Irlbeck, Linda Rickley

Others Leandro Festino, Alexandra Wallace, Aaron Lally, James Freeman, Carolyn Freeman, James Elliston, Jill S. Muncy, Lloyd D. Brown, Larry D. Williams, Daryl Wachsman, Ken Sprecher, Armando Garza, Chris Harry, Joe Alexander, David Hines, Zaman Hemani

* * * * * * * *

The first of two annual public meetings of the Dallas Police and Fire Pension System Board of Trustees as required by Section 3.01 (j-9) of Article 6243a-1 of Vernon's Revised Civil Statutes was called to order at 1:04 p.m.

* * * * * * * *

1. Report on the health and performance of the Pension System

The Chairman, Vice-Chairman and Executive Director reported on the operations and financial status of DPFP as discussed with the Texas House Pensions Committee at Dallas City Hall on the morning of May 10, 2018.

No motion was made.

Required Public Meeting
Thursday, May 10, 2018

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2. Public comment

The Chairman extended an opportunity for public comment. No one requested to speak to the Board.

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Ms. Gottschalk stated that there was no further business to come before the Board. On a motion by Mr. Garcia and a second by Mr. Walters, the meeting was adjourned at 1:27 p.m.

____
William F. Quinn
Chairman

ATTEST:

____
Kelly Gottschalk
Secretary

Dallas Police and Fire Pension System
Thursday, May 10, 2018
1:00 p.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 1:04 p.m.	William F. Quinn, Nicholas A. Merrick, Samuel L. Friar, Ray Nixon, Gilbert A. Garcia, Frederick E. Rowe, Tina Hernandez Patterson, Robert C. Walters, Joseph P. Schutz, Kneeland Youngblood
Present at 1:08 p.m.	Blaine Dickens
Absent:	None
Staff	Kelly Gottschalk, Josh Mond, John Holt, Damion Hervey, Cynthia Thomas, Ryan Wagner, Milissa Romero, Greg Irlbeck, Linda Rickley
Others	Chuck Campbell (by phone), Leandro Festino, Alexandra Wallace, Aaron Lally, Eileen Fortis (by phone), Brad Fryer (by phone), Nicole Devine (by phone), James Freeman, Carolyn Freeman, James Elliston, Jill S. Muncy, Lloyd D. Brown, Larry D. Williams, Daryl Wachsman, Ken Sprecher, Armando Garza, Chris Harry, Joe Alexander, David Hines, Zaman Hemani

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The meeting was called to order and recessed at 1:04 p.m.

The meeting was reconvened at 1:27 p.m.

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A. MOMENT OF SILENCE

The Board observed a moment of silence in memory of active police officer Rogelio Santander, retired police officers William R. Perry, John P. Hollingsworth, Douglas Collins, Kennith K. Anderson, Thomas H. Vannoy, Jr., James R. Pool, and retired firefighters Darla Sebastian, Reubin A. Chambers.

No motion was made.

Regular Board Meeting
Thursday, May 10, 2018

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B. CONSENT AGENDA

1. Approval of Minutes

Regular meeting of April 12, 2018

2. Approval of Refunds of Contributions for the Month of April 2018

3. Approval of Estate Settlements

4. Approval of Survivor Benefits

5. Approval of Service Retirements

6. Approval of Alternate Payee Benefits

7. Approval of Payment of DROP Revocation Contributions

After discussion, Mr. Youngblood made a motion to approve the minutes of the meeting of April 12, 2018. Mr. Schutz seconded the motion, which was unanimously approved by the Board.

After discussion, Mr. Garcia made a motion to approve the remaining items on the Consent Agenda, subject to the final approval of the staff. Mr. Youngblood 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. Possible Portfolio Rebalancing

The Board approved engaging Meketa Investment Group as DPFP's investment consultant at the April 12, 2018 Board meeting. Leandro Festino, Managing Principal, Alexandra Wallace, Principal, and Aaron Lally, Executive Vice President, were present from Meketa. Meketa discussed liquidating the Global Asset Allocation (GAA) portfolio and using the proceeds to invest into a Safety

Regular Board Meeting
Thursday, May 10, 2018

1. Possible Portfolio Rebalancing (continued)

Reserve portfolio comprised of Short-Term Core Bonds and Cash. The GAA portfolio is composed of three sub-asset classes: Risk Parity, Global Tactical Asset Allocation (GTAA), and Absolute Return. The GAA portfolio represents approximately 7% of DPFP's assets. The Safety Reserve portfolio, with a target allocation of 15%, is designed to be able to pay approximately 2.5 years of net benefit outflows and operating expenses. The Safety Reserve portfolio would include a 12% allocation to Short-Term Core Bonds, which are currently managed by Income Research + Management in a separate account, and a 3% allocation to Cash.

After discussion, Ms. Hernandez Patterson made a motion, in light of the need to allow the newly engaged investment consultant and a new Chief Investment Officer to make permanent recommendations with respect to the asset allocation and the Investment Policy Statement, to suspend portions of the Investment Policy Statement specifically (i) to allow for the Global Asset Allocation to be fully liquidated, (ii) to allow for a 15% allocation to be invested in a combination of approximately 12% allocation to IR+M and approximately 3% allocation to cash, and (iii) to remove the authority and requirement for staff to rebalance under the Investment Policy Statement and require staff and Meketa to seek the Board's approval on any rebalancing needs, including if the Safety Reserve allocation is in excess of 15% of the portfolio, until the Board has approved new long-term strategic asset allocation targets. Mr. Garcia seconded the motion, which was unanimously approved by the Board.

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2. Securities Lending Review

At the request of a Board member at the March 8, 2018 meeting, staff and JPMorgan provided an overview of DPFP's securities lending program. JPMorgan participants by telephone were Eileen Fortis, Vice President – Securities Lending, Brad Fryer, Executive Director/Portfolio Manager on the Investment Desk, and Nicole Devine, from the Investment Desk. The Meketa representatives also participated in the discussion.

The Board directed Meketa to review the program and discuss it with the Board later. No motion was made.

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Regular Board Meeting
Thursday, May 10, 2018

3. Formation of the Investment Advisory Committee

At the November 2017 Board meeting, the Board provided direction about the formation and roles and responsibilities of the Investment Advisory Committee (IAC). The direction from the meeting was incorporated into the amended Investment Policy Statement which was adopted on December 14, 2017.

Staff discussed with the Board possible processes for identifying members and forming the committee.

The Board provided direction to the staff. No motion was made.

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4. Survivor Benefits

Staff gave an overview for the Board of survivor benefits generally with respect to defined benefit plans and specifically with respect to the DPFP plan.

No motion was made.

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5. Disability Earnings Test

Ms. Gottschalk stated that Section 6.055 of Article 6243a-1 provides for an earnings test for any pensioner who has been granted a disability benefit after May 1, 1990. The earnings test provides that the pensioner's disability benefit is reduced by the following formula:

$1 for each $1 that the sum of "a" + "b" is greater than "c," where "a" is the earned income of the pensioner attributable to the previous calendar year from the person's employments, "b" is the total amount of disability retirement payments received by the pensioner the previous calendar year, and "c" is the annualized amount of the average computation pay the pensioner received as of the date the person left active service, increased by a factor of 2.75% each year after the year the person left active service.

Staff collects from all pensioners receiving a disability pension information, including tax returns, to determine the applicability of this test to each person.

Section 6.055 does not address when or if this test should cease with respect to pensioners receiving a disability pension. The current policy is to cease the test

Regular Board Meeting
Thursday, May 10, 2018

5. Disability Earnings Test (continued)

at age 50 which was "normal retirement age" under the previous plan. Under 6243a-1, normal retirement age is age 58.

After discussion, Mr. Youngblood made a motion to require continuation of the disability earnings test for any pensioner whose disability pension became effective on or after September 1, 2017, until the year the pensioner reaches the age of 58. For pensioners whose disability pensions were effective after May 1, 1990 and before September 1, 2017, the disability earnings test would be required until the pensioner reaches the age of 50. Mr. Walters seconded the motion, which was unanimously approved by the Board.

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6. 2017 Final Budget Review

Ms. Gottschalk reviewed actual expenses as compared to the budget for the calendar year 2017.

No motion was made.

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7. First Quarter 2018 financial statements

Ms. Gottschalk presented the first quarter 2018 financial statements.

No motion was made.

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8. Chief Investment Officer selection

The Board went into a closed executive session – personnel at 3:48 p.m.

The meeting was reopened at 4:18 p.m.

No motion was made.

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Regular Board Meeting
Thursday, May 10, 2018

9. Board meeting start time for July through December 2018

Ms. Gottschalk requested Board direction on the start time for Board meetings for the remainder of 2018. The Board had previously determined that the January, February and March Board meetings would begin at 1:00, the April, May and June meetings would begin at 8:30 (although the May meeting was moved to 1:00 due to the House Pensions Committee meeting at 10:00) and the Board would later establish a start time for the remainder of the year.

The Board directed staff that the start time for the regular monthly meetings for July through December 2018 would be 8:30 a.m.

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10. Legal issues

a. Claims against fiduciaries and other third-party advisors
b. Eddington, et.al. v. DPFP, et.al.

No discussion was held, and no motion was made regarding legal issues.

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11. Board approval of Trustee education and travel

No discussion was held, and no motion was made regarding Trustee education and travel.

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12. Hardship Requests from DROP Members

No discussion was held, and no motion was made regarding hardship requests from DROP members.

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Regular Board Meeting
Thursday, May 10, 2018

D. BRIEFING ITEMS

1. Reports and concerns of active members and pensioners of the Dallas Police and Fire Pension System

No active member or pensioner requested to address the Board with concerns.

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2. Executive Director's report

a. Associations' newsletters
- NCPERS Monitor (April 2018)

b. House Pensions Committee hearing
c. Chief Financial Officer update
d. June Board meeting start time

Ms. Gottschalk presented the Executive Director's report.

No motion was made.

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Ms. Gottschalk stated that there was no further business to come before the Board. On a motion by Mr. Youngblood and a second by Mr. Nixon, the meeting was adjourned at 4:21 p.m.

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William F. Quinn
Chairman

ATTEST:

____
Kelly Gottschalk
Secretary

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C1

Topic: **Chief Investment Officer Confirmation**

Portions of the discussion under this topic may be closed to the public under the terms of Section 551.074 of the Texas Government Code.

Discussion: Section 3.025 of Article 6243a-1 allows the Executive Director to hire a Chief Investment Officer, subject to confirmation by the Board. The Board will have an opportunity to interview the Chief Investment Officer candidate.

Staff Recommendation: **Confirm** the appointment of the Chief Investment Officer.

Regular Board Meeting – Thursday, June 14, 2018

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C2

Topic: **Chief Financial Officer update**

Portions of the discussion under this topic may be closed to the public under the terms of Section 551.074 of the Texas Government Code.

Discussion: The Executive Director will update the Board on the status of the search to fill the position of Chief Financial Officer.

Regular Board Meeting – Thursday, June 14, 2018

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C3

Topic: **Repeal of Board Resolution Relating to Section 6.063 of Article 6243a-1 and Amendment of DROP Policy**

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: On December 13, 2007, the Board adopted a resolution providing for the surviving spouse of a Member to elect a 100% joint and survivor benefit in the situation where the Member dies on Active Service and has reached normal retirement age. After review of the effect of the changes to Article 6243a-1, Staff is recommending repeal of this resolution as it does not appear to be within the current statutory authority of the Board.

Recommendation: **Repeal** the Board resolution adopted on December 13, 2007 allowing for the election by a surviving spouse of a Member to elect a 100% joint and survivor benefit when the Member dies on Active Service and **Adopt** the DROP Policy as amended allowing members to elect a 100% joint and survivor benefit at or after the time they enter DROP.

RESOLUTION OF THE BOARD OF TRUSTEES OF THE DALLAS POLICE AND FIRE PENSION SYSTEM

WHEREAS, Section 6.08(o) of the Combined Pension Plan for the Dallas Police and Fire Pension System provides that the Board of Trustees ("Board") shall adopt policies under which a Pensioner or a Member who is leaving active service may accept actuarially reduced benefits in order to provide a 100 percent joint and survivor annuity with the Member's spouse; and

WHEREAS, the Board has adopted a policy that enables a Member who is leaving active service to elect a reduced pension and thereby provide a lifetime annuity to the Member's spouse, if the spouse survives the Member, equal to 100 percent of the reduced pension the Member was receiving at the time of death; and

WHEREAS, the Board believes that a Member who has reached normal retirement age should not be forced to leave active service in order to provide a 100 percent joint and survivor annuity with the Member's spouse.

NOW THEREFORE, BE IT RESOLVED, that effective December 13, 2007, the surviving spouse of a Member, who dies after reaching normal retirement age but before leaving Active Service, shall be entitled to elect the survivors annuity equal to the survivor annuity the Member could have elected if such Member had left active service immediately before death.

DALLAS POLICE AND FIRE PENSION SYSTEM

By: THE BOARD OF TRUSTEES ON BEHALF OF THE DALLAS POLICE AND FIRE PENSION SYSTEM

By: [signature]
Name: Gerald Brown
Title: Chairman of and on behalf of the Board of Trustees

By: [signature]
Name: Steven G. Shaw
Title: Vice-Chairman of and on behalf of the Board of Trustees

By: Gary W. Edge
Name: Gary W. Edge
Title: Deputy Vice-Chairman

By: John Mays
Name: John Mays
Title: Police Pensioner Trustee

By: [signature]
Name: Rector McCollum
Title: Police Trustee

By: [signature]
Name: George Tomasovic
Title: Fire Trustee

By: [signature]
Name: Steven Umlor
Title: Police Trustee

By: R H Wachsman
Name: Richard Wachsman
Title: Fire Pensioner Trustee

ATTEST:

Richard L. Tettamant

Richard L. Tettamant

APPROVED AS TO FORM:

Everard Davenport

Everard Davenport

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DALLAS POLICE & FIRE PENSION SYSTEM

DEFERRED RETIREMENT OPTION PLAN POLICY

As Amended Through June 14~~December 14~~, 2018~~7~~

DEFERRED RETIREMENT OPTION PLAN POLICY

Table of Contents

DEFERRED RETIREMENT OPTION PLAN POLICY

Adopted December 10, 1992
Amended through June 14April~~December~~ 12~~4~~, 2018~~7~~

A. PURPOSE

1. This policy provides rules governing the Deferred Retirement Option Plan of the Dallas Police and Fire Pension System ("DPFP"), as contemplated by Section 6.14 of Article 6243a-1 of Revised Statutes (the "Plan") and the Supplemental Pension Plan for the Police and Fire Departments of the City of Dallas, Texas (the "Supplemental Plan") where applicable. It is intended that DROP and the terms of this policy allow for the continued qualification of the Plan under Section 401 of the Internal Revenue Code ("Code").

2. Any reference in this policy to a provision of the Plan shall also be considered a reference to the comparable provision of the Supplemental Plan if the applicant is a member of the Supplemental Plan.

3. The Executive Director may, if necessary, develop written procedures to implement this policy.

4. This policy may be amended at any time by the Board of Trustees ("Board"), consistent with the terms of the Plan.

5. Any capitalized terms not defined in this policy shall have the meaning ascribed to them in the Plan.

B. DEFINITIONS

1. **DROP -** The program whereby a Member while still in Active Service may elect to have an amount equal to the pension benefit that the Member would otherwise be eligible to receive be credited to a notional account on the Member's behalf. A Member, as of his or her intended date of participation in DROP, must be eligible to retire and receive an immediate pension benefit. An election to enter DROP is irrevocable except for the one-time revocation window for certain Members that is described in Section D.

2. **DROP Account -** The notional account of a Member, retiree, beneficiary or Alternate Payee created pursuant to Section 6.14 of the Plan which existed or exists prior to any annuitization required under the Plan and in conformity with this policy.

B. DEFINITIONS (continued)

3. **DROP Annuitant** – The holder of a DROP Annuity.

4. **DROP Annuity** – The series of equal payments created when a DROP Account is annuitized as required under the Plan and in conformity with this policy.

C. ENTRY INTO DROP

1. The application of any Member applying for DROP participation will be placed on the agenda for a Board meeting as soon as administratively practicable following the date the application is received for consideration and approval.

2. If the Board approves a DROP application, the application will become effective on the first day of the month in which the Board approves the application.

3. At the time of entry into DROP, the Member must irrevocably select the Plan benefit he or she will receive at the time his or her pension benefit will commence upon retirement with the Member's pension benefit calculated as of the effective date of entering DROP. While on Active Service, these benefit amounts that the Member would have otherwise received if he or she would have retired on his or her effective date of DROP participation will be credited to the DROP Account.

4. Once a Member has elected to participate in DROP, that election is irrevocable except as further described in Section D.

5. A Group B Member who obtains a rank that is higher than the highest Civil Service Rank for the City of Dallas after the effective date of his or her participation in DROP will not participate in the Supplemental Plan.

6. As of the effective date of his or her participation in DROP, the Member will no longer be entitled to obtain additional Pension Service by repaying previously withdrawn contributions or paying for any Pension Service that could have been purchased under the Plan prior to DROP entry. However, a Member who is entitled, under Section 5.08 of the Plan, to purchase credit for Pension Service for any period he or she was on a military leave of absence may still purchase that Pension Service after entering DROP so long as the required contributions are made no later than the time provided by the Uniformed Services Employment and Reemployment Rights Act ("USERRA").

7. The Board shall interpret the Plan and this policy to ensure that Members' rights are fully protected as required by USERRA.

D. DROP REVOCATION

1. A Member who was a DROP participant on or before June 1, 2017, has a one-time opportunity to revoke his or her DROP election. The revocation must be made before the earlier of February 28, 2018, or the date that the Member terminates Active Service. The revocation must be made by filing with the Executive Director a completed DROP revocation election form that has been approved by the Executive Director.

2. A DROP revocation eliminates the balance in a Member's DROP Account. The Member's benefit will then be established at the earlier of when the Member either (a) reenters DROP or (b) retires with DPFP, and will be calculated at that time under the Plan based upon the Member's total Pension Service and historic Computation Pay (highest 36 consecutive months for Pension Service prior to September 1, 2017 and highest 60 consecutive months for Pension Service on or after September 1, 2017.)

3. Any revocation of DROP participation described in this Section shall be for the entire period that the Member participated in DROP. No partial revocation of DROP participation shall be accepted.

4. No Member shall be entitled to revoke his or her DROP participation if any amount has been transferred out of such Member's DROP Account, except for any transfers related to corrections to DROP Accounts.

5. A Member will be credited with Pension Service for all or a portion (one-half) of the period relating to the revoked DROP participation if the Member who revoked the DROP participation purchases such Pension Service in an amount equal to the sum of: (a) the Member contributions that would have been made if the Member had not been a DROP participant during such period of DROP participation and (b) interest on such Member contributions, calculated on the contributions for the period from the dates the contributions would have been made if the Member had not been a DROP participant through the date of purchase. Interest will be calculated (a) through February 28, 2018 at the monthly rate of change of the U.S. City Average All Items Consumer Price Index (unadjusted) for All Urban Wage Earners and Clerical Workers for the applicable periods and (b) after February 28, 2018 at the interest rate used from time to time in DPFP's actuarial rate of return assumptions, compounded annually. Periods where the monthly rate of change was negative shall be computed as zero interest for such periods. DPFP staff shall be authorized to establish procedures for implementing the interest calculation required in this Section.

D. DROP REVOCATION (continued)

6. A Member may purchase Pension Service relating to the period of revoked DROP participation in increments of one-half of his or her total Pension Service during DROP participation. If a Member elects to purchase one-half of his or her total Pension Service available to be purchased following the DROP revocation, (a) a Member may not elect to purchase Pension Service relating to specific time periods during his or her DROP participation and (b) the amount of the Member contributions for purposes of such purchase will be one-half of the total amount required to be paid pursuant to Section D.5. above.

7. If a Member elects to purchase one-half of his or her Pension Service available to be purchased following the DROP revocation, the Member may subsequently purchase the remaining one-half of the Pension Service available, but must complete such purchase prior to any election to reenter DROP or terminating Active Service. The amount to be paid for the remaining Pension Service to be purchased will be calculated pursuant to subsections 4 and 5 above, with interest continuing to accrue on the portion that has not yet been paid at the rate used from time to time in DPFP's actuarial rate of return assumptions, compounded annually, calculated from the date of the original Pension Service purchase through the date of the purchase of the remaining Pension Service.

8. Only full payment will be accepted for the amount of any Pension Service elected to be purchased under this Section. No partial payment will be accepted. Direct rollovers from other tax-qualified plans or similar employer plans, including governmental Section 401(k) (including the City of Dallas 401(k) Retirement Savings Plan) and 457(b) deferred compensation plans and Section 403(b) annuity arrangements will be accepted for payment to the extent such plans permit such rollovers. Payment is not permitted from the Member's DROP account.

9. For the purposes of calculating a Member's pension benefit in the case where a Member purchases only one-half of the total Pension Service available for the period relating to a DROP revocation, the purchased Pension Service attributable to time prior to September 1, 2017 shall be equal to the product of: (a) the amount of Pension Service purchased, multiplied by (b) a fraction of which the numerator equals the Pension Service available for purchase representing periods prior to September 1, 2017, and the denominator equals the total Pension Service available for purchase in connection with the DROP revocation.

10. All DROP revocation election forms must be received by DPFP in proper order by February 28, 2018 and will be considered effective as of September 6, 2017 after approval by DPFP staff that the form is in proper order. Approval of the Board shall not be required for a DROP revocation to become effective.

E. ANNUITIZATION OF DROP ACCOUNTS

1. **Methodology.**

   DPFP staff, with the assistance of DPFP's Qualified Actuary, shall determine the annuitization of all DROP Accounts as required by the Plan and consistent with this policy.

2. **Interest Rates.**

   To reflect the accrual of interest over the annuitization period of a DROP Annuity as required under the Plan, the accrual of interest for all DROP Annuities shall be calculated utilizing an interest rate based on the published United States Department of Commerce Daily Treasury Yield Curve Rates ("Treasury Rates") for durations between 5 and 30 years, rounded to two decimal places. If an annuitization period for a DROP Annuity is between the years for which Treasury Rates are established, then a straight-line linear interpolation shall be used to determine the interest rate. The interest rates for purposes of this subsection E.2. will be set on the first business day of each quarter (January, April, July and October) and will based upon the average of the Treasury Rates as published on the 15th day of the three prior months, or the next business day after the 15th day of a month if the 15th day falls upon a day when rates are not published. Based upon advice from DPFP's Qualified Actuary upon implementation of this policy, interest rates to be used in calculating DROP Annuities with an annuitization period that exceeds thirty years will be the Treasury Rate published for the 30-year duration as Treasury Rates beyond thirty years do not exist. The initial interest rates effective as of October 1, 2017, are attached to this policy as Exhibit 1.

3. **Mortality Table.**

   The Board shall, based upon the recommendation of DPFP's Qualified Actuary, adopt a mortality table to be utilized in determining life expectancy for purposes of calculating DROP Annuities. The mortality table shall be based on the healthy annuitant mortality tables used in the most current actuarial valuation and blended in a manner to approximate the male/female ratio of holders of DROP accounts and DROP annuities. The Board will review this table and male/female blended ratio upon the earlier of (i) the conclusion of any actuarial experience study performed by DPFP's Qualified Actuary or (ii) any change to mortality assumptions in DPFP's annual actuarial valuation. Actual ages used in calculating life expectancy will be rounded to two decimals. The life expectancy will be rounded to the nearest whole year. Life expectancy in whole years based on a 2017 annuitization date and the mortality table recommended by DPFP's Qualified Actuary is shown in Exhibit 2.

E. ANNUITIZATION OF DROP ACCOUNTS (continued)

4. **Initial Annuitization of Non-Member's DROP Accounts.**

   a. The first payment of DROP Annuities after annuitization of all DROP Accounts in existence on or after September 1, 2017, except those DROP Accounts of Members, shall commence the last business day of the month in which this policy is adopted, or as soon as practicable thereafter.

   b. The initial annuitization of all non-Member DROP Accounts existing on September 1, 2017 will be calculated and implemented on the basis of a monthly annuity. DPFP staff will send notices to the holders of such DROP Annuities to inform them that they have sixty (60) days from the date of such notice to make a one-time election to have the monthly DROP Annuity converted to an annual annuity. If a DROP Annuitant makes such an election, the monthly DROP Annuity payments will cease as soon as administratively practicable, and the first payment of the annual DROP Annuity will begin 12 months after the last monthly payment made to the DROP Annuitant.

   c. For purposes of the initial annuitization described in this subsection E.4., any DROP Account which is held by a non-Member at any time on or after September 1, 2017, but prior to the initial annuitization pursuant to subsection E.4.a. above, shall (i) be adjusted to reflect any distributions to such non-Member after September 1, 2017, but prior to the initial annuitization and (ii) accrue interest for the period from September 1, 2017 through the date of initial annuitization at the same rate as the interest rate applicable pursuant to subsection E.2. in the calculation of the initial DROP Annuity.

   d. Annuitization of any non-Member DROP Account under this subsection E.4. will be based on the age of the holder of such DROP Account as of the first day of the month when the annuitization of DROP Accounts under this subsection E.4. occurs. In the case of a DROP Account which is held by a trust, such DROP Account will be annuitized using the age of the oldest beneficiary of the trust.

5. **Annuitization of Member DROP Accounts**

   a. The DROP Annuity for a Member shall be calculated based upon the Member's age and DROP Account balance on the effective date of the Member's retirement. The interest rate applicable to the calculation of the Member's DROP Annuity will be the interest rate in effect under subsection E.2. during the month the Member terminates Active Service. Payment of the DROP Annuity shall commence effective as of the first day of the month in which the Member's retirement commences.

E. ANNUITIZATION OF DROP ACCOUNTS (continued)

5. Annuitization of Member DROP Accounts (continued)

b. Each Member as part of the retirement process shall be given the opportunity to elect either a monthly or annual DROP Annuity. If no election is made, the Member will be deemed to have elected a monthly DROP Annuity.

6. Annuitization of Alternate Payee's Account

The DROP Annuity for any Alternate Payee receiving a portion of a Member's DROP Account through a Qualified Domestic Relations Order after the date of this policy shall commence on the earlier of (i) the date the Member's DROP Annuity commences or (ii) the first day of the month the Alternate Payee reaches age 58. Calculation of the DROP Annuity of an Alternate Payee will be based on the age of the Alternate Payee and the interest rate in effect under subsection E.2 upon commencement of the DROP Annuity.

7. Annuitization and Payments to Beneficiaries

a. Upon the death of a Member, the DROP Account of such Member shall be transferred to the Member's beneficiary(ies) pursuant to Section F of this policy. Such transferred account shall be annuitized as promptly as administratively practicable utilizing the interest rate in effect under subsection E.2. and the age of the beneficiary at the time of the Member's death in calculating the beneficiary's DROP Annuity.

b. Upon the death of a DROP Annuitant, the remaining DROP Annuity shall be paid to the beneficiary designated by such DROP Annuitant, and shall be divided if there are multiple beneficiaries as designated by the DROP Annuitant pursuant to Section F of this policy.

8. Revised Annuity in the Event of an Unforeseeable Financial Hardship Distribution

If any DROP Annuitant shall receive a distribution pursuant to Section G hereof, the DROP Annuity of such DROP Annuitant shall be re-annuitized through a calculation using (a) the interest rate utilized in the calculation of the original DROP Annuity, (b) the present value of the DROP Annuity on the date of the unforeseeable financial hardship distribution as calculated by DPFP's Qualified Actuary, and (c) the remaining number of months in the life expectancy utilized in the calculation of the original DROP Annuity.

F. DESIGNATION OF BENEFICIARIES

1. A DROP participant will have the opportunity to designate a primary beneficiary (or primary beneficiaries) and a contingent beneficiary (or contingent beneficiaries) of his or her DROP Account either when filing the application for DROP participation, or thereafter, on a beneficiary form provided by DPFP for this purpose. The named beneficiary must be a living person at the time of the filing of the beneficiary form. No trusts may be named as a beneficiary, except for a trust established for a child who is entitled to benefits pursuant to Section 6.06 (n)(1) of the Plan ("Special Needs Trust"). Existing trusts which have a DROP Account as of the date of this policy will be permitted and will be annuitized pursuant to Section E.4. and the age of the oldest beneficiary of the trust will be utilized for purposes of the annuitization. Special Needs Trusts will be annuitized based upon the age of the child.

2. In the case of a holder of DROP Annuity who dies where no living person is named as a beneficiary, the remaining DROP Annuity will be paid to the deceased DROP Annuitant's estate. In the case of a Member who dies with a DROP Account where no living person is named as a beneficiary, the DROP Account will be annuitized based upon the life of the youngest heir to the deceased Member's estate and the resulting DROP Annuity will be paid to the estate.

3. Beneficiaries of a Member's DROP Account or a DROP Annuitant's DROP Annuity are not limited to the Qualified Survivors. Upon request, DPFP will divide a deceased participant's DROP Account or DROP Annuity among the designated beneficiaries at the time of the DROP participant's death.

4. Upon the death of a DROP participant, the DROP participant's DROP Account or DROP Annuity shall become the property of the surviving spouse unless either (i) the surviving spouse has specifically waived his or her right to such funds or (ii) the surviving spouse's marriage to the DROP participant occurred after January 14, 2016 and the participant had already joined DROP and named a beneficiary other than the surviving spouse who was not the participant's spouse at the time of the beneficiary election, and will be transferred to the name of the surviving spouse or such other named beneficiary or beneficiaries. DROP Annuities shall be paid to the designated beneficiaries in accordance with the last beneficiary form on file in the DPFP administrative office upon that office's receipt of sufficient evidence of the DROP participant's death.

G. HARDSHIPS (continued)

1. Pursuant to the Plan, a DROP Annuitant who was a former Member of the Plan (a "Retiree Annuitant") may apply for a lump sum distribution relating to his or her DROP Annuity in the event that the Retiree Annuitant experiences a financial hardship that was not reasonably foreseeable. To qualify for an unforeseeable financial hardship distribution, a Retiree Annuitant (or the estate of a Retiree Annuitant in the case of subsection G.2.e.) must demonstrate that:

   a. a severe financial hardship exists at the time of the application (i.e., not one that may occur sometime in the future);

   b. the hardship cannot be relieved through any other financial means (i.e., compensation from insurance or other sources, monthly annuity benefits, or liquidation of personal assets) unless using those other sources would also cause a financial hardship; and

   c. the amount requested in the application is reasonably related to and no greater than necessary to relieve the financial hardship.

2. The Board shall only recognize the following circumstances as an unforeseeable financial hardship that is eligible for a lump sum distribution:

   a. the need to repair damage to a Retiree Annuitant's primary residence not covered by insurance as the result of a natural disaster or significant event (i.e., fire, flood, hurricane, earthquake, etc.);

   b. the need to make significant changes to a Retiree Annuitant's primary residence not covered by insurance because of medical necessity;

   c. the need to pay for medical expenses of the Retiree Annuitant, a Retiree Annuitant's spouse, or a dependent child or relative of the Retiree Annuitant as described under Code section 152(c) and (d), including non-refundable deductibles, as well as for the cost of prescription drug medication;

   d. the need to pay for the funeral expenses of a parent, child, grandchild or spouse of the Retiree Annuitant, including reasonable travel and housing costs for the Retiree Annuitant, their spouse, parent, child or grandchild;

   e. the need of the estate of a Retiree Annuitant to pay for the medical expenses or the funeral expenses of the Retiree Annuitant; or

   f. other similar extraordinary and unforeseeable circumstances arising as a result of events beyond the control of the Retiree Annuitant.

G. HARDSHIPS (continued)

3. DPFP staff will develop procedures relating to the application for an unforeseeable financial hardship distribution, which will include, at a minimum, a notarized statement by the applicant relating to the requirements for eligibility and documentation sufficient to demonstrate such eligibility. Following submission of the required financial hardship distribution application, the notarized statement, and other required documentation as stated in the application form, DPFP staff shall review the materials and inform the Retiree Annuitant within thirty (30) days whether any additional information or documentation is required or requested. Once all required and/or requested documentation has been submitted, the Retiree Annuitant shall be informed within thirty (30) days if (i) the Retiree Annuitant is eligible for an unforeseeable financial hardship distribution or (ii) the matter has been referred to the Board for consideration at the next regular meeting. After an unforeseeable financial hardship distribution has been made to a Retiree Annuitant, a Retiree Annuitant may not request an additional unforeseeable financial hardship distribution for ninety (90) days from the date of distribution of any amount under this Section.

4. The Executive Director shall have the authority to approve an application for an unforeseeable financial hardship distribution. The Executive Director shall submit to the Board for final action by the Board any recommended denial, in whole or in part, of any request for an unforeseeable financial hardship distribution. Determinations of the Board and the Executive Director on applications for unforeseeable financial hardship distributions are final and binding. Once an unforeseeable financial hardship distribution has been approved by either the Executive Director or the Board, payment of the distribution shall be made to the Retiree Annuitant as soon as administratively practicable.

5. For the purposes of this Section G, the term "dependent" shall mean any person who is claimed by a Retiree Annuitant as a dependent on the Retiree Annuitant's federal income tax return in any year for which a distribution is sought under this Section G.

6. Distributions under this Section G shall only be available for persons who (a) entered DROP prior to June 1, 2017 and (b) who have not revoked a DROP election under Section D. of this policy.

7. No claims for hardship distributions will be accepted for any circumstances which give rise to the hardship where such circumstances occurred more than six months (nine months in the case of a filing by the estate of a Retiree Annuitant pursuant to subsection G.2.e.) prior to the date of filing of the application pursuant to subsection G.3.

H. 100% Joint and Survivor Benefit

1. Coterminous with entry into DROP, a Member shall have the right to make the election provided for under Section 6.063(a)(1) of the Plan and such an election will not be subject to the requirement set forth in Section 6.063(e) of the Plan.

2. Subsequent to a Member's entry into DROP, if the Member has not made the election provided for in Section H.1., the Member shall have the right to make the election provided for under Section 6.063(a)(1) and such an election will be subject to the requirement set forth in Section 6.063(e) ~~, provided, however, that if the Member shall subsequently be granted a retirement pension within one year after making the election under this Section H.2., then Section 6.063(e) shall cease to apply~~. If a Member shall die while on Active Service within one year after making the election under this Section H.2., then the Member's DROP Account shall be increased by the reduced benefit amount which is contemplated by Section 6.063(e) to be paid to the surviving spouse.

3. If a Member makes an election under either Section H.1. or H.2., the amount credited to the Member's DROP balance~~Account~~ will be adjusted accordingly.

4. If a Member should remarry while on Active Service after making an election under Section H.1 or H.2, then the Member's benefit shall be recalculated and adjusted based upon the age of the new spouse, effective as of the date of marriage as if the Member had made a new election under Section 6.063(a)(1), if the recalculated benefit is lower than the benefit calculated based upon the previous marriage; provided however, that (i) if the Member had made the election pursuant to Section H.1., the Member shall not be subject to the requirement set forth in Section 6.063(e) for such remarriage and recalculation and (ii) if the Member had the election pursuant to Section H.2., the one year requirement under Section 6.063(e) shall be deemed to have commenced upon the original election.

5~~4~~. Members who are in DROP as of the effective date of this Policy shall be afforded the opportunity through the first to occur of (i) their retirement date or (ii) October 31, 2018 to make the election provided for in Section H.1 and after October 31, 2018, such Members shall be entitled to make the election provided for in Section H.2.

6~~5~~. Nothing in this DROP Policy shall affect or impair the right of a Member to make the election provided for in Section 6.063(a) upon or after the Member's retirement if the Member shall not make the election provided for in this Section H, provided, however, that any election made by a Member of Pensioner after their entry into DROP, notwithstanding any other provision of Section 6.063, shall be subject to the provisions of Section 6.063(e). ~~.~~

I~~H~~. EFFECTIVE DATE

APPROVED on ~~**December 14, 2017**~~ by the Board of Trustees of the Dallas Police and Fire Pension System.

[signature]

____
William F. Quinn
Chairman

ATTEST:

[signature]

____
Kelly Gottschalk
Secretary

Exhibit 1- Interest Rates

Published Rate	5 Yr	7 Yr	10 Yr	20 Yr	30 Yr
7/17/2017	1.86	2.12	2.31	2.65	2.89
8/15/2017	1.83	2.09	2.27	2.60	2.84
9/15/2017	1.81	2.04	2.20	2.52	2.77
Average	**1.83**	**2.08**	**2.26**	**2.59**	**2.83**

Exhibit 2 – Life Expectancies Based on a November 2017 DROP Annuity Commencement Date

Expected Lifetime in Years Based on a November 2017 Commencement of Annuitization

Age	Expected Lifetime (Years)	Age	Expected Lifetime (Years)
21	62	56	29
22	61	57	28
23	60	58	27
24	59	59	26
25	58	60	25
26	57	61	24
27	56	62	23
28	56	63	22
29	55	64	22
30	54	65	21
31	53	66	20
32	52	67	19
33	51	68	18
34	50	69	17
35	49	70	17
36	48	71	16
37	47	72	15
38	46	73	14
39	45	74	14
40	44	75	13
41	43	76	12
42	42	77	12
43	41	78	11
44	40	79	10
45	39	80	10
46	38	81	9
47	37	82	9
48	36	83	8
49	36	84	7
50	35	85	7
51	34	86	7
52	33	87	6
53	32	88	6
54	31	89	5
55	30	90	5

Note: The above factors are based on the sex-distinct RP-2014 Blue Collar Healthy Annuitant Mortality Tables, with the female table set forward two years, projected generationally using Scale MP-2015. The sex-distinct tables are blended 85% male and 15% female.

DALLAS POLICE & FIRE PENSION SYSTEM

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C4

Topic: **Actuarial Minimum Educational Training (MET)**

Attendees: **Jeff Williams, Segal Consulting**

Discussion: Section 801.2011 of the Texas Government Code requires trustees and pension administrators (Executive Director) of public pension systems to meet minimum educational training requirements. The Texas Pension Review Board (PRB) was charged with establishing the minimum training requirements.

DPFP applied for and received approval to be an accredited sponsor of both core and non-core MET activities from the PRB. The accreditation period will expire 5/31/2020. With DPFP receiving this accreditation, Trustees and the Executive Director can receive education credit for qualifying programs provided in house.

Segal Consulting will conduct the actuarial training. The actuarial training is counted as 1.5 credit hours.

Dallas Police and Fire Pension System

Board of Trustees Actuarial Educational Training

June 14, 2018

Presented by:

Jeffrey S. Williams
Vice President and Consulting Actuary

Segal Consulting

Texas Pension Review Board Guidelines for Actuarial Soundness

- The Texas Pension Review Board (PRB) sets guidelines for what they consider to be actuarial soundness of a Texas public sector defined benefit pension plan.
- The latest update of the Guidelines was adopted January 26, 2017.
- The PRB considers an actuarially funded defined benefit public retirement system to be actuarially sound if an actuary determines that is has sufficient money to pay the ongoing normal cost and amortize the unfunded liability over a period of no more than 40 years, preferably 15 to 25 years.
- This measure of actuarial soundness represents one of the five Guidelines:
  1. The funding of a pension plan should reflect all plan obligations and assets.
  2. The allocation of the normal cost portion of the contributions should be level or declining as a percent of payroll over all generations of taxpayers, and should be calculated under applicable actuarial standards.
  3. Funding of the unfunded actuarial accrued liability should be level or declining as a percent of payroll over the amortization period.
  4. Funding should be adequate to amortize the unfunded actuarial accrued liability over a period not to exceed 40 years, with 15-25 years being a more preferable target. Benefit increases should not be adopted if all plan changes being considered cause a material increase in the amortization period and if the resulting amortization period exceeds 25 years.
  5. The choice of assumptions should be reasonable, and should comply with applicable actuarial standards.
- The PRB Guidelines for Actuarial Soundness are on page 5 of the PRB's 2017 Guide to Public Retirement Systems in Texas.

Role of an Actuary

What Is An Actuary?

- Role among your service providers
  - Unique to a Defined Benefit Plan
  - Combination mechanic and AAA office
- Consultant and Number Cruncher
  - Communicator
  - Proprietary systems
- Services
  - Annual actuarial valuation
  - Actuarial calculations for accounting disclosures
  - Experience analysis
  - Special studies

Pension Actuarial Organizations

SOCIETY OF ACTUARIES

Research and Examinations

ACTUARIAL STANDARDS BOARD

Actuarial Standards of Practice

AMERICAN ACADEMY *of* ACTUARIES

Objective. Independent. Effective.™

Policy and Professionalism

Advancing the Practice®

Conference of Consulting Actuaries

Conferences • Community • Advanced Learning

Continuing Education

Actuarial Board for Counseling and Discipline

Guidance, Complaints, Counseling and Sanctions

Joint Board for the Enrollment of Actuaries

Actuarial Services Under ERISA

Actuarial Standards and Conduct

Professional Standards

- Actuarial Standards of Practice (ASOPs)
  - Developed by the Actuarial Standards Board (ASB)
    - www.actuarialstandardsboard.com
  - ASOP No. 4: Measuring Pension Obligations
  - ASOP No. 27: Economic Assumptions
  - ASOP No. 35: Demographic Assumptions
  - ASOP No. 44: Asset Valuation Methods
  - ASOP No. 51: Assessment of Risk (effective November 1, 2018)

- ASOP's 4, 27, and 35 currently have revisions under consideration and Exposure Drafts have been issued for comment
- Code of Professional Conduct
  - Integrity, Communications, Conflicts, Control of Product, Cooperation
- Enforcement
  - Actuarial Board of Counseling and Discipline (ABCD)
  - Guidance, complaints, counseling, mediation and sanctions

Role of the Pension Board

Role of the Pension Board

Below is a summary of a Board's governance requirements, as discussed on www.nasra.org/governance.

- Oversight of the System's administration
- Ensure compliance with:
  - Federal, state, and local laws and regulations
  - Industry standards
    - Actuarial valuations
    - Financial Reporting
    - Accounting – GASB 67/68
- Implement and comply with System's funding policy
- Fiduciaries, responsible for acting on behalf of plan participants
- Oversee investments, setting of actuarial assumptions, approving benefits, proposing statutory revisions

Actuarial Terminology

Key Pension Terms

Actuarial Determined Contribution

- Employer's periodic required contribution, expressed as a dollar amount and/or percentage of payroll
- Determined under System's funding policy
- Includes Employer Normal Cost and Amortization Payment

Actuarial Present Value

- The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is:
- Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)
- Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and
- Discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Value of Assets

- May be market value of assets
- More commonly uses a smoothed value that recognizes market gains and losses over a certain period, in order to reduce the year-to-year volatility of results
- Often a corridor around the market value, so the actuarial value can't be more than a certain percentage (often 20%) different than the market value

Key Pension Terms

Present Value of Future Benefits (PVFB)

- Present value of benefit amounts expected to be paid at various future times under a particular set of assumptions
- Includes liabilities for all active and retired members, beneficiaries, and inactive members entitled to a future benefit
- Equals the Actuarial Accrued Liability plus the Present Value of Future Normal Costs

Normal Cost

- Portion of total present value of future benefits allocated to a year
- Series of amounts needed each year (active participant) that will fund projected benefits at retirement
  - Depends on actuarial cost method
- A budgeting tool

Actuarial Accrued Liability (AAL)

- Accumulated value of past Normal Costs
- What you would have in fund if:
  - Current plan, data, and assumptions were always so
  - Always funded the Normal Cost
  - All assumptions always came true (no past gains or losses)

Key Pension Terms

Actual Cost Method

- Procedure for allocating Present Value of Future Benefits over a participant‘s working lifetime
- Used to determine how the PVFB will be split between the Normal Cost and Actuarial Accrued Liability
- Different cost methods differ in how the PVFB is allocated between Normal Cost and Liability

Unfunded Actuarial Accrued Liability (UAAL)

- The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets

Amortization Method

- Method for paying down the unfunded actuarial accrued liability
- Level Dollar, Level Percentage, Open, Closed

Amortization Payment

- Amount of the employer contribution used to pay down the UAAL

Funded Ratio

- The ratio of the actuarial value of assets to the actuarial accrued liability

Discount Rate

- Calculates value of future payments
- Typically equals long-term rate of return assumption for public sector plans for valuation purposes
- Assumption that usually has the largest impact on Present Value of Future Benefits and Actuarial Accrued Liability

Questions and Discussion

Actuarial Assumptions

Role of Assumptions and Methods

$$C + I = B + E$$

<u>C</u>ontributions + <u>I</u>nvestment Income

equals

<u>B</u>enefit Payments + <u>E</u>xpenses

- Actuarial valuation determines the current or “measured” cost, not the ultimate cost
- Assumptions and funding methods affect only the timing of costs

Multi-Year Experience Studies

- The purpose of an experience study is to perform an in-depth study of the actuarial assumptions and methodologies in use by the System and determine how actual experience compared to what was expected.
- The Government Finance Officers Association (GFOA) considers the completion of regular experience studies a best practice.
- The actuary then recommends new assumptions and/or methods that take into account actual experience over the recent past as well as expectations for the future.
- An experience study was performed by Segal for the System based on the January 1, 2010 – December 31, 2014 timeframe.
- Recommended assumptions and methods were adopted by the Board and implemented in the January 1, 2016 valuation.
- The next study will be based on the period January 1, 2015 – December 31, 2019.
- In the 2017 valuation assumptions were changed that were related to the plan changes effective in the fall of 2017. Assumptions changed included retirement, DROP utilization, DROP interest, and COLA.
- The salary scale for years 2017 – 2019 was also modified in accordance with the Meet and Confer Agreement.
- It is not currently expected that new assumptions will be recommended prior to completion of the next experience study.

Background

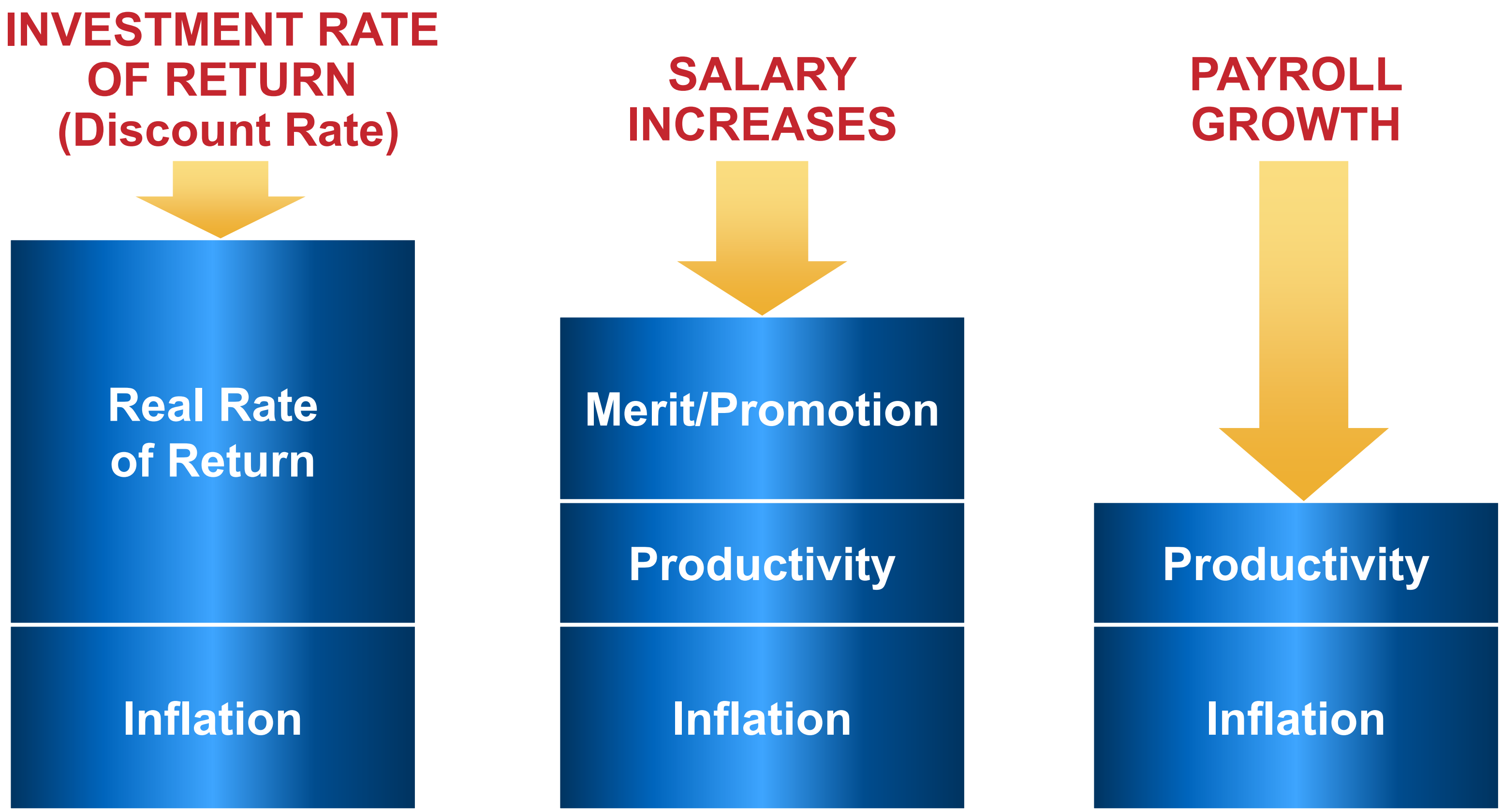
Two Types of Actuarial Assumptions

Economic	Demographic
• Inflation • Discount rate (Investment rate of return) • Payroll growth rate • Salary increases • Administrative expenses • DROP annuitization interest	• Death in active service • Death after retirement – Non-disabled – Disabled • Withdrawal • Disability • Retirement – DROP Utilization • Percent Married/Spouse Age • Other Assumptions

Economic Assumptions

Economic Assumptions
Building Block Approach

Each economic assumption has two or three components (or building blocks).



Building blocks must be consistent across all economic assumptions.

Inflation Rate

- **Current Assumption: 2.75%**
- The economy is currently in a low inflationary period.
- The inflation assumption is a long-term assumption, is in a reasonable range, and is consistent with a range of 2.50% - 3.00% based on NASRA's survey and other public sector plans.

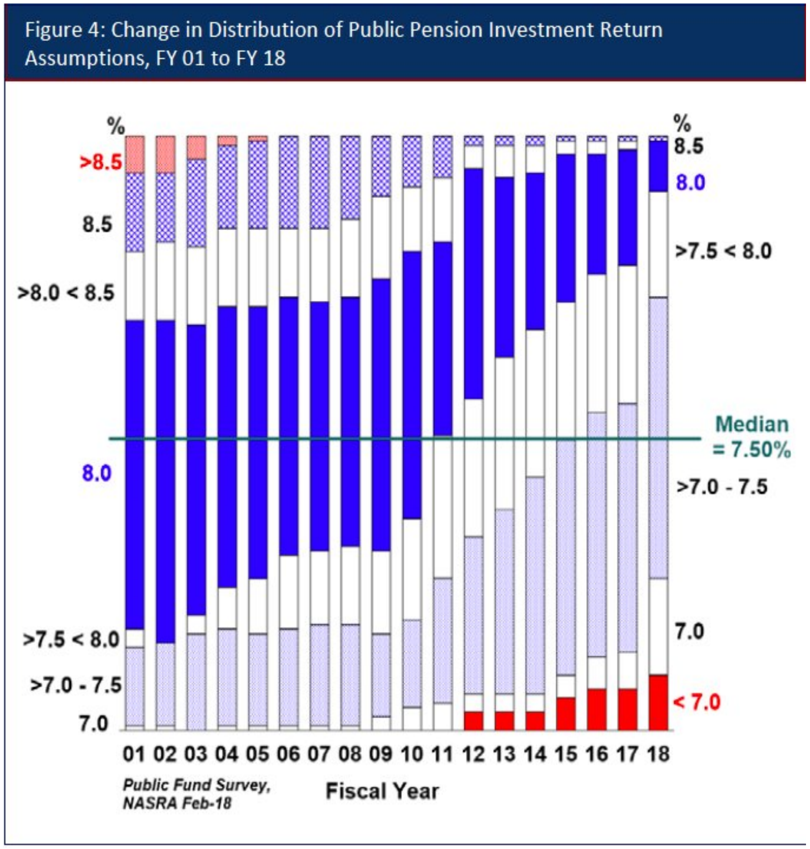
Investment Rate of Return

- **January 1, 2017 Valuation Assumption: 7.25%**
- **NASRA Survey, February 2018**
  - Among 129 plans measured, nearly 75% have reduced investment return assumption since fiscal 2010.
  - These reductions have caused a decline in the average return assumption from 7.91% to 7.36%; the median assumption is 7.50%.
- We understand that the Board is addressing asset allocation and that this may take a couple years to accomplish, likely resulting in some short-term losses.

NASRA Issue Brief: Public Pension Plan Investment Return Assumptions

Updated February 2018

FIGURE 4: CHANGE IN DISTRIBUTION OF PUBLIC PENSION INVESTMENT RETURN ASSUMPTIONS, FY01 TO FY18



Source: Compiled by NASRA based on Public Fund Survey, February 2018

Salary Scale

Observations

- The salary increase assumptions for years 2017 through 2019 are based on the Meet and Confer Agreements.
- Beginning in 2020 a service-based table is used.
- The table differs slightly between Police and Fire.
- The salary scale beginning in 2020 includes a 2.75% inflationary increase and merit/longevity increases of between 0.25% and 2.45%.
- Percentage increases are assumed to be higher earlier in a member's career.

Payroll Growth

- **Current Assumption: 2.75%**
- **Comments**
  - Used to amortize Unfunded Actuarial Accrued Liability (UAAL) as a level percentage of payroll
  - Payment on UAAL expected to increase at payroll growth rate, all things considered
  - Used to develop the effective amortization period
  - Usually equivalent to inflation assumption or inflation plus productivity

Administrative Expenses

- **Current Assumption:** $10,000,000 per year, or 1% of computation pay, if greater
- **Comments**
  - Current actuarial practice suggests maintaining a separate explicit administrative expense assumption. (This is required for the GASB disclosures.)
  - The administrative expense assumption is reviewed annually and often updated more frequently than other assumptions.

Demographic Assumptions

Mortality Rates

Current Assumptions

- Post-Retirement Mortality
  - RP-2014 Blue Collar Annuitant Mortality Tables, set forward two years for females
- Pre-Retirement Mortality
  - RP-2014 Employee Mortality Tables, set back two years for males
- Disabled Life Mortality
  - RP-2014 Disabled Retiree Tables, set back three years for males and females
- All tables have generational projection using the MP-2015 improvement scale

Upcoming

- The Society of Actuaries is working on public sector mortality tables.
- It is anticipated that the System's mortality rates will be updated either in the next experience study or upon the SOA's publication of the new tables.

Retirement Rates

Current Assumptions

- New retirement rates were implemented in the 2017 valuation that are first effective in the 2018 valuation.
- The new rates are divided into current active DROP members and non-DROP active members.
- Rates for active DROP members differ based on whether the member had at least eight years in the DROP or less than eight years in the DROP as of January 1, 2017.
- Rates for non-DROP active members are divided into whether or not the member was hired prior to or on or after March 1, 2011, and if they were hired prior to March 1, 2011, whether or not they had at least 20 years of service as of September 1, 2017.

Withdrawal Rates

Current Assumptions

- Current rates are service-based
- Low rates for both groups (consistent with national trends)
- Police more likely to terminate employment prior to retirement than Fire

Comments

- Turnover experience over the past couple years was greater than normal.
- Now that the System’s benefit changes have taken effect it is expected that turnover will return to a more normal pattern.

Disability and Other Assumptions

Disability

- Incidences of disability have historically been low

Marriage Rates and Spousal Age Difference

- The current assumption is that 75% of active members are married with a three year age differential between the spouses.

DROP Utilization

- It is assumed that there will be no new DROP entrants.

Period in DROP

- Current DROP members with less than eight years in DROP as of January 1, 2017 are assumed to retire once they have been in DROP for eight years.

COLA

- 2.00% COLA, on original benefit, assumed to begin October 1, 2049. The year the COLA is assumed to start will be updated in each valuation, as needed.

Questions and Discussion

Actuarial Cost Methods

Actuarial Cost Methods in use in Texas

Entry Age

- Projects costs associated with each individual from entry age to assumed retirement age
- Level allocation based on either pay or service of individual
- Tends to produce more level contribution rates
- Most popular method among public sector plans (about 70% of all plans)
- Required for GASB 67 and 68 disclosures
- Normal cost stays constant as a percentage of payroll for each member
- Uses the assumed salary scale to develop the normal cost
- Method used by Dallas Police & Fire Pension System

Ultimate Entry Age

- Not acceptable under proposed ASOP 4
- Sometimes used when plans have different tiers of benefits
- Future normal costs determined as if each active plan participant a member of the newest benefit tier
- Present Value of Future Benefits calculated based on member's actual tier
- Normal Cost lower than Entry Age if newer tiers with lower benefits; however, Actuarial Accrued Liability will be higher.
- Present Value Future Benefits = Present Value Future Normal Costs + Actuarial Accrued Liability
- PVFB is the same under both methods, so if the PVFNC is lower, the AAL must be higher

Actuarial Cost Methods in use in Texas

Projected Unit Credit

- Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and allocated over service
- Future pay taken into account when determining AAL
- Normal Cost increases as participant ages
- Second most popular method among public sector plans

Traditional Unit Credit

- Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and allocated over service
- Future pay <u>not</u> taken into account when determining AAL
- Normal Cost increases as participant ages
- Required method for private sector ERISA plans

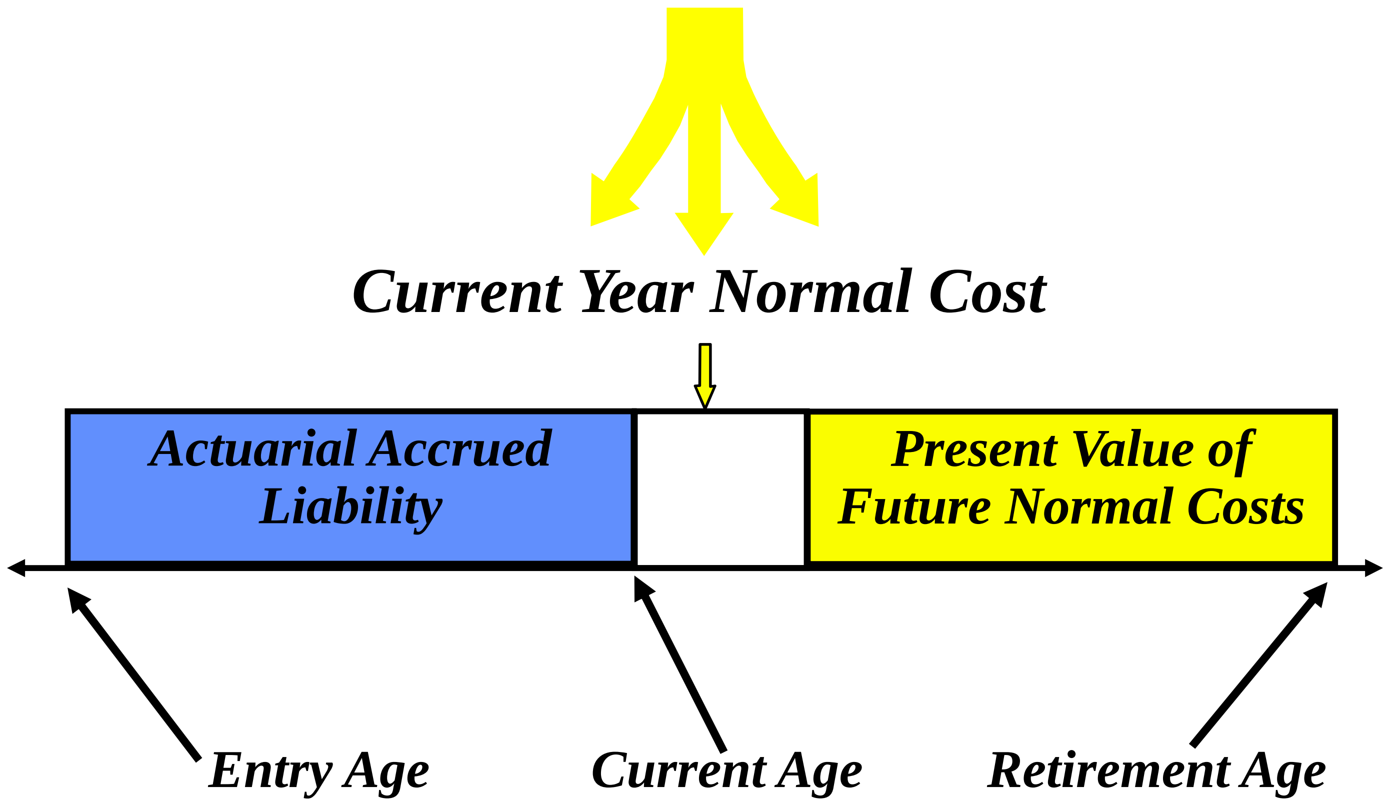
Aggregate

- The amount that is the PVFB less plan assets is spread over the future payroll
- Not common

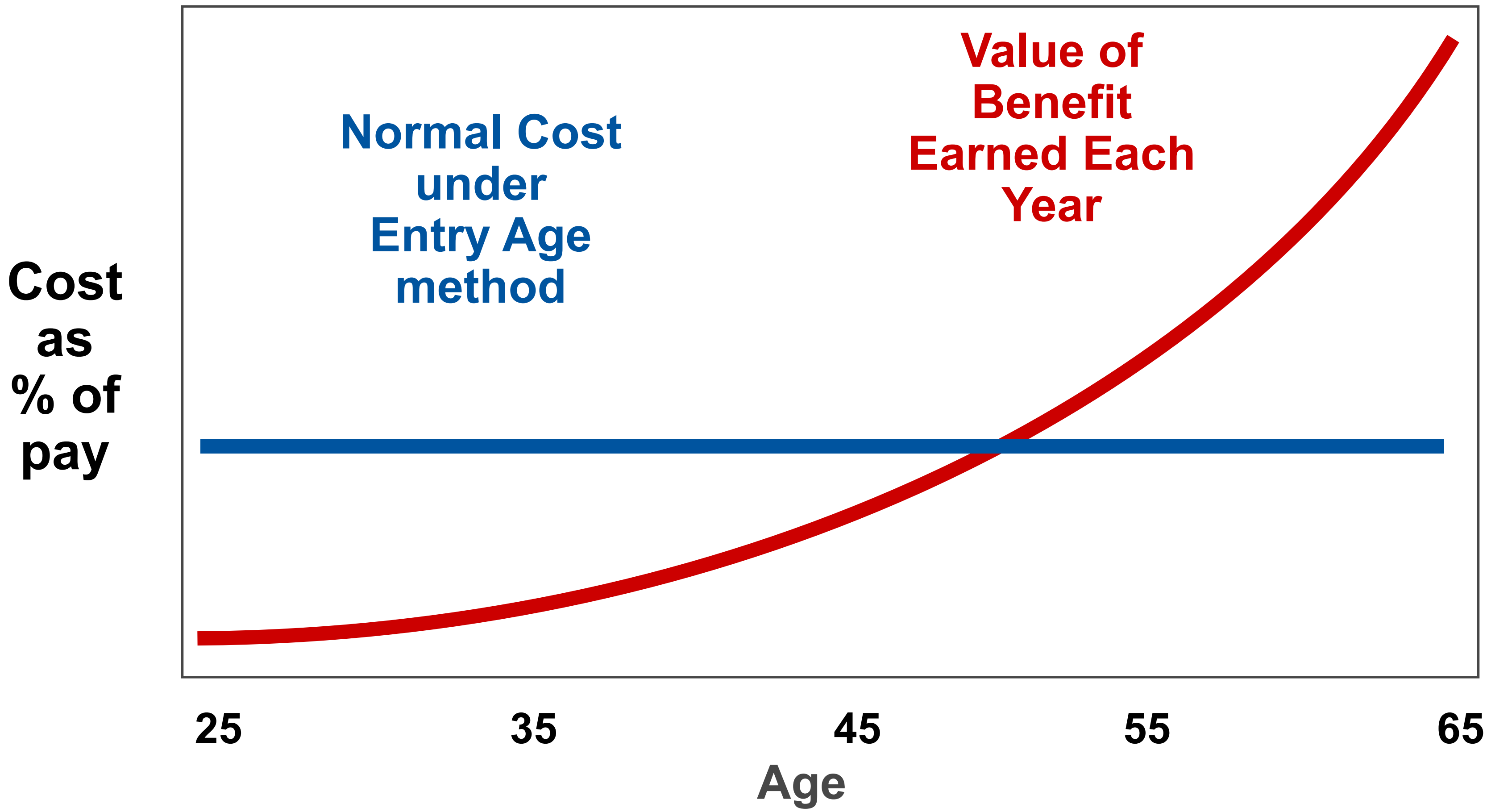
Actuarial Cost Method

Procedure for allocating Present Value of Future Benefits over a participant's working lifetime

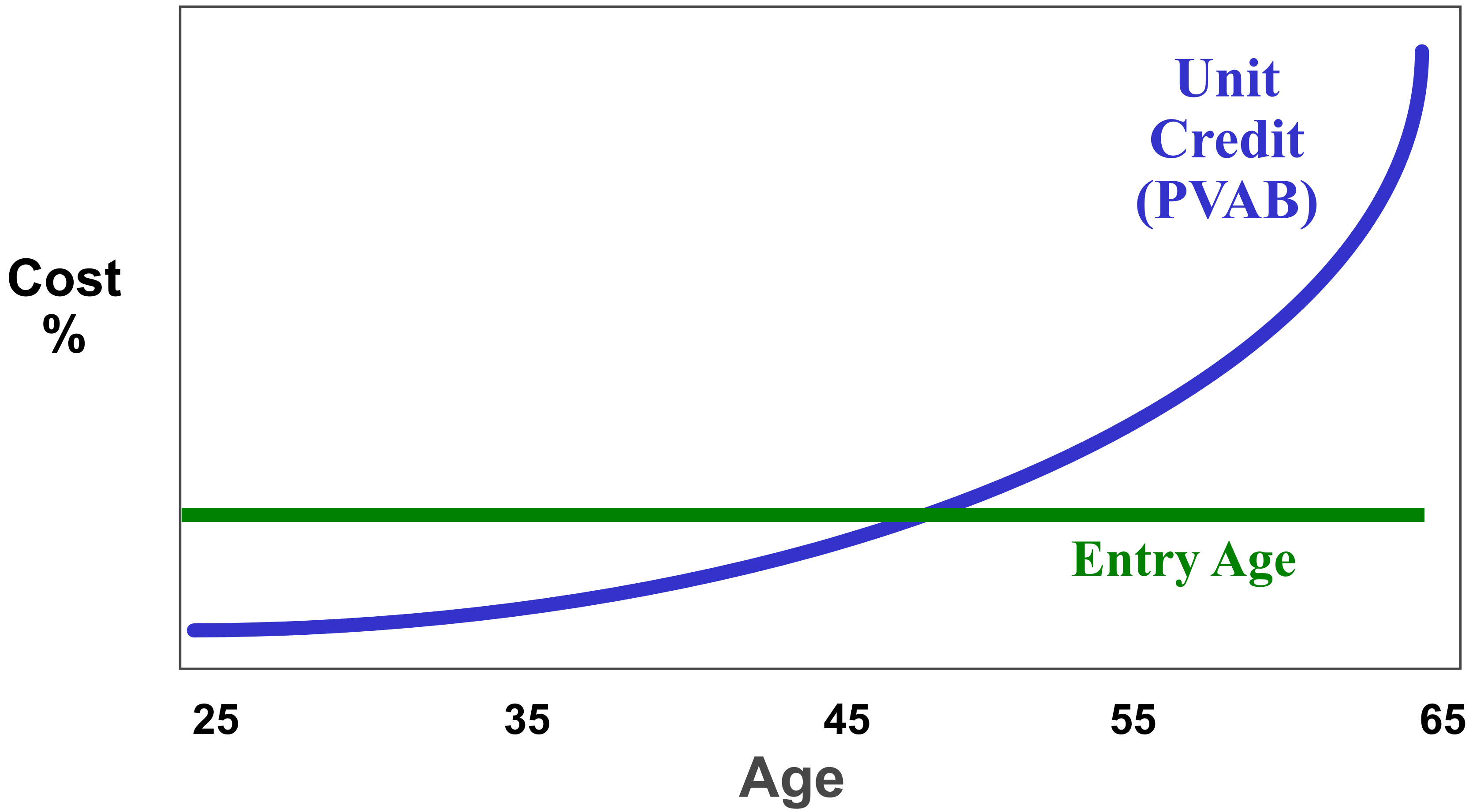
Present Value of Future Benefits



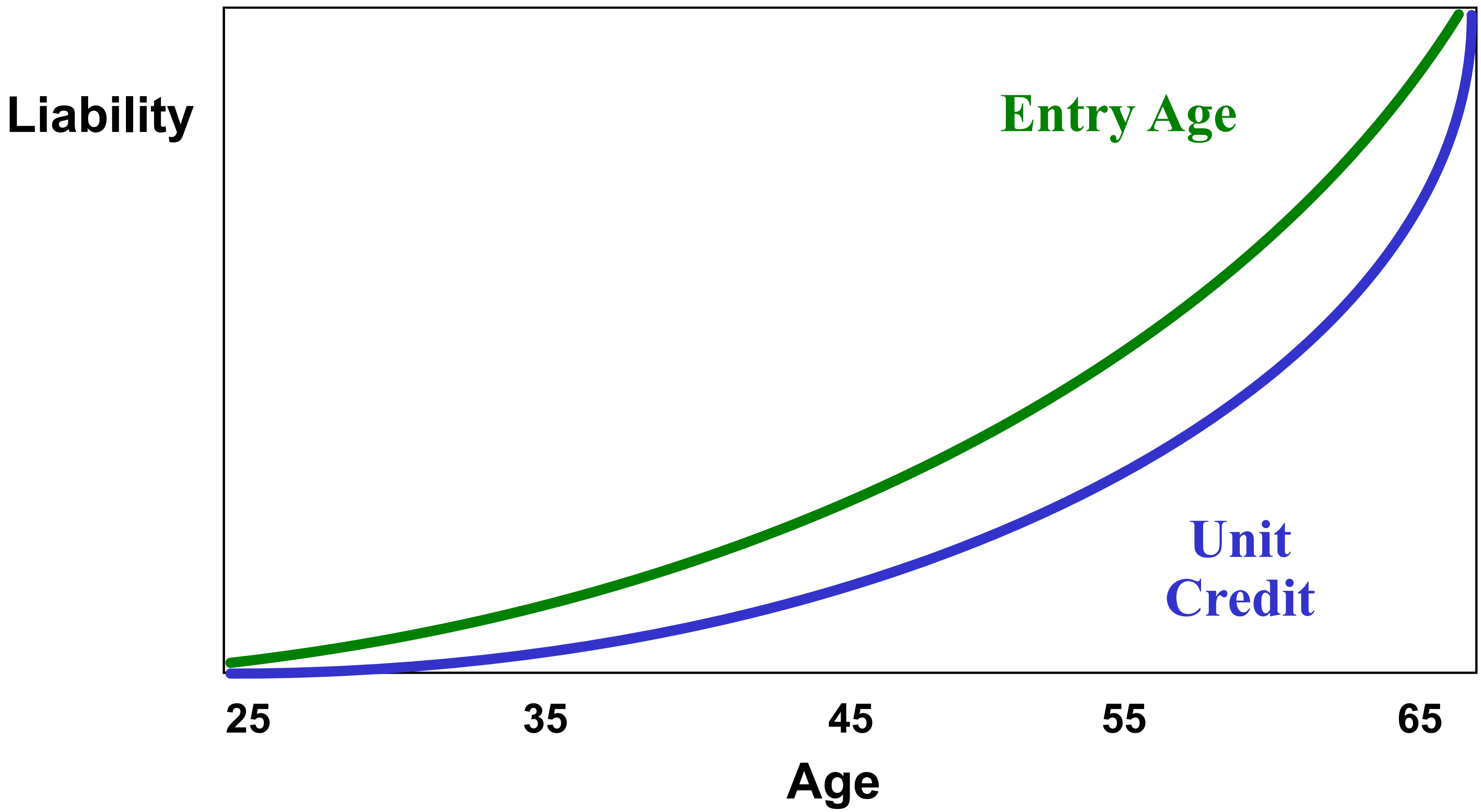
Normal Cost vs.
Value of Benefit Earned Each Year (for an individual)



Normal Cost as a Percentage of Pay (for an individual)



Actuarial Accrued Liability (for an individual)



Questions and Discussion

Asset Smoothing Method

Asset Smoothing Methods

Objectives

- Reflect market value of assets
- Smooth out fluctuations in market values
- Produce smoother pattern of contributions

Features

- Practical to both understand and model
- Should not consistently lead or lag market
- Treatment of realized vs. unrealized gains
- Consistency with other investment policies
- “Return to Market” conditions
- Should not be biased

Asset Smoothing Example: one good year

Year	1	2	3	4	5	6
MVA return	12%	7%	7%	7%	7%	7%
Deferred	(5%)					
Recognized	1%	1%	1%	1%	1%	
AVA return	8%	8%	8%	8%	8%	7%

Asset Smoothing Example: one good year, then one bad year

Year	1	2	3	4	5	6	7
MVA return	12%	2%	7%	7%	7%	7%	7%
Deferred	(5%)	5%					
Recognized	1%	1%	1%	1%	1%		
		(1%)	(1%)	(1%)	(1%)	(1%)	
AVA return	8%	7%	7%	7%	7%	6%	7%

Asset Smoothing Mechanics

- When MVA return is **greater** than assumed
  - Smoothing “defers gains”
  - Smoothed value (AVA) is **less** than MVA
  - UAAL and actuarial determined contributions are **larger**
- When MVA return is **less** than assumed
  - Smoothing “defers losses”
  - Smoothed value (AVA) is **greater** than MVA
  - UAAL and actuarial determined contributions are **smaller**

Actuarial Asset Smoothing Method

Current Method

- Reflects 5-year smoothed value of assets
- 20% Corridor around market
- The actuarial value of assets was written down to the market value of assets in the January 1, 2016 actuarial valuation.
- The January 1, 2017 actuarial valuation is the first year in which the current method was employed.
  - Gains and losses will accumulate until reaching a five-year rolling period

Questions and Discussion

Amortization Methods

Amortization of Unfunded Liability

Source of Unfunded Liability

- Plan changes
- Assumption or method changes
- Gains / losses

Amortization period

- Fixed period (closed) or rolling (open)
- One layer (uniform) or multiple

Amortization method

- Level dollar amount
- Level percentage of pay

Amortization Methods – Level Dollar vs. Level % Pay

7.25% interest 2.75% payroll increase	30 Years Level Dollar	30 Years Level % pay
AAL Loss	$1,000,000	$1,000,000
Amortization factor (first year)	12.981178	17.245833
Amortization Amount		
Year 1	$77,035	$57,985
Year 10	$77,035	$74,021
Year 15	$77,035	$84,774
Year 20	$77,035	$97,089
Year 30	$77,035	$127,347
Total Amount Paid		
Principal	$1,000,000	$1,000,000
Interest	$1,311,050	$1,649,603
Total	$2,311,050	$2,649,603

Negative Amortization

- $1,000,000 liability, 7.25% interest
- First year interest only is $72,500
- With level dollar payments, payments are always greater than interest
  - UAAL immediately begins to decrease
- With level percentage payments, early payments can be less than interest
  - UAAL increases (but not as a percentage of payroll)
  - Eventually larger payments cover interest plus increased UAAL

Amortization Structure for UAAL

- Closed versus Open ("Rolling") Amortization Period
  - Closed means the period decreases each year
    - UAAL is fully amortized over initial amortization period
  - Open means the UAAL is re-amortized over the same new period every year (refinance the mortgage every year)
- Amortization based on one layer or multiple layers
  - One layer means the entire UAAL is amortized as a single amount regardless of the source of the UAAL
  - Multiple layers amortize each new change in UAAL over separate periods
    - Gains / losses, assumption changes, plan changes
    - Can use same periods or different periods for different sources of UAAL

Amortization of the Unfunded Actuarial Accrued Liability

- The effective amortization period will be developed using a level % of payroll with payroll increasing 2.75% per year.
- The January 1, 2018 actuarial valuation will use a 30-year amortization period for the actuarial determined contribution, at which point the amortization period will be closed and reduced by one year with each subsequent valuation.

The Texas Pension Review Board (PRB) targets an amortization period of 30 years but not more than 40 years. Systems with an effective amortization period greater than 40 years for three consecutive years need to develop a Funding Soundness Restoration Plan (FSRP) to bring them into compliance over a reasonable period of time. The PRB understands the System's projected amortization period currently exceeds 40 years (44 years as of January 1, 2017).

Questions and Discussion

Funded Ratios

Funded Status

- Funded ratio = assets / liabilities
- Funded status = assets - liabilities

- Assets > liabilities ==> surplus
- Assets < liabilities ==> unfunded liability

Funded Status: various measures

- Assets
  - Termination: Market value
  - Funding: Actuarial value
- Liabilities
  - Termination value (corporate “current liability”)
    - current service, current pay
    - settlement assumptions
  - Funding: Actuarial Accrued Liability
    - depends on cost method (EAN, PUC, etc.)

Funded Ratio (or "Funding Ratio")

- Not used to determine contribution rate
  - Amortization cost based on UAAL ($)
- For public plans, no "bright line" test
  - For corporate, Current Liability, 80% and 90%
  - For multiemployer, different ratios affect Zone Status
- Useful to track progress
- Not useful as a simple test of Plan's health
  - Like UAAL, does not measure solvency or benefit security

Significance of Funding Ratio

- Which Plan would you rather be in?

	Funding Ratio	
Valuation Date	Plan A	Plan B
2018	73%	82%

Significance of Funding Ratio

- Which Plan would you rather be in?

	Funding Ratio	
Valuation Date	Plan A	Plan B
2018	73%	82%
2017	61%	89%
2016	57%	93%
2015	46%	102%
2014	38%	118%
2013	24%	132%

Questions and Discussion

Funding Policies

Conference of Consulting Actuaries
Public Plans Community – Model Funding Policy

General Funding Policy Objectives

1. Actuarially determined employer contribution
   - Future contributions plus current assets sufficient to fund all benefits for current members
2. Intergenerational equity
   - Reasonable allocation of funding to years of service
3. Contributions as a stable percentage of payroll
   - Reasonable management of employer contribution volatility
4. Accountability and transparency
   - Clear in intent and effect
   - Allow assessment of whether, how and when sponsor will meet funding requirements
5. Governance issues
   - "Agency risk" – interested parties will try to influence results

Three Funding Policy Components

- **Actuarial cost method** allocates present value of member's future benefits to years of service
  - Defines Normal Cost and Actuarial Accrued Liability (AAL)
- **Asset smoothing method** manages short term market volatility while tracking Market Value of Assets
  - Defines the Unfunded Actuarial Accrued Liability (UAAL)
- **Amortization method** sets contributions to systematically pay off the UAAL
  - Length of time and structure of payments
- **Review your funding policy and have a comprehensive written funding policy statement.**

  http://www.ccactuaries.org/Portals/0/Library/Papers/CCA-PPC_Actuarial-Funding-Policies-and-Practices-for-Public-Pension-Plans.pdf

Actuarial Valuations and Other Reports

Types of Actuarial Reports

Actuarial Valuation

- Purposes of an actuarial valuation
  - Primary:
    - Contribution requirements
    - Funded status
  - Secondary:
    - Disclosure requirements
    - Basis for pricing plan changes
    - Analysis of demographic experience
    - Analysis of financial experience

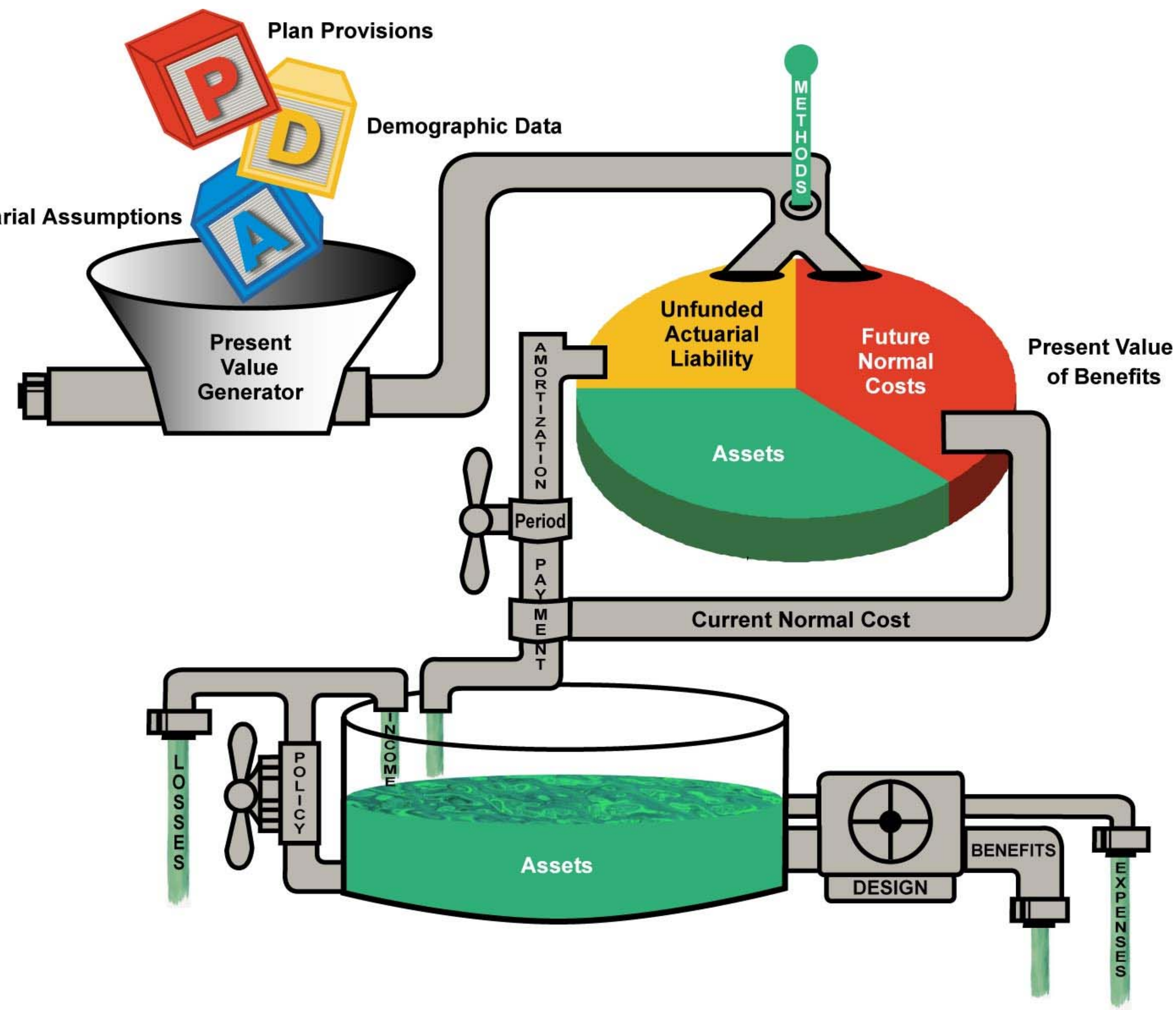
Experience Study

- Purpose is to perform an in-depth study of the actuarial assumptions and methodologies in use by the System and determine how actual experience compared to what was expected

Actuarial Audit

- Purpose is to have an outside actuary review the current actuary's assumptions, methodologies, and results

Portrait of a Pension Valuation



Portrait of a Pension Valuation

- Review the January 1, 2017 actuarial valuation

Questions and Discussion

Thank You!

Segal Consulting

2018 Powers Ferry Road, Suite 850
Atlanta, GA 30339-7200
T 678.306.3147

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

www.segalco.com

Segal Consulting

Dallas Police and Fire Pension System

Actuarial Valuation and Review as of January 1, 2017

Segal Consulting
2018 Powers Ferry Road, Suite 850 Atlanta, GA 30339-7200
T 678.306.3100 www.segalco.com

July 10, 2017

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

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of January 1, 2017. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience and establishes the actuarially determined funding requirements for 2017; actual funding is determined by state law.

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

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the smoothing of investment gains and losses); and changes in plan provisions or applicable law.

The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board of Trustees are reasonably related to the experience of and the expectations for the System, with the presumption that appropriate action is taken to address the System's funding issues.

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

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By:

Leon F. (Rocky) Joyner, FCA, ASA, MAAA, EA
Vice President and Consulting Actuary

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

Deborah K. Brigham

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

SECTION 1

VALUATION SUMMARY

SECTION 2

VALUATION RESULTS

SECTION 3

SUPPLEMENTAL INFORMATION

SECTION 4

REPORTING INFORMATION

SECTION 5

GASB INFORMATION

Segal Consulting

SECTION 1: Valuation Summary for the Dallas Police and Fire Pension System

Purpose

This report has been prepared by Segal Consulting to present a valuation of the Dallas Police and Fire Pension System as of January 1, 2017. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of the Pension System, as administered by the Board;
- The characteristics of covered active members, inactive vested members, and retired members and beneficiaries as of December 31, 2016, provided by the System's IT Department;
- The unaudited assets of the System as of December 31, 2016, provided by the System's Finance Department;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding member terminations, retirement, death, etc.

  The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Experience Study Report for the five-year period ended December 31, 2014. Assumption changes were made in the January 1, 2017 valuation related to the salary scale and DROP interest. Additional assumption changes were made as part of the plan changes effective September 1, 2017. Changes from the prior year are listed at the end of this exhibit.

Significant Issues in Valuation Year

1. The January 1, 2016 actuarial valuation report presented the actuarially determined contribution for the System as a total rate (City and member combined), and reflected a 40-year amortization of the unfunded actuarial accrued liability. At the request of the Texas Pension Review Board, and in a subsequent communication to System staff, Segal Consulting provided the contribution rate using a 30-year amortization, with the rate split between the City and members. The 2016 results in this report have been revised to reflect the 30-year numbers, and the 2017 results are presented in the same manner.
2. The total actuarially determined contribution (City and member) declined from 79.03% of computation pay for 2016 to 56.95% of computation pay for 2017. The decline is due to significant plan changes approved by the Texas Legislature in May 2017 and effective September 1, 2017; these plan changes have been included in this valuation. The City's portion of the actuarially determined contribution rate decreased from 71.70% of computation pay for 2016 to 47.25% of computation pay for 2017.

SECTION 1: Valuation Summary for the Dallas Police and Fire Pension System

3. On May 31, 2017, the Governor of Texas signed HB3158 into law. HB3158 amends Article 6243a-1 of the Texas Statues and provides changes to the pension benefits provided by the Dallas Police & Fire Pension System, as well as changes to the contributions required by both plan members and the City of Dallas. Both the plan and contribution changes, which are effective September 1, 2017, are reflected in the January 1, 2017 actuarial valuation. A complete listing of the plan changes effective September 1, 2017 can be found on the System's website, www.dpfp.org. A summary of the major changes is as follows:

   - Normal Retirement Age increased from either age 50 or 55 to age 58
   - Early Retirement Age increased from age 45 for members hired prior to March 1, 2011 to age 53 for all members
   - Benefit multiplier for all future service for members hired prior to March 1, 2011 lowered from 3.00% to 2.50%
   - Benefit multiplier retroactively increased to 2.50% for members hired on or after March 1, 2011
   - Benefit multipliers for 20 & Out benefit lowered and begin at later ages
   - Maximum benefit reduced from 96% of computation pay to 90% of computation pay for members hired prior to March 1, 2011
   - Average computation pay period changed from 36 months to 60 months for future service for members hired prior to March 1, 2011
   - COLA discontinued for all members. The Board may choose to provide a COLA if the funded ratio on a market value basis is at least 70% after the implementation of a COLA.
   - The supplemental benefit is eliminated prospectively; only those for whom the supplement was already granted as of September 1, 2017 will maintain the supplement
   - Active DROP participation is limited to 10 years
   - DROP interest for active DROP members will cease after September 1, 2017; only the balance as of September 1, 2017 will be eligible for interest once active DROP members retire
   - Retirees with DROP accounts as of September 1, 2017 will have their DROP account balances paid out over their expected lifetime based on their age as of September 1, 2017
   - Future retirees with DROP accounts will have their DROP account balances paid out over their expected lifetime as of the date of their retirement
   - Interest on retiree DROP accounts will be paid based on the length of the retiree's expected lifetime and will be based on U.S. Treasury rates which correlate to expected lifetime, as determined by the Board of Trustees; interest is only payable on the September 1, 2017 account balance
   - Member contributions for both DROP and non-DROP members increased to 13.5% effective September 1, 2017

SECTION 1: Valuation Summary for the Dallas Police and Fire Pension System

- The City's contribution rate will increase to 34.5% of computation pay. Between September 1, 2017 and December 31, 2024, the City's contribution will be the greater of 34.5% and a biweekly contribution amount as stated in HB3158, plus $13 million per year.

4. The following assumption changes were proposed by the actuary and presented to the System as part of the plan design work that is incorporated in this valuation. These changes are reflected for the first time in this valuation.

   - The administrative expense assumption was changed from $10 million per year to the greater of $10 million per year or 1% of computation pay
   - The DROP utilization factor was changed from 100% to 0%
   - Current DROP members with at least eight years in the DROP as of January 1, 2017 are assumed to retire in 2018. Current DROP members with less than eight years in DROP as of January 1, 2017 are assumed to retire once they have been in the DROP for eight years.
   - Retirement rates were changed effective January 1, 2018
   - 100% retirement rate once the projected sum of age plus service equals 90
   - New terminated vested members are assumed to retire at age 58
   - Beginning September 1, 2017, DROP account balances for annuitants are assumed to earn 2.75% interest; DROP account balances as of September 1, 2017 for active members are assumed to earn 2.75% interest upon retirement; DROP account balances accrued after September 1, 2017 do not earn interest.
   - DROP payment period based on an 85%/15% male/female blend of the current healthy annuitant mortality tables
   - COLA assumed to be a 2.00% COLA beginning October 1, 2049 and payable every October 1 thereafter

5. Prior to the 2017 legislative session, the City and bargaining parties signed a new Meet and Confer Agreement. To reflect the expected impact of this agreement on member salaries, the assumed salary scale rates were revised through 2019. In addition, the assumed DROP interest was changed to 0% as of October 1, 2018 as a result of Section 6.14(c) of the plan document as amended and restated through April 16, 2015. These assumption changes are not related to the plan changes effective September 1, 2017.

6. The reconciliation of the City's actuarially determined employer contribution (ADEC), on a 30-year amortization basis, from the January 1, 2016 valuation to the January 1, 2017 valuation, is shown below.
   - January 1, 2016 ADEC — **$261,589,079**, or **71.70%** of computation pay
   - January 1, 2017 ADEC, prior to any assumption or plan changes — **$272,943,384**, or **77.75%** of computation pay
   - January 1, 2017 ADEC, after assumption changes not related to plan changes — **$249,844,232**, or **69.90%** of computation pay
   - January 1, 2017 ADEC, after plan changes — **$168,865,484**, or **47.25%** of computation pay

   Chart 14 on page 13 provides further details of the ADEC reconciliation.

7. In the January 1, 2016 actuarial valuation, the System was projected to become insolvent within 15 years. In the January 1, 2017 actuarial valuation, the System is projected to become 100% funded by January 1, 2061, based on the City's "hiring plan" payroll projections through 2037.

8. There were 284 retirements from the active population during 2016, almost double the number from the year before. The total number of active members declined almost 6%, from 5,415 to 5,104. The active member population is at its lowest level since the year ended December 31, 2007.

9. The projected year of full funding may vary on an annual basis due to demographic and economic experience other than assumed. Beginning in 2025, once the City is contributing based solely on computation pay, differences between actual payroll and the City's hiring plan payroll may also have an impact on when the System is projected to become fully funded. The City's hiring plan reflects significant growth in payroll over the next 20 years. If payroll growth is more modest, or if there is adverse experience in the System that leads to experience losses, the amortization of the $2.2 billion unfunded liability could take significantly longer. Progress toward 100% funding should be carefully monitored.

10. The market value of assets declined from $2.68 billion as of December 31, 2015 to $2.15 billion as of December 31, 2016, based on unaudited assets. Over the same timeframe, total DROP account balances declined from $1.50 billion to $1.05 billion.

SECTION 1: Valuation Summary for the Dallas Police and Fire Pension System

11. The rate of return on the market value of assets was 6.82% for the year ended December 31, 2016; on an actuarial value basis, the rate of return was 7.16%. Compared to the return assumption of 7.25%, there was a minor loss ($2.0 million, or 0.04% of pre-plan change liability) due to asset performance. The net experience loss from sources other than investment experience was $53.6 million (0.9% of pre-plan change liability).
12. As stated in the January 1, 2016 actuarial valuation, the actuarial value of assets was written down to the market value of assets at that time, with five-year asset smoothing implemented in the 2017 valuation. Since the market value return in 2016 did not meet the 7.25% return assumption, there are asset losses that will be smoothed in over the next five years. As of December 31, 2016, there are $7,963,470 in unrecognized asset losses.
13. Financial information provided for the valuation, including the December 31, 2016 market value of assets and City and member contributions, is based on preliminary unaudited assets and may subsequently change once the audit is finalized. Audited assets are not expected to be materially different from those used in the valuation.
14. The funded ratio on an actuarial basis has increased from 45.07% as of January 1, 2016 to 49.41% as of January 1, 2017. On a market value basis, the funded ratio increased from 45.07% to 49.23%. The increases in funded ratio are as a result of the plan changes and assumptions related to the plan changes. As the System stabilizes over the next several years after the plan and investment portfolio changes, it is expected that the funding ratios will decline over the next decade before they once again start to rise.
15. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined employer contribution under the System's funding policy. Section 5 provides the accounting information for Governmental Accounting Standards Board Statement No. 67 disclosures as of December 31, 2016. The Net Pension Liability (NPL) is equal to the difference between the Total Pension Liability (TPL) and the Plan's fiduciary net position (equal to the market value of assets). The TPL is calculated based on a discount rate of 4.12%, which reflects a blending of the 7.25% funding rate and a 20-year municipal bond rate of 3.78%. The NPL as of December 31, 2016 is $6,300,444,636, a decline of $556,271,259 from the December 31, 2015 NPL of $6,856,715,895. (Plan changes effective September 1, 2017 are not included in the Net Pension Liability as of December 31, 2016. Had these plan changes been included, the December 31, 2016 Net Pension Liability would be approximately $4.1 billion.)
16. The actuarial valuation report as of January 1, 2017 is based on financial and demographic information as of that date. Changes subsequent to that date are not reflected and will affect future actuarial costs of the Plan. Since actuarial results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience may differ from expected experience.

SECTION 1: Valuation Summary for the Dallas Police and Fire Pension System

Summary of Key Valuation Results

	2017, after plan changes	2017, prior to plan changes	2016
Contributions for plan year beginning January 1, adjusted for timing:			
Total actuarially determined contribution (City and member)	$203,533,370	$276,861,319	$288,633,291
Expected member contributions	34,667,886	27,017,087	26,774,212
City's actuarially determined employer contribution (ADEC)	168,865,484	249,844,232	261,859,079
City's ADEC as a percentage of computation pay	47.25%	69.90%	71.70%
Actual contributions (City and member)	--	--	$144,941,423
Amortization period for determination of ADEC	30 years	30 years	30 years
Funding elements for plan year beginning January 1:			
Employer normal cost, including administrative expenses	$34,947,056	$55,337,064	$63,413,557
Market value of assets	2,149,836,260	2,149,836,260	2,680,124,303
Actuarial value of assets	2,157,799,730	2,157,799,730	2,680,124,303
Actuarial accrued liability	4,367,180,454	5,364,055,235	5,947,173,998
Unfunded actuarial accrued liability (UAAL)	2,209,380,724	3,206,255,505	3,267,049,695
Funded ratio – Actuarial basis	49.41%	40.23%	45.07%
Funded ratio – Market basis	49.23%	40.08%	45.07%
Projected year of full funding	2061	N/A	N/A
Demographic data for plan year beginning January 1:			
Number of retired members and beneficiaries	4,456	4,456	4,230
Number of vested former members[1]	215	215	200
Number of active members	5,104	5,104	5,415
Total computation pay	$357,414,472	$357,414,472	$365,210,426
Average computation pay	70,026	70,026	67,444

[1]*Excludes terminated members due a refund of contributions*

Important Information About Actuarial Valuations

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

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

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

SECTION 1: Valuation Summary for the Dallas Police and Fire Pension System

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

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

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

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System

A. MEMBER DATA

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, vested terminated members, retired members and beneficiaries.

This section presents a summary of significant statistical data on these member groups.

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

A historical perspective of how the member population has changed over the past ten valuations is shown in this chart.

CHART 1

Member Population: 2007 – 2016

Year Ended December 31	Active Members	Vested Terminated Members*	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
2007	4,909	182	3,294	0.71
2008	5,235	151	3,375	0.67
2009	5,476	144	3,450	0.66
2010	5,482	135	3,535	0.67
2011	5,376	128	3,669	0.71
2012	5,400	96	3,783	0.72
2013	5,397	122	3,890	0.74
2014	5,487	157	4,069	0.77
2015	5,415	200	4,230	0.82
2016	5,104	215	4,456	0.92

**Excludes terminated members due a refund of member contributions*

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System

Active Members

System costs are affected by the age, years of service and computation pay of active members. In this year's valuation, there were 5,104 active members with an average age of 41.4, average service of 14.3 years and average computation pay of $70,026. The 5,415 active members in the prior valuation had an average age of 41.4, average service of 14.3 years and average computation pay of $67,444.

The number of active Firefighters decreased from 1,932 to 1,849 as of December 31, 2016. The average age of this group is 41.7, the average years of service is 14.4, and the average computation pay is $70,703. Last year these averages were 41.8, 14.6 and $68,309, respectively.

The number of active Police Officers decreased from 3,483 to 3,255 as of December 31, 2016. The average age of this group remained unchanged at 41.2, and the average years of service remained unchanged at 14.1. The average computation pay increased from $66,965 to $69,642.

These graphs show a distribution of active members by age and by years of service.

CHART 2

Distribution of Active Members by Age as of December 31, 2016

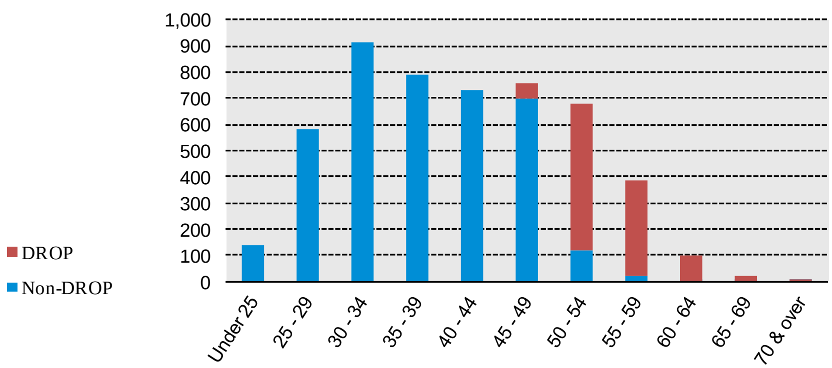
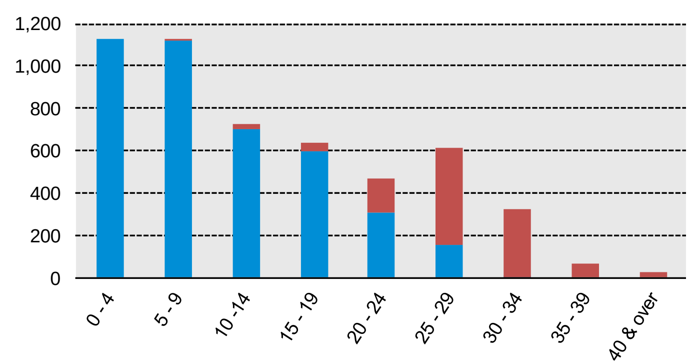


CHART 3

Distribution of Active Members by Years of Service as of December 31, 2016



SECTION 2: Valuation Results for the Dallas Police and Fire Pension System

Inactive Members
In this year's valuation, there were 215 members with a vested right to a deferred or immediate vested benefit. In addition, there were 295 members entitled to a return of their member contributions.

Retired Members and Beneficiaries
As of December 31, 2016, there were 3,338 retired members and 1,077 beneficiaries receiving total monthly benefits of $18,104,251. For comparison, in the previous valuation, there were 3,115 retired members and 1,067 beneficiaries receiving monthly benefits of $16,438,266.

There are also 41 beneficiaries with DROP balances only, and no monthly annuity. This number has decreased from 48 last year.

These graphs show a distribution of the current retired members and beneficiaries based on their monthly amount and age, by type of pension.

CHART 4

Distribution of Retired Members and Beneficiaries by Type and by Monthly Amount as of December 31, 2016

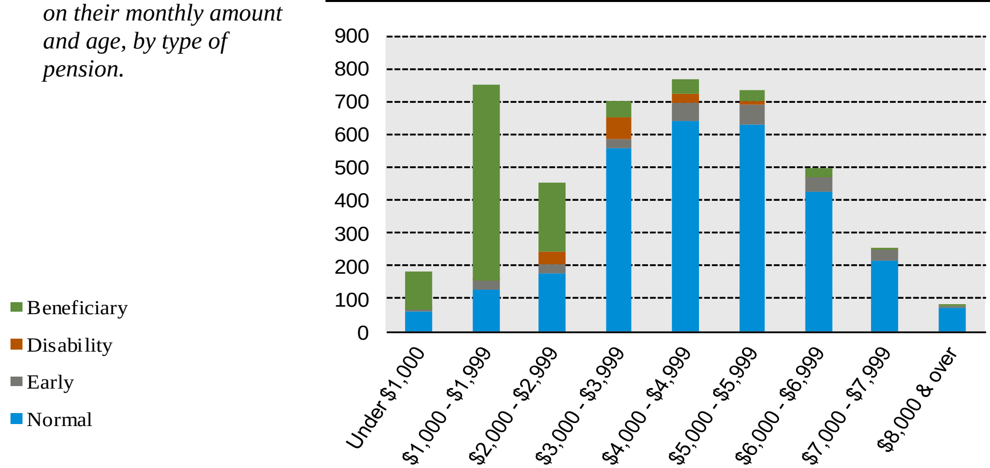
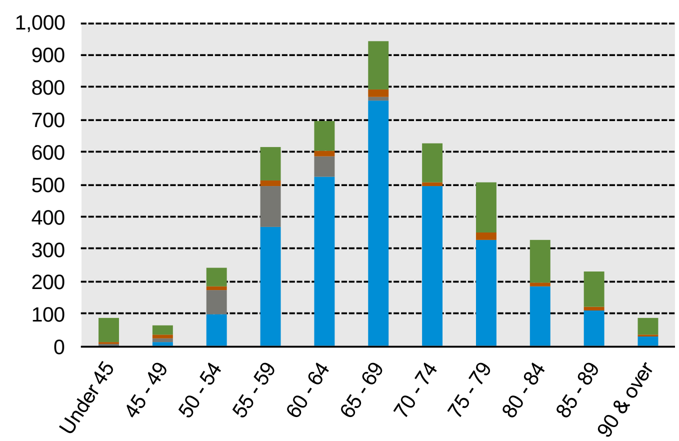


CHART 5

Distribution of Retired Members and Beneficiaries by Type and by Age as of December 31, 2016



SECTION 2: Valuation Results for the Dallas Police and Fire Pension System

B. FINANCIAL INFORMATION

Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and net investment earnings (less investment fees) will be needed to cover benefit payments.

Retirement plan assets change because of the net impact of these income and expense components. Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits D, E and F.

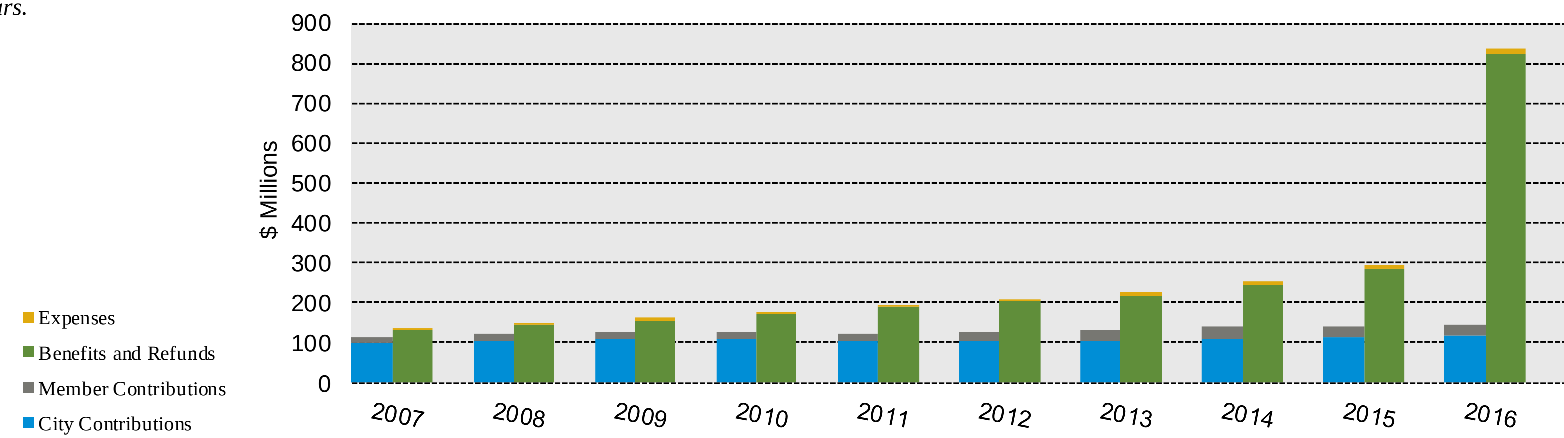
Total contributions were $144.9 million for the year ended December 31, 2016. Benefit payments and refunds totaled $825.1 million, of which $606.3 million were DROP lump sums. Benefit payments are projected to be $290 million in 2017. To the extent that future contributions are less than benefit payments, investment earnings or fund assets will be needed to cover the shortfall.

DROP balances declined from $1.50 billion as of December 31, 2015 to $1.05 billion as of December 31, 2016. Of the $1.05 billion balance, $689.52 million is for members who have left employment with Dallas.

This chart depicts the contributions made and the benefits and expenses paid over the last ten years.

CHART 6

Comparison of Contributions Made and Benefits and Expenses Paid for Years Ended December 31, 2007 – 2016



SECTION 2: Valuation Results for the Dallas Police and Fire Pension System

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative.

Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

The actuarial value of assets was reset to the market value of assets as of December 31, 2015 with future gains and losses after that date amortized on a straight-line basis over five years.

The chart shows the determination of the actuarial value of assets as of the valuation date.

CHART 7

Determination of Actuarial Value of Assets for Year Ended December 31, 2016

	Original Amount[1]	Unrecognized Return[2]	
1. Market value of assets, December 31, 2016			$2,149,836,260
2. Calculation of unrecognized return			
(a) Year ended December 31, 2016	-$9,954,337	-$7,963,470	
(b) Total unrecognized return			-7,963,470
3. Preliminary actuarial value: (1) - (2b)			2,157,799,730
4. Adjustment to be within 20% corridor			0
5. Final actuarial value of assets as of December 31, 2016: (3) + (4)			$2,157,799,730
6. Actuarial value as a percentage of market value: (5) ÷ (1)			100.4%
7. Amount deferred for future recognition: (1) - (5)			-$7,963,470

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

[2] *Recognition at 20% per year over five years*

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System

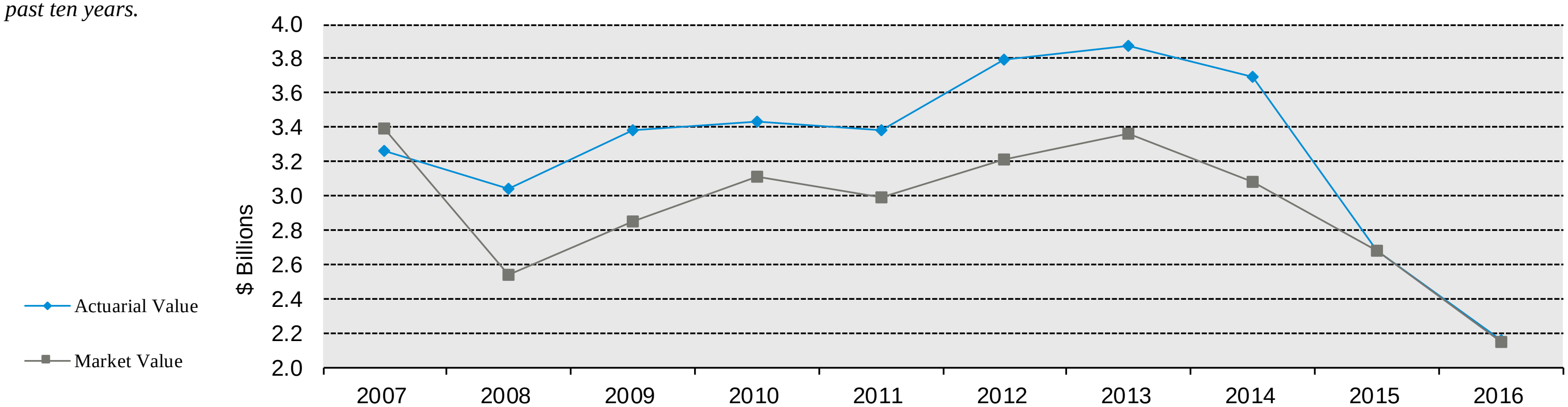
Both the actuarial value and market value of assets are representations of the System's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the System's liabilities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

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

This chart shows the change in the actuarial value of assets versus the market value over the past ten years.

CHART 8

Actuarial Value of Assets vs. Market Value of Assets as of December 31, 2007 – 2016



C. ACTUARIAL EXPERIENCE

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

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

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

The total loss is $55,556,817, incluing a loss of $1,990,867 from investments and a loss of $53,565,950 from all other sources. The net experience variation from individual sources other than investments was 0.9% of the pre-plan change actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

This chart provides a summary of the actuarial experience during the past year.

CHART 9

Actuarial Experience for Year Ended December 31, 2016

1.	Net loss from investments*	-$1,990,867
2.	Net gain from administrative expenses	525,632
3.	Net loss from other experience	-54,091,582
4.	Net experience loss: (1) + (2) + (3)	-$55,556,817

** Details in Chart 10*

Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Plan's investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets is 7.25%. The actual rate of return on an actuarial basis for the 2016 plan year was 7.16%.

Since the actual return for the year was less than the assumed return, the Plan experienced an actuarial loss during the year ended December 31, 2016 with regard to its investments.

This chart shows the loss due to investment experience.

CHART 10

Actuarial Value Investment Experience for Year Ended December 31, 2016

1. Actual return	$167,318,581
2. Average value of assets	2,335,302,726
3. Actual rate of return: (1) ÷ (2)	7.16%
4. Assumed rate of return	7.25%
5. Expected return: (2) x (4)	$169,309,448
6. Actuarial loss: (1) – (5)	-$1,990,867

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System

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

The Board has maintained the assumed rate of return of 7.25%. Market returns over the next couple of years may fall short of the target as the investment portfolio stabilizes after restructuring; however, based on the Board's target asset allocations, the assumption is not unreasonable over the long-term.

CHART 11

Investment Return – Actuarial Value vs. Market Value: 2007 - 2016

Year Ended December 31	Actuarial Value Investment Return			Market Value Investment Return	
	Amount[1]		Percent[1]	Amount[2]	Percent[2]
2007	$312,669,979		10.58%	$276,240,781	8.85%
2008	-199,538,242		-6.14	-838,497,127	-24.80
2009	371,704,709		12.29	347,054,071	13.78
2010	90,332,398		2.69	303,461,949	10.72
2011	14,561,313		0.43	-54,844,275	-1.78
2012	493,841,725		14.79	292,719,981	9.92
2013	169,425,156		4.52	243,514,011	7.70
2014	-75,632,075		-1.98	-176,940,296	-5.35
2015	-870,708,449		-24.03	-254,829,470	-8.47
2016	167,318,581		7.16	159,355,111	6.82
Total	$473,975,095			$297,234,736	
		Five-year average return	-3.41%		1.79%
		Ten-year average return	-0.18%		1.00%

Note: Each year's yield is weighted by the average asset value in that year
[1]*Includes a change in asset method for plan years 2012 and 2015*
[2]*Returns for years 2014 and 2015 include significant write-downs of the Plan's assets*

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System

Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs.

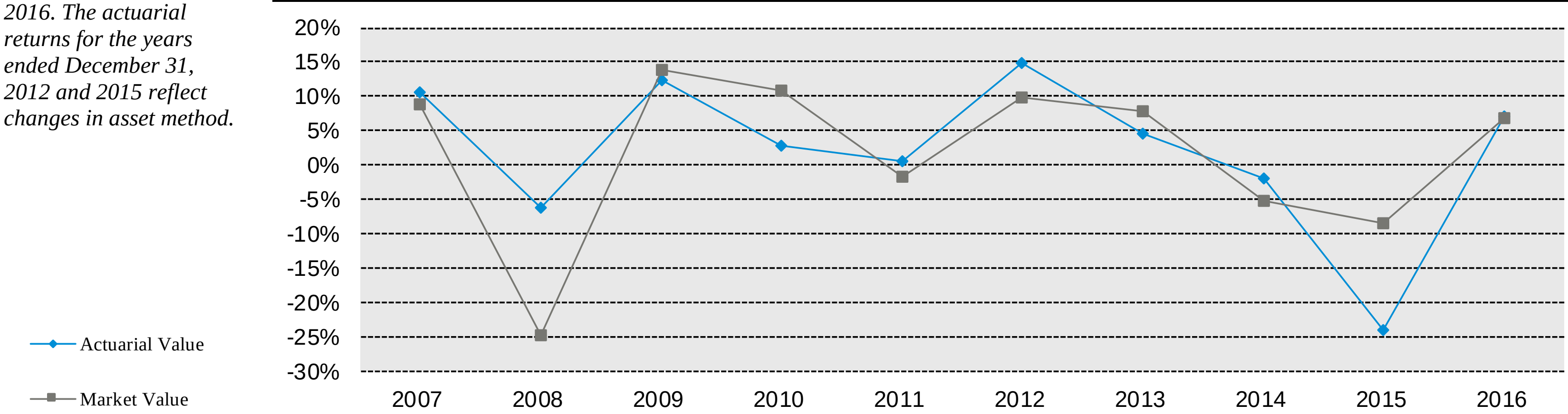
Administrative Expenses

Administrative expenses for the year ended December 31, 2016 totaled $9,492,445 compared to the assumption of $9,656,091, payable monthly. This resulted in a gain of $525,632 for the year. Because it is expected that these expenses will remain level, we have maintained the assumption of $9,656,091 for the current year.

This chart illustrates how this leveling effect has actually worked over the years 2007 - 2016. The actuarial returns for the years ended December 31, 2012 and 2015 reflect changes in asset method.

CHART 12

Market and Actuarial Rates of Return for Years Ended December 31, 2007 - 2016



Other Experience

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

- the extent of turnover among the members,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),
- the number of disability retirements, and
- salary increases different than assumed.

The net loss from this other experience for the year ended December 31, 2016 amounted to $54,091,582, which is 1.0% of the actuarial accrued liability. The loss is primarily due to a greater number of retirements than expected in 2016 and greater than expected DROP payments.

D. ACTUARIALLY DETERMINED CONTRIBUTION

The amount of annual contribution required to fund the System is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability. This total amount is then divided by the total computation pay for active members to determine the City's actuarially determined funding rate of 47.25% of computation pay.

The actuarially determined contribution is based on a 30-year amortization of the unfunded actuarial accrued liability as a level percentage of payroll, with payroll expected to increase 2.75% annually.

Through August 2017, the City of Dallas is expected to contribute 27.50% of pay to the System, including overtime and other non-computation pay. Member contributions are 8.50% of computation pay for members who do not currently participate in the DROP, and 4.00% for DROP members.

Effective September 1, 2017, the City will contribute biweekly amounts mandated by HB3158 through 2024, but no less than 34.5% of computation pay, plus $13 million per year. Beginning January 1, 2025, the City will contribute 34.5% of computation pay. Member contributions will be 13.5% of computation pay for all members effective September 1, 2017.

The chart compares this valuation's actuarially determined contribution with the prior valuation.

CHART 13

Actuarially Determined Contribution

	Year Beginning January 1			
	2017		2016	
	Amount	% of Computation Pay	Amount	% of Computation Pay
1. Total normal cost	$58,766,591	16.44%	$79,610,889	21.80%
2. Administrative expenses	9,656,091	2.70%	9,656,091	2.64%
3. Expected member contributions	-33,475,626	-9.36%	-25,853,423	-7.08%
4. Employer normal cost: (1) + (2) + (3)	$34,947,056	9.78%	$63,413,557	17.36%
5. Actuarial accrued liability	4,367,180,454		5,947,173,998	
6. Actuarial value of assets	2,157,799,730		2,680,124,303	
7. Unfunded actuarial accrued liability: (5) - (6)	$2,209,380,724		$3,267,049,695	
8. Payment on unfunded actuarial accrued liability; 30-year amortization	128,110,992	35.84%	189,439,952	51.87%
9. Actuarially determined employer contribution: (4) + (8), adjusted for timing*	$168,865,484	47.25%	$261,859,079	71.70%
10. Total computation pay	$357,414,472		$365,210,426	

**Contributions are assumed to be paid at the middle of every year*

The contribution requirements as of January 1, 2017 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

Reconciliation of Actuarially Determined Employer Contribution

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

The chart reconciles the contribution from the prior valuation to the amount determined in this valuation.

CHART 14

Reconciliation of Actuarially Determined Employer Contribution from January 1, 2016 to January 1, 2017

Actuarially Determined Employer Contribution as of January 1, 2016	$261,859,079
Effect of plan changes and change in actuarial assumptions related to plan changes	-80,978,748
Effect of changes in actuarial assumptions not related to plan changes	-23,099,152
Effect of contributions less than actuarially determined contribution	9,086,220
Effect of expected change in amortization payment due to payroll decline	5,395,143
Effect of investment loss	121,586
Net effect of other gains and losses on accrued liability	3,271,373
Net effect of other changes	-6,790,017
Total change	-$92,993,595
Actuarially Determined Employer Contribution as of January 1, 2017	$168,865,484

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

EXHIBIT A

Table of Plan Coverage

	Year Ended December 31		
Category	**2016**	**2015**	**Change From Prior Year**
Total active members in valuation:			
Number	5,104	5,415	-5.7%
Average age	41.4	41.4	N/A
Average years of service	14.3	14.3	N/A
Total computation pay	$357,414,472	$365,210,426	-2.1%
Average computation pay	70,026	67,444	3.8%
DROP account balances	356,421,938	474,296,247	-24.9%
Accumulated contribution balances	284,870,633	290,394,810	-1.9%
Total active vested members	3,978	4,235	-6.1%
Active members (excluding DROP):			
Number	4,002	4,077	-1.9%
Average age	37.6	37.0	N/A
Average years of service	10.3	9.8	N/A
Total computation pay	$262,030,358	$249,889,014	4.9%
Average computation pay	65,475	61,292	6.8%
Active members (DROP only):			
Number	1,102	1,338	-17.6%
Average age	55.1	54.8	N/A
Average years of service	28.3	28.1	N/A
Total computation pay	$95,384,114	$115,321,412	-17.3%
Average computation pay	86,555	86,189	0.3%
DROP account balances	356,078,264	474,296,247	-24.9%

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

EXHIBIT A (continued)

Table of Plan Coverage

Category	Year Ended December 31 2016	Year Ended December 31 2015	Change From Prior Year
Vested terminated members:			
Number	215	200	7.5%
Average age	39.4	38.9	N/A
Average monthly benefit	$1,125	$1,004	12.1%
Retired members:			
Number in pay status	3,189	2,964	7.6%
Average age	67.6	67.9	N/A
Average monthly benefit*	$4,672	$4,515	3.5%
DROP account balances	$662,398,699	$986,486,520	-32.9%
Disabled members:			
Number in pay status	149	151	-1.3%
Average age	67.2	66.6	N/A
Average monthly benefit*	$3,470	$3,407	1.8%
Beneficiaries in pay status:			
Number in pay status	1,077	1,067	0.9%
Average age	72.2	72.2	N/A
Average monthly benefit*	$2,065	$1,973	4.7%
DROP account balances	$27,124,372	$34,410,127	-21.2%
Beneficiaries with a DROP account only:			
Number	41	48	-14.6%
DROP account balances	$7,550,055	$9,579,082	-21.2%
Terminated members due a refund of contributions:			
Number	295	126	134.1%
Accumulated contribution balances	$1,170,846	$496,391	135.9%

** Excludes benefit supplement*

Note: DROP Account Balances reported for valuation purposes may differ slightly from the final balances stated in the System's year-end financial statements, due to subsequent adjustments. The difference is not material.

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

EXHIBIT B -1 (Total)

Members in Active Service as of December 31, 2016
By Age, Years of Service, and Average Computation Pay

		Years of Service								
Age	**Total**	**0 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40 & over**
Under 25	138	138	- -	- -	- -	- -	- -	- -	- -	- -
	$50,304	$50,304	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	582	493	87	2	- -	- -	- -	- -	- -	- -
	53,986	52,948	$59,727	$60,115	- -	- -	- -	- -	- -	- -
30 - 34	916	306	533	77	- -	- -	- -	- -	- -	- -
	59,327	53,878	61,440	66,361	- -	- -	- -	- -	- -	- -
35 - 39	790	126	296	287	80	1	- -	- -	- -	- -
	63,522	52,747	60,585	68,630	$72,969	$69,077	- -	- -	- -	- -
40 - 44	731	29	134	202	313	53	- -	- -	- -	- -
	71,506	53,098	60,854	69,322	76,928	84,820	- -	- -	- -	- -
45 - 49	757	16	50	96	184	256	154	1	- -	- -
	79,817	59,375	60,471	69,152	77,558	85,914	$87,246	$108,875	- -	- -
50 - 54	679	2	18	42	46	123	316	132	- -	- -
	84,750	53,916	61,987	71,022	76,450	85,895	87,369	88,247	- -	- -
55 - 59	387	3	1	17	15	35	113	163	40	- -
	86,266	121,911	62,128	71,001	80,438	79,577	86,853	88,104	$89,569	- -
60 - 64	97	- -	6	2	1	4	24	28	24	8
	87,002	- -	72,375	70,089	85,271	82,105	87,189	88,084	90,329	$90,535
65 - 69	22	- -	1	- -	- -	3	2	2	4	10
	91,195	- -	60,480	- -	- -	90,806	94,270	81,546	98,177	92,905
70 & over	5	1	- -	- -	- -	- -	- -	- -	1	3
	91,526	53,916	- -	- -	- -	- -	- -	- -	75,396	109,439
Total	5,104	1,114	1,126	725	639	475	609	326	69	21
	$70,026	$53,138	$61,037	$68,826	$76,675	$85,283	$87,258	$88,184	$90,127	$94,364

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

EXHIBIT B-2 (Police)

Members in Active Service as of December 31, 2016
By Age, Years of Service, and Average Computation Pay

		Years of Service								
Age	**Total**	**0 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40 & over**
Under 25	98	98	- -	- -	- -	- -	- -	- -	- -	- -
	$50,134	$50,134	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	387	337	48	2	- -	- -	- -	- -	- -	- -
	53,844	53,042	$59,208	$60,115	- -	- -	- -	- -	- -	- -
30 - 34	570	170	337	63	- -	- -	- -	- -	- -	- -
	59,783	53,739	61,534	66,728	- -	- -	- -	- -	- -	- -
35 - 39	475	57	165	202	50	1	- -	- -	- -	- -
	63,711	51,608	60,327	68,111	$70,794	$69,077	- -	- -	- -	- -
40 - 44	451	22	86	120	189	34	- -	- -	- -	- -
	70,505	52,450	60,792	69,003	75,485	84,368	- -	- -	- -	- -
45 - 49	546	12	48	68	114	168	136	- -	- -	- -
	78,825	59,946	60,465	69,786	75,816	84,781	$86,657	- -	- -	- -
50 - 54	454	- -	17	30	29	72	244	62	- -	- -
	84,081	- -	61,700	70,035	75,732	85,583	87,191	$86,939	- -	- -
55 - 59	219	1	1	10	15	21	76	74	21	- -
	85,825	84,545	62,128	73,466	80,438	79,098	86,899	88,264	$90,987	- -
60 - 64	44	- -	4	2	1	2	16	12	4	3
	86,266	- -	75,597	70,089	85,271	87,475	86,888	87,199	94,090	$93,326
65 - 69	10	- -	1	- -	- -	1	2	1	1	4
	88,277	- -	60,480	- -	- -	98,991	94,270	84,029	102,990	86,935
70 & over	1	- -	- -	- -	- -	- -	- -	- -	- -	1
	111,596	- -	- -	- -	- -	- -	- -	- -	- -	111,596
Total	3,255	697	707	497	398	299	474	149	26	8
	$69,642	$52,831	$61,014	$68,580	$75,220	$84,541	$87,011	$87,598	$91,926	$92,415

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

EXHIBIT B-3 (Fire)

Members in Active Service as of December 31, 2016
By Age, Years of Service, and Average Computation Pay

		Years of Service								
Age	**Total**	**0 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40 & over**
Under 25	40	40	- -	- -	- -	- -	- -	- -	- -	- -
	$50,721	$50,721	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	195	156	39	- -	- -	- -	- -	- -	- -	- -
	54,269	52,745	$60,366	- -	- -	- -	- -	- -	- -	- -
30 - 34	346	136	196	14	- -	- -	- -	- -	- -	- -
	58,577	54,051	61,279	$64,712	- -	- -	- -	- -	- -	- -
35 - 39	315	69	131	85	30	- -	- -	- -	- -	- -
	63,237	53,688	60,909	69,861	$76,594	- -	- -	- -	- -	- -
40 - 44	280	7	48	82	124	19	- -	- -	- -	- -
	73,120	55,136	60,964	69,789	79,127	$85,630	- -	- -	- -	- -
45 - 49	211	4	2	28	70	88	18	1	- -	- -
	82,383	57,664	60,620	67,614	80,396	88,077	$91,690	$108,875	- -	- -
50 - 54	225	2	1	12	17	51	72	70	- -	- -
	86,100	53,916	66,865	73,487	77,675	86,336	87,973	89,405	- -	- -
55 - 59	168	2	- -	7	- -	14	37	89	19	- -
	86,840	140,594	- -	67,480	- -	80,295	86,757	87,972	$88,002	- -
60 - 64	53	- -	2	- -	- -	2	8	16	20	5
	87,613	- -	65,930	- -	- -	76,736	87,792	88,749	89,577	$88,861
65 - 69	12	- -	- -	- -	- -	2	- -	1	3	6
	93,626	- -	- -	- -	- -	86,714	- -	79,063	96,573	96,884
70 & over	4	1	- -	- -	- -	- -	- -	- -	1	2
	86,509	53,916	- -	- -	- -	- -	- -	- -	75,396	108,361
Total	1,849	417	419	228	241	176	135	177	43	13
	$70,703	$53,650	$61,075	$69,361	$79,078	$86,545	$88,125	$88,676	$89,039	$95,564

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

EXHIBIT C

Reconciliation of Member Data

	Active Members	Vested Former Members[1]	Disableds	Retired Members	Beneficiaries[1]	Total
Number as of January 1, 2016	5,415	200	151	2,964	1,067	9,797
New members	183	N/A	N/A	N/A	N/A	183
Terminations – with vested rights	-52	52	0	0	0	0
Terminations – without vested rights	-48	N/A	N/A	N/A	N/A	-48
Retirements	-284	-6	N/A	290	N/A	0
New disabilities	-1	0	1	N/A	N/A	0
Return to work	6	-1	0	0	N/A	5
Deceased	-7	0	-3	-66	-46	-122
New beneficiaries	0	0	0	0	69	69
Lump sum payoffs[2]	-108	-29	0	0	0	-137
Certain period expired	N/A	N/A	0	0	-12	-12
Data adjustments	0	-1	0	1	-1	-1
Number as of January 1, 2017	5,104	215	149	3,189	1,077	9,734

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

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

EXHIBIT D
Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended December 31, 2016		Year Ended December 31, 2015	
Net assets at actuarial value at the beginning of the year		$2,680,124,303		$3,695,273,876
Contribution income:				
Employer contributions	$119,423,106		$114,885,723	
Member contributions	25,518,317		25,676,327	
Less administrative expenses*	-9,492,445		0	
Net contribution income		135,448,978		140,562,050
Investment income:				
Interest, dividends and other income	$54,956,120		$73,557,008	
Recognition of capital appreciation	128,577,874		-383,825,484	
Less interest expense	-4,532,196		-6,005,609	
Less investment fees*	-11,683,217		-18,409,504	
Net investment income		167,318,581		-334,683,589
Total income available for benefits		$302,767,559		-$194,121,539
Less benefit payments:				
Benefit payments	-$821,737,799		-$283,217,455	
Refunds	-3,354,333		-1,785,719	
Net benefit payments		-$825,092,132		-$285,003,174
Change in actuarial asset method		$0		-$536,024,860
Change in actuarial value of assets		-$522,324,573		-$1,015,149,573
Net assets at actuarial value at the end of the year		$2,157,799,730		$2,680,124,303

* *The 2015 valuation year did not include an explicit administrative expense assumption; administrative expenses were included with investment fees*

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

EXHIBIT E

Summary Statement of Income and Expenses on a Market Value Basis

	Year Ended December 31, 2016		Year Ended December 31, 2015	
Net assets at market value at the beginning of the year[1]		$2,680,124,303		$3,079,394,897
Contribution income:				
Employer contributions	$119,423,106		$114,885,723	
Member contributions	25,518,317		25,676,327	
Less administrative expenses[2]	-9,492,445		0	
Net contribution income		135,448,978		140,562,050
Investment income:				
Interest, dividends and other income	$54,956,120		$73,557,008	
Recognition of capital appreciation	120,614,404		-303,971,365	
Less interest expense	-4,532,196		-6,005,609	
Less investment fees[2]	-11,683,217		-18,409,504	
Net investment income		159,355,111		-254,829,470
Total income available for benefits		$294,804,089		-$114,267,420
Less benefit payments:				
Benefit payments	-$821,737,799		-$283,217,455	
Refunds	-3,354,333		-1,785,719	
Net benefit payments		-$825,092,132		-$285,003,174
Change in market value of assets		-$530,288,043		-$399,270,594
Net assets at market value at the end of the year[1]		$2,149,836,260		$2,680,124,303

[1] *Based on preliminary unaudited assets*

[2] *The 2015 valuation year did not include an explicit administrative expense assumption; administrative expenses were included with investment fees*

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

EXHIBIT F

Summary Statement of Plan Assets

	Year Ended December 31, 2016		Year Ended December 31, 2015	
Cash equivalents and prepaid expenses		$324,575,667		$76,716,720
Invested securities lending collateral		21,494,665		93,566,804
Capital assets		11,943,266		12,103,670
Receivables		29,150,640		58,151,552
Investments:				
Real assets	$1,119,263,244		$1,127,163,418	
Fixed income securities	267,687,478		380,295,552	
Private equity	262,289,952		441,805,815	
Equity securities	153,397,855		436,644,700	
Alternative investments	133,798,219		392,177,664	
Other	6,811,004		29,384,494	
Total investments at market value		1,943,247,752		2,807,471,643
Total assets		$2,330,411,990		$3,048,010,389
Less liabilities		-$180,575,730		-$367,886,086
Net assets at market value*		$2,149,836,260		$2,680,124,303
Net assets at actuarial value		$2,157,799,730		$2,680,124,303

Note: DROP Account Balances reported for valuation purposes total $1,053,151,389, or 49.0% of the total assets of the System. This number may differ slightly from the final DROP balance stated in the System's year-end financial statements, due to subsequent adjustments. The difference is not material.

* *Based on preliminary unaudited assets*

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

EXHIBIT G

Development of the Fund Through December 31, 2016

Year Ended December 31	Employer Contributions	Member Contributions	Net Investment Return[1]	Administrative Expenses[2]	Benefit Payments[3]	Refunds	Actuarial Value of Assets at End of Year
2007	$97,440,007	$17,860,267	$312,669,979	$0	$130,995,067	$836,301	$3,258,627,218
2008	104,372,723	18,638,767	-199,538,242	0	142,075,673	357,628	3,039,667,165
2009	107,699,648	19,584,241	371,704,709	0	154,976,635	771,352	3,382,907,776
2010	108,060,956	19,790,189	90,332,398	0	169,458,531	813,965	3,430,818,823
2011	102,437,115	19,493,460	14,561,313	0	188,093,019	736,470	3,378,481,222
2012	103,310,264	22,490,884	493,841,725	0	203,099,511	N/A	3,795,024,584
2013	105,711,435	26,044,579	169,425,156	0	218,884,493	N/A	3,877,321,261
2014	109,791,512	28,969,429	-75,632,075	0	245,176,251	N/A	3,695,273,876
2015	114,885,723	25,676,327	-870,708,449	0	283,217,455	1,785,719	2,680,124,303
2016	119,423,106	25,518,317	167,318,581	9,492,445	821,737,799	3,354,333	2,157,799,730

[1] *Net of investment fees and administrative expenses prior to 2016; net of investment fees only beginning in 2016. Returns for years ended 2007-2014 were estimated based on prior actuarial valuations. Returns include the effect of changes in asset method for years ending 2012 and 2015.*

[2] *A separate administrative expense assumption did not exist prior to the 2016 valuation*

[3] *Includes refunds; breakdown between benefit payments and refunds not provided in the 2012-2014 valuations*

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

EXHIBIT H

Development of Unfunded Actuarial Accrued Liability for Year Ended December 31, 2016

1.	Unfunded actuarial accrued liability at beginning of year		$3,267,049,695
2.	Changes due to:		
	(a) Expected increase	33,686,755	
	(b) Actual contributions less than recommended	148,779,134	
	(c) Total		182,465,889
3.	Expected unfunded actuarial accrued liability		$3,449,515,584
4.	Net loss		55,556,817
5.	Unfunded actuarial accrued liability before changes		$3,505,072,401
6.	Changes due to:		
	(a) Assumption changes not related to plan changes	-$298,816,896	
	(b) Plan provisions changed in HB3158 and related assumption changes	-996,874,781	
	(c) Total		-1,295,691,677
7.	Unfunded actuarial accrued liability at end of year		$2,209,380,724
8.	Actuarial accrued liability at beginning of year		$5,947,173,998
9.	Loss as a percentage of actuarial accrued liability at beginning of year		0.93%

EXHIBIT I

Section 415 Limitations

Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan.

A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active members could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets.

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of $160,000 indexed for inflation. That limit is $210,000 for 2017. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each member's circumstances, for such things as form of benefits chosen and after tax contributions. There is no retirement age adjustment for public safety.

Benefits in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m).

Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard.

EXHIBIT J

Definitions of Pension Terms

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

Assumptions or Actuarial Assumptions: The estimates on which the cost of the Plan is calculated including:

(a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;

(b) Mortality rates — the death rates of members and pensioners; life expectancy is based on these rates;

(c) Retirement rates — the rate or probability of retirement at a given age;

(d) Withdrawal rates — the rates at which members of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Normal Cost: The amount of contributions required to fund the benefit allocated to the current year of service.

Actuarial Accrued Liability For Actives: The value of all projected benefit payments for current members less the portion that will be paid by future normal costs.

Actuarial Accrued Liability For Pensioners: The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

Unfunded Actuarial Accrued Liability: The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan. There is a wide range of approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System

Amortization of the Unfunded Actuarial Accrued Liability:	Payments made over a period of years equal in value to the Plan's unfunded actuarial accrued liability.
Investment Return:	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

EXHIBIT I

Summary of Actuarial Valuation Results

The valuation was made with respect to the following data supplied to us:

1.	Retired members as of the valuation date (including 1,077 beneficiaries in pay status and 41 beneficiaries who have DROP account balances only)		4,456
2.	Members inactive during year ended December 31, 2016 with vested rights (excluding inactive members with a DROP account balance)		215
3.	Members active during the year ended December 31, 2016		5,104
	Fully vested	3,978	
	Not vested	1,126	
4.	Terminated members due a refund of contributions		295

The actuarial factors as of the valuation date are as follows:

1.	Normal cost, including administrative expenses		$68,422,682
2.	Present value of future benefits		4,859,187,039
3.	Present value of future normal costs		492,006,585
4.	Actuarial accrued liability		4,367,180,454
	Retired members and beneficiaries*	$2,712,706,702	
	Inactive members with vested rights	20,959,808	
	Active members	1,632,343,097	
	Terminated members due a refund or contributions	1,170,847	
5.	Actuarial value of assets ($2,149,836,260 at market value – unaudited)		2,157,799,730
6.	Unfunded actuarial accrued liability		$2,209,380,724

**Includes beneficiaries with DROP account balances only*

EXHIBIT I (continued)

Summary of Actuarial Valuation Results

The determination of the actuarially determined employer contribution is as follows:

1.	Total normal cost	$58,766,591
2.	Administrative expenses	9,656,091
3.	Expected member contributions	-33,475,626
4.	Employer normal cost: (1) + (2) + (3)	$34,947,056
5.	Payment on unfunded actuarial accrued liability	128,110,992
6.	Actuarially determined employer contribution: (4) + (5), adjusted for timing	$168,865,484
7.	Total computation pay	$357,414,472
8.	Actuarially determined employer contribution as a percentage of total computation pay: (6) ÷ (7)	47.25%

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

EXHIBIT II

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b) - (a)] / (c)
01/01/2012	$3,378,481,222	$4,568,850,587	$1,190,369,365	73.95%	$349,494,994	340.60%
01/01/2013	3,795,024,584	4,858,205,631	1,063,181,047	78.12%	361,043,989	294.47%
01/01/2014	3,877,321,261	5,129,195,887	1,251,874,626	75.59%	377,943,454	331.23%
01/01/2015	3,695,273,876	5,792,216,025	2,096,942,149	63.80%	383,006,330	547.50%
01/01/2016	2,680,124,303	5,947,173,998	3,267,049,695	45.07%	365,210,426	894.57%
01/01/2017	2,157,799,730	4,367,180,454	2,209,380,724	49.41%	357,414,472	618.16%

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

EXHIBIT III

Funded Ratio

A critical piece of information regarding the System's financial status is the funded ratio. This ratio compares the actuarial value of assets to the actuarial accrued liabilities of the System as calculated. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors.

The chart below depicts a history of the funded ratios for this plan on both an actuarial value (AVA) and a market value (MVA) basis.

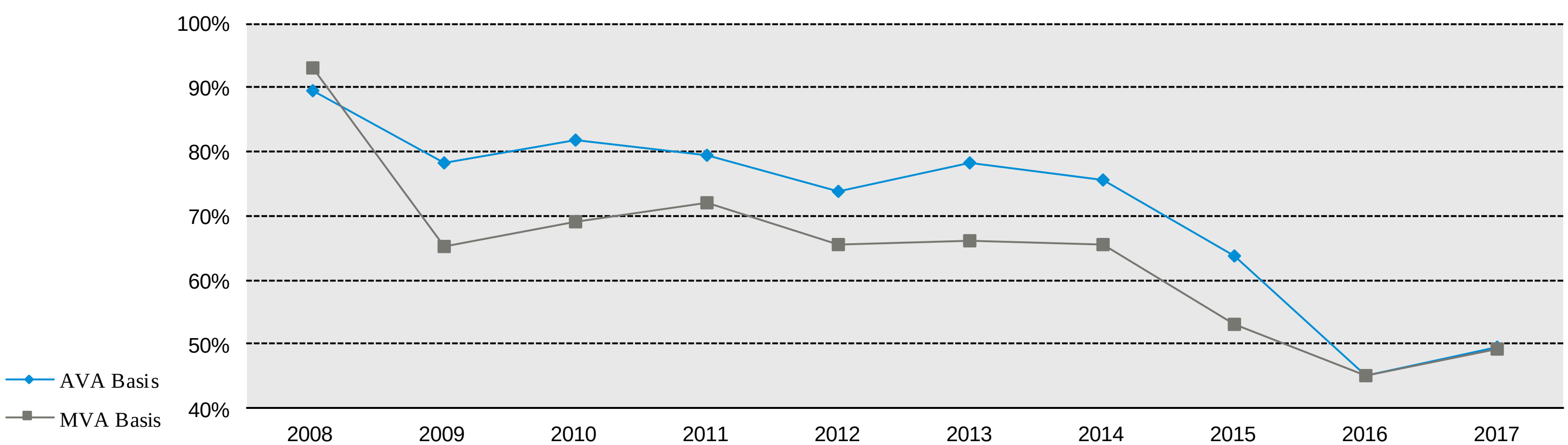


EXHIBIT IV

Actuarial Assumptions and Actuarial Cost Method

Rationale for Assumptions:	The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Experience Study Report for the five-year period ended December 31, 2014. Additional changes from the prior year related to the plan changes and modifications based on the Meet and Confer agreement are listed at the end of this exhibit.
Mortality Rates:	
Pre-retirement:	RP-2014 Employee Mortality Table, set back two years for males, projected generationally using Scale MP-2015
Healthy annuitants:	RP-2014 Blue Collar Healthy Annuitant Mortality Table, set forward two years for females, projected generationally using Scale MP-2015
Disabled annuitants:	RP-2014 Disabled Retiree Mortality Table, set back three years for males and females, projected generationally using Scale MP-2015
	The tables above, with adjustments as shown, reasonably reflect the mortality experience of the System as of the measurement date. The mortality tables were then generationally projected using Scale MP-2015 to anticipate future mortality improvement.

Mortality and Disability Rates before Retirement:

	Rate (%)			
	Mortality[1]		Disability[2]	
Age	Male	Female	Fire	Police
20	0.03	0.02	0.10	0.10
25	0.05	0.02	0.15	0.15
30	0.04	0.02	0.20	0.20
35	0.05	0.03	0.25	0.25
40	0.06	0.04	0.30	0.30
45	0.08	0.07	0.35	0.35
50	0.14	0.11	0.40	0.40
55	0.23	0.17	--	--
60	0.38	0.24	--	--
65	1.26	1.05	--	--
70	1.97	1.70	--	--
75	3.15	2.81	--	--
80	5.19	4.71	--	--

[1] *Rates shown do not include generational projection; rates beginning at age 65 are for healthy annuitants*
[2] *100% of disabilities are assumed to be service related*

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

Termination Rates Before Retirement:

Withdrawal Rate (%)		
Years of Service	Police	Fire
0	14.00	5.50
1	6.00	4.50
2	5.50	4.00
3	5.00	3.50
4	4.50	3.00
5	4.00	1.50
6	3.50	1.00
7	3.00	0.75
8	2.50	0.50
9	2.00	0.50
10-37	1.00	0.50
38 & over	0.00	0.00

Retirement Rates for 2017:

Police		Fire	
Age	Rate (%)	Age	Rate (%)
Under 50	1.00	Under 50	0.75
50-52	3.00	50-54	2.50
53-54	7.00	55-58	12.00
55	15.00	59-64	25.00
56-57	20.00	65-66	30.00
58-64	25.00	67	100.00
65-66	50.00		
67	100.00		

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

Retirement Rates beginning in 2018:

Current Active DROP Members

- If at least eight years in DROP as of January 1, 2017, 100% retirement rate in 2018
- If less than eight years in DROP as of January 1, 2017, 50% retirement rate in 2018

Non-DROP Active Members

Members hired prior to March 1, 2011 with less than 20 years of service as of September 1, 2017		Members hired prior to March 1, 2011 with at least 20 years of service as of September 1, 2017		Members hired on or after March 1, 2011	
Age	**Rate (%)**	**Age**	**Rate (%)**	**Age**	**Rate (%)**
Under 50	0	Under 50	1	Under 50	1
50	10	50	20	50	5
51	5	51	10	51	5
52	5	52	10	52	5
53	5	53	10	53	5
54	5	54	20	54	10
55	15	55	40	55	20
56	10	56	50	56	30
57	5	57	50	57	40
58	60	58	60	58	50
59	50	59	60	59	50
60	50	60	60	60	50
61	50	61	60	61	50
62 & over	100	62 & over	100	62 & over	100

100% retirement rate once the sum of age plus service equals 90
Current terminated vested members are assumed to retire at age 50
Future terminated vested members are assumed to retire at age 58

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

Interest on DROP Accounts:	6.00% per annum, until September 1, 2017 Beginning September 1, 2017: ➤ Annuitant account balances – 2.75% ➤ Active account balances as of September 1, 2017 – 2.75%, payable upon retirement ➤ Active account balances accrued after September 1, 2017 – 0.00%
Utilization of DROP:	0% of Police and Fire members are assumed to elect to enter the DROP
Period in DROP:	Current DROP members with at least eight years in the DROP as of January 1, 2017 are assumed to retire in 2018. Current DROP members with less than eight years in DROP as of January 1, 2017 are assumed to retire once they have been in DROP for eight years.
DROP Payment Period:	Based on expected lifetime as of the later of September 1, 2017 or retirement date. Expected lifetime determined based on an 85%/15% male/female blend of the current healthy annuitant mortality tables.
Unknown Data for Members:	Same age and service as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Percent Married:	75%
Age of Spouse/Children:	Females are assumed to be three years younger than males The youngest child is assumed to be ten years old
Retiree Form of Payment:	100% of married members are assumed to elect a Joint and Survivor annuity
Net Investment Return:	7.25% The net investment return assumption was chosen by the Pension System's Board of Trustees, with input from the actuary. This assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the System's target asset allocation.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

Payroll Growth: 2.75%

Salary Scale for 2017 – 2019:

2017 – 10% if less than 10 years, 7% if 10 – 11 years, 2% if more than 11 years
2018 – 5% if less than 10 years, 2% if more than 10 years
2019 – 10% if less than 10 years, 7% if 10 – 11 years, 2% if more than 11 years

Salary Scale for 2020 and after:

	Rate (%)	
Years of Service	Police	Fire
1	5.20	5.20
2	5.00	5.05
3	4.80	4.90
4	4.60	4.75
5	4.40	4.60
6	4.20	4.45
7	4.00	4.30
8	3.80	4.15
9	3.60	4.00
10	3.40	3.85
11	3.20	3.70
12	3.00	3.55
13	3.00	3.40
14	3.00	3.25
15	3.00	3.10
16 & over	3.00	3.00

Includes allowance for inflation of 2.75% per year.

The salary scale assumption is based on the City's pay plan, along with analysis completed in conjunction with an Experience Study Report for the five-year period ended December 31, 2014. The salary scale for 2017 – 2019 is based on the Meet and Confer agreement.

Cost-of-living adjustment:	
Prior to October 1, 2049:	0.00%
Beginning October 1, 2049:	2.00%, on original benefit The assumption for the year the COLA begins will be updated on an annual basis and set equal to the year the System is projected to be 70% funded on a market value basis after the COLA is reflected.
Administrative Expenses:	$10,000,000 per year, payable monthly (equivalent to $9,656,091 at the beginning of the year) or 1% of computation pay, if greater
Actuarial Value of Assets:	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a five-year period, further adjusted, if necessary, to be within 20% of the market value.
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is the age at the time the member commenced employment. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis, with Normal Cost determined as if the current benefit accrual rate had always been in effect. Actuarial Liability is allocated by salary.
Amortization Methodology:	The actuarially determined contribution is calculated using a 30-year amortization of unfunded actuarially accrued liability. The 2018 actuarial valuation will also use a 30-year amortization period, at which point the amortization period will be closed and reduced by one year with each subsequent valuation.
Change in Assumptions	The following assumption changes are not related to the plan changes: ➤ The salary scale was modified for valuation years 2017 - 2019 in accordance with the Meet and Confer Agreement ➤ DROP interest is assumed to decline from 6.00% to 5.00% effective October 1, 2017, and to 0.00% effective October 1, 2018, per Section 6.14(c) of the plan document as amended and restated through April 16, 2015

The following assumption changes were proposed by the actuary and presented to the Board as part of the plan design work that is incorporated in this valuation. These changes are reflected for the first time in this valuation.

- The administrative expense assumption was changed from $10 million per year to the greater of $10 million per year or 1% of computation pay
- The DROP utilization factor was changed from 100% to 0%
- Current DROP members with at least eight years in the DROP as of January 1, 2017 are assumed to retire in 2018. Current DROP members with less than eight years in the DROP as of January 1, 2017 are assumed to retire once they have been in DROP for eight years.
- Retirement rates were changed effective January 1, 2018
- 100% retirement rate once the sum of age plus service equals 90
- New terminated vested members are assumed to retire at age 58
- Beginning September 1, 2017, DROP account balances for annuitants are assumed to earn 2.75% interest; DROP account balances as of September 1, 2017 for active members are assumed to earn 2.75% interest upon retirement; DROP account balances accrued after September 1, 2017 do not earn interest.
- DROP payment period based on an 85%/15% male/female blend of the current healthy annuitant mortality tables
- COLA assumed to be a 2.00% COLA beginning October 1, 2049 and payable every October 1 thereafter

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

EXHIBIT V

Summary of Plan Provisions – Members Whose Participation Began Before March 1, 2011

This exhibit summarizes the major provisions of the Dallas Police and Fire Pension System included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions. This valuation includes many plan changes not effective until September 1, 2017; the new provisions are listed in this summary.

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

Normal Retirement – Benefit Earned Prior to September 1, 2017:

Age Requirement	50
Service Requirement	5
Amount	The greater of 3% of Average Computation Pay times years of Pension Service (maximum 96.0%) and $2,200 per month. The $2,200 per month minimum benefit is prorated if the Member retires with less than 20 years of service. Average Computation Pay uses the 36 consecutive months that reflects the highest civil service rank held by a member plus Educational Incentive Pay plus Longevity Pay plus City Service Incentive Pay.

Normal Retirement – Benefit Earned Beginning September 1, 2017:

Age Requirement	58
Service Requirement	5
Amount	The greater of 2.5% of Average Computation Pay times years of Pension Service (maximum 90.0%) and $2,200 per month. The $2,200 per month minimum benefit is prorated if the Member retires with less than 20 years of service. Average Computation Pay uses the 60 consecutive months that reflects the highest civil service rank held by a member plus Educational Incentive Pay plus Longevity Pay plus City Service Incentive Pay.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

20 and Out Reduced Retirement – If Eligible as of September 1, 2017:

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

Benefit Accrued by September 1, 2017
20 & Out Table 1

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

Benefit Accrued Beginning September 1, 2017
20 & Out Table 2

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

20 and Out Reduced Retirement – If Not Eligible as of September 1, 2017:

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

20 & Out Table 2

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

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

Early Retirement – If at least age 45 and less than age 50 as of September 1, 2017:	
Age Requirement	45
Service Requirement	5
Amount	Normal pension accrued prior to September 1, 2017 plus the benefit accrued based on the 20 & Out Table 2 for service beginning September 1, 2017, reduced by 2/3 of 1% for each whole month by which the benefit commencement date precedes the normal retirement date.
Early Retirement – If reach age 53 after September 1, 2017:	
Age Requirement	53
Service Requirement	5
Amount	Normal pension accrued prior to September 1, 2017 plus the benefit accrued based on the 20 & Out Table 2 for service beginning September 1, 2017. The benefit will be reduced by 2/3 of 1% per month from age 58 for the post-September 1, 2017 benefit.
Non-Service Connected Disability:	
Eligibility	Injury or illness (lasting more than 90 days) not related to or incurred while in the performance of the member's job, preventing the member from performing their departmental duties.
Amount	3% of Average Computation Pay for service earned prior to September 1, 2017 and the applicable benefit multiplier from 20 & Out Table 2 times Average Computation Pay for service earned beginning September 1, 2017
Service-Connected Disability:	
Eligibility	Injury or illness (lasting more than 90 days) obtained while on duty in the performance of the member's job.
Amount	3% of Average Computation Pay for service earned prior to September 1, 2017 and the applicable benefit multiplier from 20 & Out Table 2 times Average Computation Pay for service earned beginning September 1, 2017; if the member has less than 20 years of service, the benefit will be calculated as if they had 20 years at the time of disability.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

Benefit Supplement:	
Age Requirement	55
Service Requirement	20 years, waived if member is receiving a service-connected disability
Amount	3% of the total monthly benefit (including any applicable COLA's) payable to the Member when the Member attains age 55. The benefit supplement shall not be less than $75 per month. Beginning September 1, 2017, only those annuitants already receiving the supplement will be eligible to maintain their current supplement, which will not change ongoing; future retirees will not be eligible for the supplement.
Termination Benefit:	
With less than five years of pension service	Upon request, the member's contributions will be returned without interest.
At least five years of pension service	The member may either withdraw contributions or leave contributions in the Plan and receive a monthly benefit to commence no earlier than the member's earliest eligibility for retirement benefits. Retirement benefit is equal to the accrued benefit as of the date of termination.
Pre-Retirement Death Benefit:	
While in active service	The greater of 50% of the Member's accrued benefit or a benefit based on 20 years of service. The benefit may not exceed 45% of Average Computation Pay.
After leaving active service, with fewer than five years	A lump sum benefit equal to the return of member contributions with interest.
After leaving active service, with at least five years	50% of the Member's accrued benefit, with no early retirement reduction
Post-Retirement Death Benefit:	50% of the pension the Member was receiving at the time of their death

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

Qualified Surviving Children Benefit:	50% of the pension the Member was receiving at the time of their death, divided equally among the children, paid until the youngest child is 19 years old or for life if the child becomes handicapped prior to age 23
Minimum Survivor Benefit:	$1,100 per month, not to exceed the actual amount the Member was receiving upon their death. If there are no Qualified Surviving Children, the minimum benefit to a spouse who is a Qualified Survivor shall be $1,200 per month. If the Member had less than 20 years of Pension Service, the minimum benefit will be prorated based on actual years of Pension Service.
Special Survivor Benefit:	
Eligibility	Upon leaving active service or joining DROP: a) the Member was at least 55 years old with at least 20 years of pension service, or b) the sum of the Member's age plus Pension Service was at least 78; **and** Has no Qualified Surviving Children or handicapped children currently eligible for survivor benefits; **and** Whose Qualified Surviving Spouse is at least 55 years old. The Qualified Surviving Spouse does not have to be 55 years old at the time of the Member's death.
Amount	Once all the eligibility conditions are met, the amount the Qualified Surviving Spouse will receive increases from 50% of the Member's pension benefit to a percentage of the Member's pension benefit based on 3% times the number of years of Pension Service the Member worked.
Survivor Benefit if No Qualified Surviving Spouse:	A lump sum that is the actuarial equivalent of 120 monthly payments of the greater of: 50% of the Member's pension benefit at the time of their death, or a benefit based on 20 years of the Member's service.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

DROP:	
Eligibility	Members in active service who are retirement eligible may elect to enter the Deferred Retirement Option Plan (DROP).
Distribution	$3,000/month, if requested, for March 31, 2017 through the month prior to the start of lifetime annuitization. Once the Board has approved the life expectancy tables and interest rates, but no earlier than September 1, 2017, the DROP account balance will be paid over the expected future lifetime of annuitants as of September 1, 2017, and over the expected future lifetime based on the age at retirement of those who retire with a DROP account balance after September 1, 2017.
Interest	The benefit will be accumulated at a rate of 6.0% from October 1, 2016 to August 31, 2017. Beginning September 1, 2017, interest will be determined based on the expected lifetime of the member at retirement. The Board of Trustees will set the interest rates.
Cost-of-Living Adjustments:	The Board may grant an ad hoc COLA based on the actual market return over the prior five years less 5%, not to exceed 4% of the base benefit, if, after granting a COLA, the funded ratio on a market value of assets basis is no less than 70%.
Member Contributions:	January 1, 2017 through August 31, 2017 8.5% of computation pay if not participating in DROP 4.0% of computation pay if participating in DROP Effective September 1, 2017 13.5% of computation pay for all members
Changes in Plan Provisions:	The plan provisions listed in this section reflect the changes effective September 1, 2017 as summarized in Section 1.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

EXHIBIT V

Summary of Plan Provisions – Members Whose Participation Began on or After March 1, 2011

Normal Retirement:

Age Requirement	55
Service Requirement	5
Amount	2.5% of Average Computation Pay for each year of Pension Service, maximum 90% The minimum monthly benefit is $110 times the number of years of Pension Service at retirement, but not greater than $2,200. Average Computation Pay uses the 60 consecutive months that reflects the highest civil service rank held by a member plus Educational Incentive Pay plus Longevity Pay plus City Service Incentive Pay.

Early Retirement:

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

20 and Out Reduced Retirement:

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

20 & Out Table 2

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

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

Non-Service Connected Disability:	
Eligibility	Injury or illness (lasting more than 90 days) not related to or incurred while in the performance of the member's job, preventing the member from performing their departmental duties..
Amount	The Member's accrued benefit, but not less than a pro-rated minimum benefit.
Service-Connected Disability:	
Eligibility	Injury or illness (lasting more than 90 days) obtained while on duty in the performance of the member's job.
Amount	The greater of 50% of Average Computation Pay and the Member's accrued benefit.
Termination Benefit:	
With less than five years of service	Upon request, the member's contributions will be returned without interest.
After five years of service	The member may either withdraw contributions or leave contributions in the Plan and receive a monthly benefit to commence no earlier than the member's earliest eligibility for retirement benefits. Retirement benefit is equal to the accrued benefit as of the date of termination.
Pre-retirement Death Benefit:	
While in active service	The greater of 50% of the Member's accrued benefit or a benefit based on 20 years of service. The benefit may not exceed 45% of Average Computation Pay.
After leaving active service, with less than five years	A lump sum benefit equal to the return of member contributions with interest.
After leaving active service, with at least five years	50% of the Member's accrued benefit, with no early retirement reduction
Post-Retirement Death Benefit:	50% of the pension the Member was receiving at the time of their death

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

Qualified Surviving Children Benefit:	50% of the pension the Member was receiving at the time of their death, divided equally among the children, paid until the youngest child is 19 years old or for life if the child becomes handicapped prior to age 23.
Minimum Survivor Benefit:	$1,100 per month, not to exceed the actual amount the Member was receiving upon their death. If there are no Qualified Surviving Children, the minimum benefit to a spouse who is a Qualified Survivor shall be $1,200 per month. If the Member had less than 20 years of Pension Service, the minimum benefit will be prorated based on actual years of Pension Service.
Special Survivor Benefit:	
Eligibility	Upon leaving active service or joining DROP: a) the Member was at least 55 years old with at least 20 years of pension service, or b) the sum of the Member's age plus Pension Service was at least 78; **and** Has no Qualified Surviving Children or handicapped children currently eligible for survivor benefits; **and** Whose Qualified Surviving Spouse is at least 55 years old. The Qualified Surviving Spouse does not have to be 55 years old at the time of the Member's death.
Amount	Once all the eligibility conditions are met, the amount the Qualified Surviving Spouse will receive increases from 50% of the Member's pension benefit to a percentage of the Member's pension benefit based on 2.5% times the number of years of Pension Service the Member worked.
Survivor Benefit if No Qualified Surviving Spouse:	A lump sum that is the actuarial equivalent of 120 monthly payments of the greater of: 50% of the Member's pension benefit at the time of their death, or a benefit based on 20 years of the Member's service.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System

DROP:	
Eligibility	Members in active service who are retirement eligible may elect to enter the Deferred Retirement Option Plan (DROP).
Distribution	$3,000/month, if requested, for March 31, 2017 through the month prior to the start of lifetime annuitization. Once the Board has approved the life expectancy tables and interest rates, but no earlier than September 1, 2017, the DROP account balance will be paid over the expected future lifetime of annuitants as of September 1, 2017, and over the expected future lifetime based on the age at retirement of those who retire with a DROP account balance after September 1, 2017.
Interest	The benefit will be accumulated at a rate of 6.0% from October 1, 2016 to August 31, 2017. Beginning September 1, 2017, interest will be determined based on the expected lifetime of the member at retirement. The Board of Trustees will set the interest rates.
COLA:	The Board may grant an ad hoc COLA based on the actual market return over the prior five years less 5%, not to exceed 4% of the base benefit, if, after granting a COLA, the funded ratio on a market value of assets basis is no less than 70%.
Member Contributions:	<u>January 1, 2017 through August 31, 2017</u> 8.5% of computation pay if not participating in DROP 4.0% of computation pay if participating in DROP <u>Effective September 1, 2017</u> 13.5% of computation pay for all members
Changes in Plan Provisions:	The plan provisions listed in this section reflect the changes effective September 1, 2017 as summarized in Section 1.

SECTION 5: GASB Information for Dallas Police and Fire Pension System

EXHIBIT 1

Net Pension Liability

The components of the net pension liability of the Pension System at December 31, 2016 were as follows:

Total pension liability	$8,450,280,896
System fiduciary net position*	2,150,661,803
System's net pension liability	$6,299,619,093
System fiduciary net position as a percentage of the total pension liability	25.45%

**Assets differ from those used in the actuarial valuation*

Plan changes effective September 1, 2017 are not included in the net pension liability as of December 31, 2016. Had these plan changes been included, the December 31, 2016 Net Pension Liability would be approximately $4.1 billion.

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of January 1, 2017, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.75%
Real rate of return	4.50%
Investment rate of return	7.25%, net of investment expense, including inflation

The actuarial assumptions used in the January 1, 2017 valuation were based on the results of an experience study of the Pension System for the period January 1, 2010 to December 31, 2014, and based on assumption changes included in the January 1, 2017 valuation. The December 31, 2016 Total Pension Liability does not include assumption changes in the January 1, 2017 valuation that are related to the plan changes effective September 1, 2017. Assumptions are detailed in Exhibit V in Section 4 of this valuation report.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the System's target asset allocation are summarized in the table on the next page (net of inflation). This target allocation was approved by the Board of Trustees for the System on March 10, 2016.

SECTION 5: GASB Information for Dallas Police and Fire Pension System

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Global Equity	20%	6.87%
Emerging Market Equity	5%	9.42%
Private Equity	5%	10.47%
Short-Term Core Bonds	2%	1.35%
Global Bonds	3%	1.38%
High Yield and Bank Loans	11%	4.09%
Structured Credit and Absolute Return	6%	5.67%
Emerging Markets Debt	6%	4.71%
Private Debt	5%	7.69%
Natural Resources	5%	7.63%
Infrastructure	5%	6.25%
Real Estate	12%	5.00%
Liquid Real Assets	3%	4.43%
Asset Allocation	10%	4.90%
Cash	2%	1.06%
Total	100%	

*As provided by Segal Marco Advisors, a member of The Segal Group

Discount rate: The discount rate used to measure the total pension liability was 4.12%. The projection of cash flows used to determine the discount rate assumed City and plan member contributions will be made at the current contribution rate: 27.50% of pay, including overtime and non-computation pay, from the City, 8.50% of computation pay from the members who have not elected DROP and 4.00% of computation pay from the members who have elected DROP. Total computation pay is projected to grow at 2.75% annually. The normal cost rate for future members is assumed to be 11.85% for all years. Based on those assumptions, the System's fiduciary net position was not projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to the first 12 periods of projected benefit payments and a 3.78% municipal bond rate was applied for all periods thereafter. The 3.78% municipal bond rate is based on an index of 20-year, tax-exempt general obligation bonds, published weekly by the

Federal Reserve. (The chosen rate is the Bond Buyer 20-Bond GO Index rate published closest to, but not later than, the measurement date of December 31, 2016.)

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

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the Dallas Police and Fire Pension System, calculated using the discount rate of 4.12%, as well as what the Dallas Police and Fire's net pension liability would be if it were calculated using a discount rate that is one-percentage-point lower (3.12%) or one-percentage-point higher (5.12%) than the current rate:

	1% Decrease (3.12%)	Current Discount (4.12%)	1% Increase (5.12%)
Dallas Police and Fire's net pension liability	$7,746,687,763	$6,299,619,093	$5,159,477,958

SECTION 5: GASB Information for Dallas Police and Fire Pension System

EXHIBIT 2
Schedules of Changes in Net Pension Liability – Last Two Fiscal Years

	2016	2015
Total pension liability		
Service cost	$167,432,312	$125,440,684
Interest	360,567,435	359,023,651
Changes of benefit terms	0	0
Differences between expected and actual experience	-77,462,935	379,460,954
Changes of assumptions	-712,003,982	908,988,241
Benefit payments, including refunds of member contributions	-825,092,132	-285,003,174
Net change in total pension liability	-$1,086,559,302	$1,487,910,356
Total pension liability – beginning	9,536,840,198	8,048,929,842
Total pension liability – ending (a)	$8,450,280,896	$9,536,840,198
Plan fiduciary net position		
Contributions – employer	$119,345,000*	$114,885,723
Contributions – member	25,518,317	25,676,327
Net investment and other income	164,790,956	-235,206,910
Benefit payments, including refunds of member contributions	-825,092,132	-285,003,174
Administrative expense	-9,492,445	-8,417,520
Interest expense	-4,532,196	-6,005,609
Net change in plan fiduciary net position	-$529,462,500	-$394,071,163
Plan fiduciary net position – beginning	2,680,124,303	3,074,195,466
Plan fiduciary net position – ending (b)	$2,150,661,803*	$2,680,124,303
System's net pension liability – ending (a) – (b)	$6,299,619,093	$6,856,715,895
Plan fiduciary net position as a percentage of the total pension liability	25.45%	28.10%
Covered employee payroll	$357,414,472	$365,210,426
System's net pension liability as percentage of covered employee payroll	1,762.55%	1,877.47%

Notes to Schedule:

** Assets and employer contributions differ from those used in the actuarial valuation*

Benefit changes: There have not been any changes in plan provisions reflected for the first time in this December 31, 2016 GASB 67 disclosure.

Change of Assumptions: The blended discount rate increased from 3.95% to 4.12%, with a liability impact of -$221,794,888. Section 4, Exhibit IV lists other assumption changes not related to plan changes effective September 1, 2017; these other assumption changes decreased liability by $490,209,094.

SECTION 5: GASB Information for Dallas Police and Fire Pension System

EXHIBIT 3

Schedule of City's Contributions – Last Two Fiscal Years

Year Ended December 31	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions[1]	Contribution Deficiency (Excess)	Covered-Employee Payroll	Contributions as a Percentage of Covered Employee Payroll
2015[2]	--	$114,885,723	--	$383,006,330	31.46%
2016	$261,859,079	119,345,000	$142,514,079	365,210,426	32.68

[1]*The City's contributions are based on statutory rates set by state law and not on Actuarially Determined Contributions*

[2]*The Actuarially Determined Contribution was not directly calculated as a dollar amount by the prior actuary for the year ended 2015*

SECTION 5: GASB Information for Dallas Police and Fire Pension System

EXHIBIT 4

Notes to Required Supplementary Information

Valuation date	Actuarially determined contributions are calculated as of January 1, 2016, the beginning of the year for which they are payable
Methods and used assumptions to determine contribution rates:	
Actuarial cost method	Entry age
Amortization method	30-year level percent of covered payroll, open
Remaining amortization period	Infinite as of January 1, 2016
Asset valuation method	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a five-year period.
Key actuarial assumptions for 2016 actuarially determined contribution*:	
Investment rate of return	7.25%, net of all expenses
Inflation rate	2.75%
Projected salary increases	Inflation plus merit increases, varying by gorup and service, ranging from 0.25% to 2.45%.
Cost of living adjustments	4.00%
Payroll growth rate	2.75% per annum used to amortize unfunded actuarial liabilities.
Retirement	Group-specific rates based on age
Mortality	*Pre-retirement*: Sex-distinct RP-2014 Employee Mortality Table, set back two years for males, projected generationally using Scale MP-2015 *Healthy annuitants*: Sex-distinct RP-2014 Healthy Annuitant Mortality Table, set forward two years for females, projected generationally using Scale MP-2015 *Disabled annuitants*: Sex-distinct RP-2014 Disabled Retiree Mortality Table, set back three years for males and females, projected generationally using Scale MP-2015
Annualized DROP account returns	7.0% at October 1, 2015 6.0% at October 1, 2016 5.0% at October 1, 2017 and thereafter
DROP entry	Age 50 with 5 years of service. Any active members who satisfy these criteria and have not entered DROP are assumed never to join DROP. Active members who retire with a DROP account are assumed to receive the balance of their account over a 10-year time period.

*Assumptions differ from those used in determination of the December 31, 2016 Total Pension Liability

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Segal Consulting

Dallas Police and Fire Pension System Supplemental Plan

Actuarial Valuation and Review as of January 1, 2017

Segal Consulting
2018 Powers Ferry Road, Suite 850 Atlanta, GA 30339
T 678.306.3100 www.segalco.com

July 10, 2017

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

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of January 1, 2017. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience and establishes the funding requirements for 2017.

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

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and we meet the Qualification Standards to render the actuarial opinion herein. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board of Trustees are reasonably related to the experience of and the expectations for the Plan. Since the members in this Supplemental Plan are a subset of the Dallas Police and Fire Pension System Combined Pension Plan, and since the assets are invested together, the same assumptions are used for both. Changes impacting the larger plan will impact this one as well.

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

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By:

Leon F. (Rocky) Joyner, FCA, ASA, MAAA, EA
Vice President and Consulting Actuary

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

Deborah K. Brigham

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

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Segal Consulting

SECTION 1: Valuation Summary for the Dallas Police and Fire Pension System Supplemental Plan

Purpose

This report has been prepared by Segal Consulting to present a valuation of the Dallas Police and Fire Pension System Supplemental Plan as of January 1, 2017. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of the Pension Plan, as administered by the Board;
- The characteristics of covered active members, retired members and beneficiaries as of December 31, 2016, provided by the System's IT Department;
- The assets of the Supplemental Plan as of December 31, 2016, provided by the System's Finance Department;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding member terminations, retirement, death, etc.

The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Experience Study Report for the five-year period ended December 31, 2014. Assumption changes were made in the January 1, 2017 valuation related to the salary scale and DROP interest. Additional assumption changes were made as part of the plan changes effective September 1, 2017. Changes from the prior year are listed at the end of this exhibit.

Significant Issues in Valuation Year

1. The total actuarially determined contribution (City and member) declined from $3,100,770, or 427.99% of supplemental computation pay for 2016 to $2,132,807, or 406.21% of supplemental computation pay for 2017. The decline is due to significant plan changes approved by the Texas Legislature in May 2017 and effective September 1, 2017; these plan changes have been included in this valuation. The City's portion of the actuarially determined contribution, based on the City's normal cost plus a ten-year amortization of the unfunded actuarial accrued liability, decreased from $3,063,584 to $2,086,639.
2. On May 31, 2017, the Governor of Texas signed HB3158 into law. HB3158 amends Article 6243a-1 of the Texas Statues and provides changes to the pension benefits provided by the Dallas Police & Fire Pension System, which also changes the Supplemental Plan, as well as changes to the contributions required by both plan members and the City of Dallas. Both the plan and contribution changes, which are effective September 1, 2017, are reflected in the January 1, 2017 actuarial valuation. A complete listing of the plan changes effective September 1, 2017 can be found on the System's website, www.dpfp.org. A summary of the major changes is as follows:

- Normal Retirement Age increased from either age 50 or 55 to age 58
- Early Retirement Age increased from age 45 for members hired prior to March 1, 2011 to age 53 for all members
- Benefit multiplier for all future service for members hired prior to March 1, 2011 lowered from 3.00% to 2.50%
- Benefit multiplier retroactively increased to 2.50% for members hired on or after March 1, 2011
- Benefit multipliers for 20 & Out benefit lowered and begin at later ages
- Maximum benefit reduced from 96% of computation pay to 90% of computation pay for members hired prior to March 1, 2011
- Average computation pay period changed from 36 months to 60 months for future service for members hired prior to March 1, 2011
- COLA discontinued for all members. The Board may choose to provide a COLA if the funded ratio on a market value basis is at least 70% after the implementation of a COLA.
- The supplemental benefit is eliminated prospectively; only those for whom the supplement was already granted as of September 1, 2017 will maintain the supplement
- Active DROP participation is limited to 10 years
- DROP interest for active DROP members will cease after September 1, 2017; only the balance as of September 1, 2017 will be eligible for interest once active DROP members retire
- Retirees with DROP accounts as of September 1, 2017 will have their DROP account balances paid out over their expected lifetime based on their age as of September 1, 2017
- Future retirees with DROP accounts will have their DROP account balances paid out over their expected lifetime as of the date of their retirement
- Interest on retiree DROP accounts will be paid based on the length of the retiree’s expected lifetime and will be based on U.S. Treasury rates which correlate to expected lifetime, as determined by the Board of Trustees; interest is only payable on the September 1, 2017 account balance
- Member contributions for both DROP and non-DROP members increased to 13.5% effective September 1, 2017

3. The following assumption changes were proposed by the actuary and presented to the System as part of the plan design work that is incorporated in this valuation. These changes are reflected for the first time in this valuation.

   - The DROP utilization factor was changed from 100% to 0%

SECTION 1: Valuation Summary for the Dallas Police and Fire Pension System Supplemental Plan

- Current DROP members with at least eight years in the DROP as of January 1, 2017 are assumed to retire in 2018. Current DROP members with less than eight years in DROP as of January 1, 2017 are assumed to retire once they have been in the DROP for eight years.
- Retirement rates were changed effective January 1, 2018
- 100% retirement rate once the projected sum of age plus service equals 90
- New terminated vested members are assumed to retire at age 58
- Beginning September 1, 2017, DROP account balances for annuitants are assumed to earn 2.75% interest; DROP account balances as of September 1, 2017 for active members are assumed to earn 2.75% interest upon retirement; DROP account balances accrued after September 1, 2017 do not earn interest.
- DROP payment period based on an 85%/15% male/female blend of the current healthy annuitant mortality tables
- COLA assumed to be a 2.00% COLA beginning October 1, 2049 and payable every October 1 thereafter

4. Prior to the 2017 legislative session, the City and bargaining parties signed a new Meet and Confer Agreement. To reflect the expected impact of this agreement on member salaries, the assumed salary scale rates were revised through 2019. In addition, the assumed DROP interest was changed to 0% as of October 1, 2018 as a result of Section 6.14(c) of the plan document as amended and restated through April 16, 2015. These assumption changes are not related to the plan changes effective September 1, 2017.

5. The reconciliation of the City's actuarially determined employer contribution (ADEC), on a 10-year amortization basis, from the January 1, 2016 valuation to the January 1, 2017 valuation is shown below.

January 1, 2016 ADEC	**$3,063,584**, or **422.85%** of computation pay
January 1, 2017 ADEC, prior to any assumption or plan changes	**$3,077,320**, or **580.47%** of computation pay
January 1, 2017 ADEC, after assumption changes not related to plan changes	**$2,917,938**, or **555.75%** of computation pay
January 1, 2017 ADEC, after plan changes	**$2,086,639**, or **397.42%** of computation pay

Chart 14 on page 13 provides further details of the ADEC reconciliation.

SECTION 1: Valuation Summary for the Dallas Police and Fire Pension System Supplemental Plan

6. The market value of assets declined from $19,456,706 as of December 31, 2015 to $17,663,539 as of December 31, 2016, based on unaudited assets. Over the same timeframe, total DROP account balances declined from $10,901,587 to $8,016,290.
7. The rate of return on the market value of assets was 6.55% for the year ended December 31, 2016. Compared to the return assumption of 7.25%, there was a minor loss ($126,444 or 0.31% of pre-plan change liability) due to asset performance. The net experience loss from sources other than investment experience was $1,244,538 (3.05% of pre-plan change liability). A discussion of non-investment experience is on page 11 of the valuation report.
8. Financial information provided for the valuation, including the December 31, 2016 market value of assets and City and member contributions, is based on preliminary unaudited assets and may subsequently change once the audit is finalized. Audited assets are not expected to be materially different from those used in the valuation.
9. Total supplemental computation pay declined by approximately $200,000, or almost 28%, from the prior year. This decline in supplemental computation pay was confirmed with System staff and reflects retirements in the year as well as the excess pay nature of the Supplemental Plan.
10. The funded ratio has increased from 45.80% as of January 1, 2016 to 52.91% as of January 1, 2017 as a result of the plan changes and the assumptions related to the plan changes.
11. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the System’s funding policy. Section 5 provides the accounting information for Governmental Accounting Standards Board Statement No. 67 disclosures as of December 31, 2016. The Net Pension Liability (NPL) is equal to the difference between the Total Pension Liability (TPL) and the Plan’s fiduciary net position (equal to the market value of assets). The TPL is calculated based on a discount rate of 7.10%, which reflects a blending of the 7.25% funding rate and a 20-year municipal bond rate of 3.78%. The NPL as of December 31, 2016 is $22,977,344, a decline of $955,053 from the December 31, 2015 NPL of $23,932,397. (Plan changes effective September 1, 2017 are not included in the Net Pension Liability as of December 31, 2016. Had these plan changes been included, the December 31, 2016 Net Pension Liability would be approximately $16.2 million.)
12. The actuarial valuation report as of January 1, 2017 is based on financial and demographic information as of that date. Changes subsequent to that date are not reflected and will affect future actuarial costs of the Plan. Since actuarial results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience may differ from expected experience.

SECTION 1: Valuation Summary for the Dallas Police and Fire Pension System Supplemental Plan

Summary of Key Valuation Results

	2017, after Plan changes	2017, prior to Plan changes	2016
Contributions for plan year beginning January 1, adjusted for timing:			
Total actuarially determined contribution (City and member)	$2,132,808	$2,950,489	$3,100,771
Expected member contributions	46,169	32,551	37,187
City's actuarially determined employer contribution (ADEC)	2,086,639	2,917,938	3,063,584
City's ADEC as a percentage of total supplemental computation pay	397.42%	555.75%	422.85%
Actual contributions (City and member)	--	--	$3,020,090
Amortization period for determination of ADEC	10 years	10 years	10 years
Funding elements for plan year beginning January 1:			
Employer normal cost, including administrative expenses	$122,779	$171,928	$187,191
Actuarial (market) value of assets	17,663,539	17,663,539	19,456,706
Actuarial accrued liability	33,383,834	39,644,706	42,479,534
Unfunded actuarial accrued liability (UAAL)	15,720,295	21,981,167	23,022,828
Funded ratio	52.91%	44.55%	45.80%
Demographic data for plan year beginning January 1:			
Number of retired members and beneficiaries	128	128	124
Number of active members	47	47	45
Total supplemental computation pay	$525,048	$525,048	$724,503
Average supplemental computation pay	11,171	11,177	16,100

Important Information About Actuarial Valuations

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

In order to prepare a valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

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

SECTION 1: Valuation Summary for the Dallas Police and Fire Pension System Supplemental Plan

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

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

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

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System Supplemental Plan

A. MEMBER DATA

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, vested terminated members, retired members and beneficiaries.

This section presents a summary of significant statistical data on these member groups.

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

A historical perspective of how the member population has changed over the past ten valuations can be seen in this chart.

CHART 1

Member Population: 2007 – 2016

Year Ended December 31	Active Members	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
2007	40	111	2.78
2008	41	112	2.73
2009	40	112	2.80
2010	39	113	2.90
2011	37	113	3.05
2012	39	120	3.08
2013	38	120	3.16
2014	39	122	3.13
2015	45	124	2.76
2016	47	128	2.72

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System Supplemental Plan

Active Members

Supplemental plan costs are affected by the age, years of service and supplemental computation pay of active members. In this year's valuation, there were 47 active members with an average age of 50.1, average years of service of 26.4 years and average supplemental computation pay of $11,171. The 45 active members in the prior valuation had an average age of 50.5, average service of 26.7 years and average supplemental computation pay of $16,100.

The number of active Firefighters decreased from 16 to 15 as of December 31, 2016. The average age of this group is 50.8, the average years of service is 26.6, and the average supplemental computation pay is $7,330.

The number of active Police Officers increased from 29 to 32 as of December 31, 2016. The average age of this group is 49.8, the average years of service is 26.2, and the average supplemental computation pay is $12,972.

These graphs show a distribution of active members by age and by years of service.

CHART 2

Distribution of Active Members by Age as of December 31, 2016

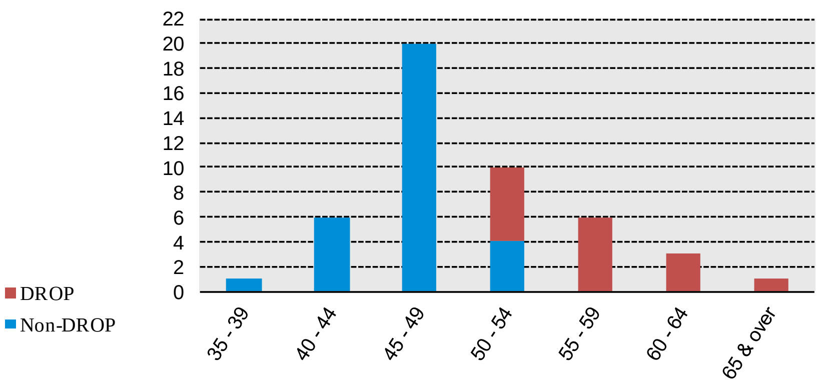
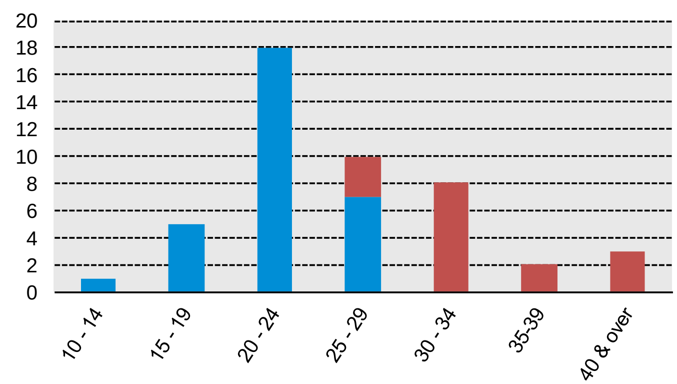


CHART 3

Distribution of Active Members by Years of Service as of December 31, 2016



SECTION 2: Valuation Results for the Dallas Police and Fire Pension System Supplemental Plan

Retired Members and Beneficiaries
As of December 31, 2016, 100 retired members and 28 beneficiaries were receiving total monthly benefits of $198,156, including benefit supplements. For comparison, in the previous valuation, there were 98 retired members and 26 beneficiaries receiving monthly benefits of $180,008, including benefit supplements.

These graphs show a distribution of the current retired members and beneficiaries based on their monthly amount and age, by type of pension.

CHART 4

Distribution of Retired Members and Beneficiaries by Type and by Monthly Amount as of December 31, 2016

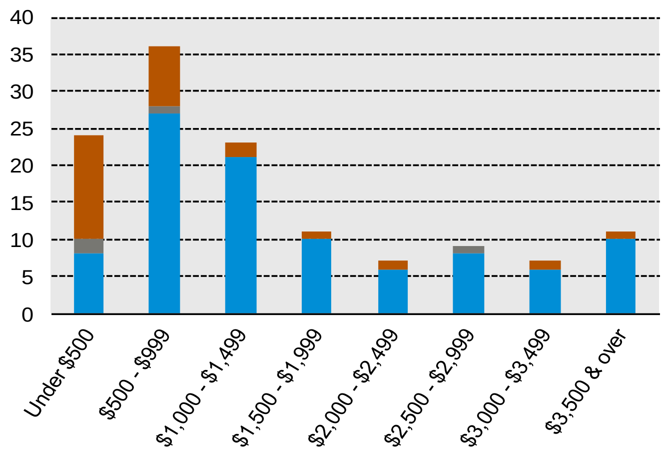
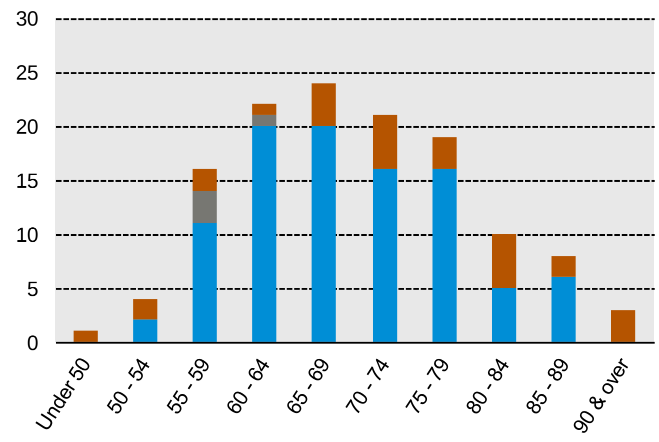


CHART 5

Distribution of Retired Members and Beneficiaries by Type and by Age as of December 31, 2016



Beneficiary
Early
Normal

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System Supplemental Plan

B. FINANCIAL INFORMATION

Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and net investment earnings (less investment fees) will be needed to cover benefit payments.

Retirement plan assets change as a result of the net impact of these income and expense components. Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits D, E and F.

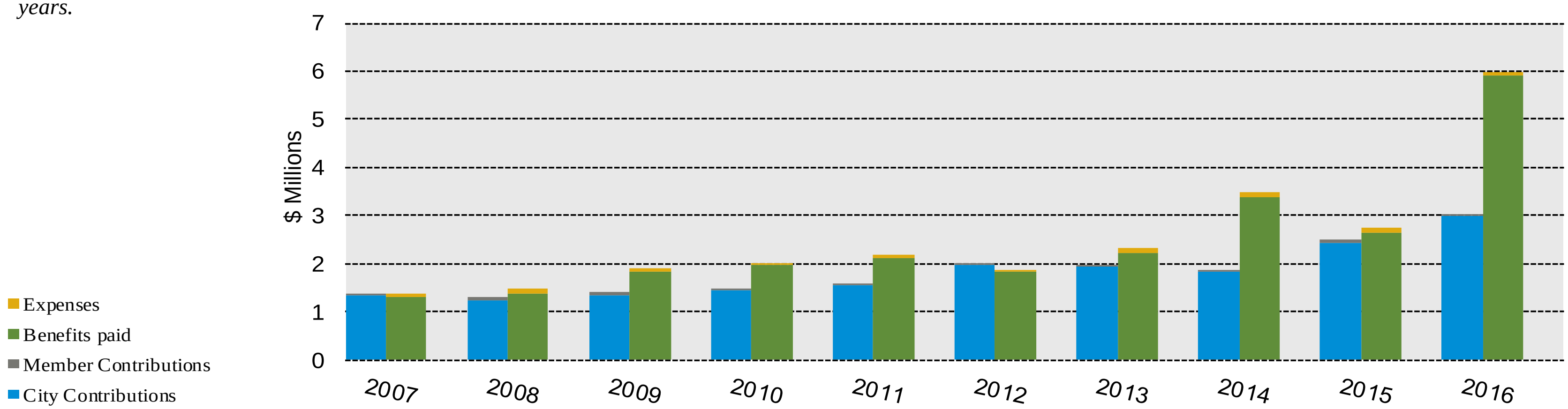
Total contributions were $3.0 million for the year ended December 31, 2016. Benefit payments and refunds totaled $5.9 million, of which $3.8 million were DROP lump sums. Benefit payments are projected to be $3.8 million in 2017. To the extent that future contributions are less than benefit payments, investment earnings or fund assets will be needed to cover the shortfall.

DROP balances declined from $10.0 million as of December 31, 2015 to $8.0 million as of December 31, 2016. Of the $8.0 million balance, $7.3 million is for members who have left employment with Dallas.

The chart depicts the contributions made and the benefits and expenses paid over the last ten years.

CHART 6

Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended December 31, 2007 – 2016



SECTION 2: Valuation Results for the Dallas Police and Fire Pension System Supplemental Plan

In general, it is desirable to have level and predictable plan costs from one year to the next. However, the Board has approved an asset valuation method that uses market value. Under this valuation method, the full value of market fluctuation is recognized in a single year and, as a result, the asset value and the plan costs are relatively volatile. The Supplemental Plan is small compared to the Combined Pension Plan, and Dallas's contributions to this Plan are about 2% of the total amount that the City contributes to the System. Thus, some volatility can be withstood.

The Board has the option to adopt an asset "smoothing" method in the future should they decide the current method (using market value) is producing undesirable fluctuations.

The chart shows the determination of the actuarial value of assets as of the valuation date.

CHART 7

Determination of Actuarial Value of Assets for Year Ended December 31, 2016

1. Actuarial value of assets = Market value of assets	$17,663,539

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System Supplemental Plan

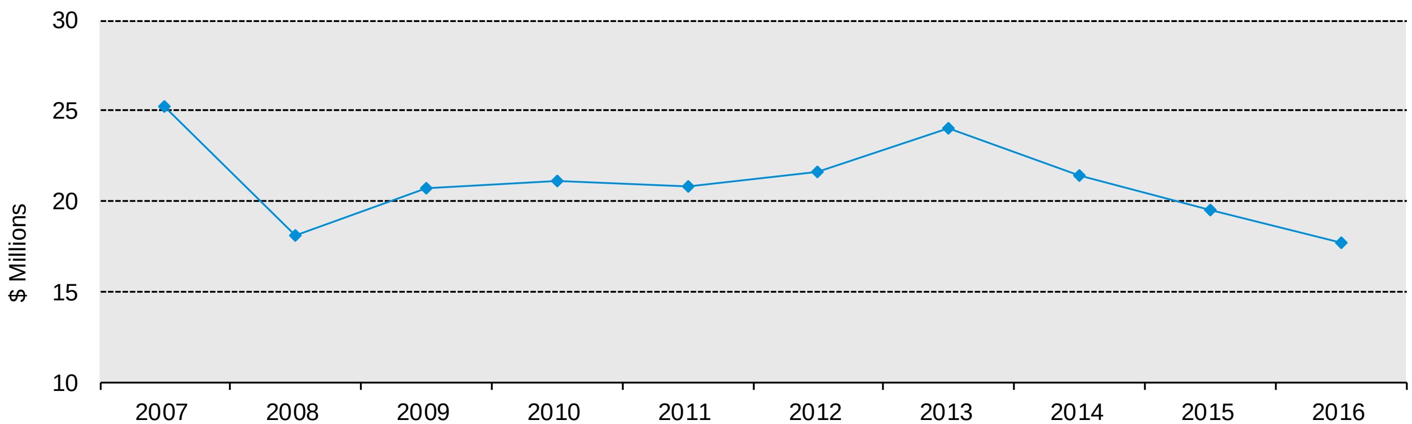
The actuarial value (equal to the market value of assets) is a representation of the Supplemental Plan's financial status. The actuarial asset value is significant because the Supplemental Plan's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

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

This chart shows how the actuarial value of assets (equal to the market value of assets) has changed over the past ten years.

CHART 8

Actuarial Value of Assets (equal to Market Value of Assets) as of December 31, 2007 – 2016



C. ACTUARIAL EXPERIENCE

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

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

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

The total loss is $1,371,182, including losses of $126,644 from investment and $1,244,538 from all other sources. The net experience variation from individual sources other than investments was 3.0% of the pre-plan change actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

This chart provides a summary of the actuarial experience during the past year.

CHART 9

Actuarial Experience for Year Ended December 31, 2016

1.	Net loss from investments*	-$126,644
2.	Net loss from administrative expenses	-18,690
3.	Net loss from other experience	-1,225,848
4.	Net experience loss: (1) + (2) + (3)	-$1,371,182

** Details in Chart 10*

Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Supplemental Plan's investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets is 7.25%. The actual rate of return on an actuarial basis for the Supplemental Plan for the 2016 plan year was 6.55%.

Since the actual return for the year was less than the assumed return, the Supplemental Plan experienced an actuarial loss during the year ended December 31, 2016 with regard to its investments.

This chart shows the loss due to investment experience.

CHART 10

Actuarial Value Investment Experience for Year Ended December 31, 2016

1. Actual return	$1,176,323
2. Average value of assets	17,971,961
3. Actual rate of return: (1) ÷ (2)	6.55%
4. Assumed rate of return	7.25%
5. Expected return: (2) x (4)	$1,302,967
6. Actuarial loss: (1) – (5)	-$126,644

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System Supplemental Plan

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis for the last ten years, including five-year and ten-year averages.

The Board has maintained the assumed rate of return of 7.25%. Market returns over the next couple of years may fall short of the target as the investment portfolio stabilizes after restructuring; however, based on the Board's target asset allocations, the assumption is not unreasonable over the long-term.

CHART 11

Investment Return: 2007 - 2016

	Market Value Investment Return*	
Year Ended December 31	**Amount**	**Percent**
2007	$1,877,281	8.04%
2008	-7,039,494	-27.92
2009	2,985,884	16.66
2010	924,634	4.52
2011	252,054	1.21
2012	578,432	2.77
2013	2,712,000	12.65
2014	-1,091,374	-4.69
2015	-1,828,695	-8.56
2016	1,176,323	6.55
Total	$547,045	
	Five-year average return	1.47%
	Ten-year average return	0.26%

Note: Each year's yield is weighted by the average asset value in that year
**Returns for years 2014 and 2015 include significant write-downs of the Plan's assets*

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System Supplemental Plan

The actuarial value of assets has been equal to market value for the last ten years. This has resulted in relatively volatile actuarial rates of return and pension plan cost.

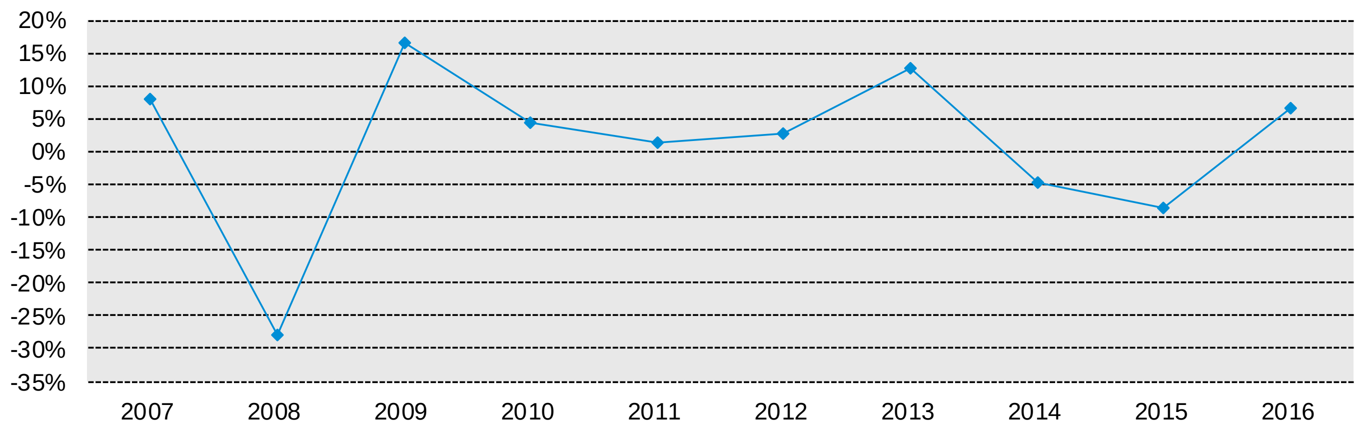
Administrative Expenses

Administrative expenses for the year ended December 31, 2016 totaled $78,047 compared to the assumption of $57,937, payable monthly. This resulted in a loss of $18,690 for the year. There were greater than usual administrative expenses in 2016 that are not expected to be ongoing. We have maintained the assumption of $57,937 for the current year, but will continue to monitor expenses.

This chart illustrates the rates of return.

CHART 12

Actuarial Rates of Return (equal to Market Value Rates of Return) for Years Ended December 31, 2007 - 2016



Other Experience

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

- the extent of turnover among the members,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),
- the number of disability retirements, and
- salary increases different than assumed.

The net loss from this other experience for the year ended December 31, 2016 amounted to $1,225,848, which is 3.0% of the pre-plan change actuarial accrued liability. The loss is primarily due to greater than expected DROP payments in 2016. The nature of the Supplemental Plan and the use of market value of assets lends itself to potentially significant gains and losses in a single year.

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System Supplemental Plan

D. ACTUARIALLY DETERMINED CONTRIBUTION

The amount of annual contribution required to fund the Supplemental Plan is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability. This total amount is then divided by the total supplemental computation pay for active members to determine the funding rate of 397.42% of supplemental computation pay.

The recommended contribution is based on a rolling ten-year amortization of the unfunded actuarial accrued liability as a level percentage of payroll, with payroll expected to increase 2.75% annually The payment on the unfunded liability accounts for nearly 94% of the City's recommended contribution.

The chart compares this valuation's recommended contribution with the prior valuation.

CHART 13

Actuarially Determined Contribution

	Year Beginning January 1			
	2017		2016	
	Amount	% of Supplemental Computation Pay	Amount	% of Supplemental Computation Pay
1. Total normal cost	$109,422	20.84%	$165,161	22.80%
2. Administrative expenses	57,937	11.03%	57,937	8.00%
3. Expected member contributions	-44,580	-8.49%	-35,907	-4.96%
4. Employer normal cost: (1) + (2) + (3)	$122,779	23.38%	$187,191	25.84%
5. Actuarial accrued liability	33,383,834		42,479,534	
6. Actuarial value of assets	17,663,539		19,456,706	
7. Unfunded actuarial accrued liability: (5) - (6)	$15,720,295		$23,022,828	
8. Payment on unfunded actuarial accrued liability; 10-year amortization	1,892,099	360.37%	2,771,034	382.47%
9. Actuarially determined employer contribution: (4) + (8), adjusted for timing*	$2,086,639	397.42%	$3,063,584	422.85%
10. Total supplemental computation pay	$525,048		$724,503	

**Contributions are assumed to be paid at the middle of every year*

SECTION 2: Valuation Results for the Dallas Police and Fire Pension System Supplemental Plan

The contribution requirements as of January 1, 2017 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

Reconciliation of Actuarially Determined Employer Contribution

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

The chart reconciles the contribution from the prior valuation to the amount determined in this valuation.

CHART 14

Reconciliation of Recommended Contribution from January 1, 2016 to January 1, 2017

Actuarially Determined Employer Contribution as of January 1, 2016	$3,063,584
Effect of plan changes and change in actuarial assumptions related to plan changes	-831,299
Effect of changes in actuarial assumptions not related to plan changes	-159,382
Effect of expected change in amortization payment due to payroll decline	78,917
Effect of contributions less than recommended contribution	11,257
Effect of investment loss	17,193
Effect of other gains and losses on accrued liability	168,954
Effect of net other changes	-262,585
Total change	-$976,945
Actuarially Determined Employer Contribution as of January 1, 2017	$2,086,639

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT A

Table of Plan Coverage

Category	Year Ended December 31 2016	Year Ended December 31 2015	Change From Prior Year
Active members in valuation:			
Number	47	45	4.4%
Average age	50.1	50.5	N/A
Average years of service	26.4	26.7	N/A
Total supplemental computation pay	$525,048	$724,503	-27.5%
Average supplemental computation pay	11,171	16,100	-30.6%
DROP account balances	757,045	1,873,373	-59.6%
Accumulated contribution balances	106,211	149,703	-29.1%
Total active vested members	47	45	4.4%
Active members (excluding DROP):			
Number	31	25	24.0%
Average age	46.5	46.4	N/A
Average years of service	22.2	21.7	N/A
Total supplemental computation pay	$231,730	$153,938	50.5%
Average supplemental computation pay	7,475	6,158	21.4%
Active members (DROP only):			
Number	16	20	-20.0%
Average age	57.2	55.7	N/A
Average years of service	34.3	32.9	N/A
Total supplemental computation pay	$293,318	$570,565	-48.6%
Average supplemental computation pay	18,332	28,528	-35.7%
DROP account balances	757,045	1,873,373	-59.6%

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT A (continued)

Table of Plan Coverage

Category	Year Ended December 31 2016	Year Ended December 31 2015	Change From Prior Year
Retired members:			
Number in pay status	100	98	2.0%
Average age	68.9	68.8	N/A
Average monthly benefit*	$1,708	$1,572	8.7%
DROP account balances	6,002,383	7,768,206	-22.7%
Beneficiaries in pay status:			
Number in pay status	28	26	7.7%
Average age	72.2	71.3	N/A
Average monthly benefit*	$802	$817	-1.8%
DROP account balances	1,256,862	1,260,008	-0.2%

**Excludes benefit supplement*

Note: DROP Account Balances reported for valuation purposes may differ slightly from the final balances stated in the System's year-end financial statements, due to subsequent adjustments. The difference is not material.

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT B-1 (Total)

Members in Active Service as of December 31, 2016

By Age, Years of Service, and Average Supplemental Computation Pay

		Years of Service						
Age	**Total**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40 & over**
35 - 39	1	1	- -	- -	- -	- -	- -	- -
	$1,188	$1,188	- -	- -	- -	- -	- -	- -
40 - 44	6	- -	3	3	- -	- -	- -	- -
	2,235	- -	$2,989	$1,480	- -	- -	- -	- -
45 - 49	20	- -	2	14	4	- -	- -	- -
	7,373	- -	2,097	6,174	$14,206	- -	- -	- -
50 - 54	10	- -	- -	1	5	4	- -	- -
	17,793	- -	- -	14,070	19,599	$16,466	- -	- -
55 - 59	6	- -	- -	- -	1	4	1	- -
	20,674	- -	- -	- -	24,902	16,229	$34,223	- -
60 - 64	3	- -	- -	- -	- -	- -	1	2
	20,342	- -	- -	- -	- -	- -	5,795	$27,616
70 & over	1	- -	- -	- -	- -	- -	- -	1
	- -	- -	- -	- -	- -	- -	- -	- -
Total	47	1	5	18	10	8	2	3
	$11,171	$1,188	$2,632	$5,831	$17,972	$16,348	$20,009	$18,410

Note: Chart includes members eligible for supplemental benefits based on prior supplemental computation pay but with zero excess supplemental computation pay in 2016.

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT B-2 (Police)

Members in Active Service as of December 31, 2016
By Age, Years of Service, and Average Supplemental Computation Pay

		Years of Service						
Age	**Total**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40 & over**
35 - 39	1	1	- -	- -	- -	- -	- -	- -
	$1,188	$1,188	- -	- -	- -	- -	- -	- -
40 - 44	5	- -	3	2	- -	- -	- -	- -
	2,200	- -	$2,989	$1,017	- -	- -	- -	- -
45 - 49	12	- -	1	7	4	- -	- -	- -
	8,984	- -	4,194	6,683	$14,206	- -	- -	- -
50 - 54	7	- -	- -	1	5	1	- -	- -
	18,203	- -	- -	14,070	19,599	$15,355	- -	- -
55 - 59	5	- -	- -	- -	1	3	1	- -
	23,649	- -	- -	- -	24,902	19,707	$34,223	- -
60 - 64	1	- -	- -	- -	- -	- -	- -	1
	49,437	- -	- -	- -	- -	- -	- -	$49,437
65 - 69	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -
70 & over	1	- -	- -	- -	- -	- -	- -	1
	- -	- -	- -	- -	- -	- -	- -	- -
Total	32	1	4	10	10	4	1	2
	$12,972	$1,188	$3,290	$6,289	$17,972	$18,619	$34,223	$24,719

Note: Chart includes members eligible for supplemental benefits based on prior supplemental computation pay but with zero excess supplemental computation pay in 2016.

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT B-3 (Fire)

Members in Active Service as of December 31, 2016
By Age, Years of Service, and Average Supplemental Computation Pay

		Years of Service					
Age	**Total**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40 & over**
40 - 44	1	- -	1	- -	- -	- -	- -
	$2,407	- -	$2,407	- -	- -	- -	- -
45 - 49	8	1	7	- -	- -	- -	- -
	4,957	- -	5,665	- -	- -	- -	- -
50 - 54	3	- -	- -	- -	3	- -	- -
	16,836	- -	- -	- -	$16,836	- -	- -
55 - 59	1	- -	- -	- -	1	- -	- -
	5,795	- -	- -	- -	5,795	- -	- -
60 & over	2	- -	- -	- -	- -	1	1
	5,795	- -	- -	- -	- -	$5,795	$5,795
Total	15	1	8	- -	4	1	1
	$7,330	- -	$5,258	- -	$14,076	$5,795	$5,795

Note: Chart includes members eligible for supplemental benefits based on prior supplemental computation pay but with zero excess supplemental computation pay in 2016.

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT C

Reconciliation of Member Data

	Active Members	Retired Members	Beneficiaries	Total
Number as of January 1, 2016	45	98	26	169
New members	6	N/A	N/A	6
Terminations – with vested rights	0	0	0	0
Terminations – without vested rights	0	N/A	N/A	0
Retirements	-4	4	N/A	0
New disabilities	0	N/A	N/A	0
Return to work	0	0	N/A	0
Deceased	0	-2	0	-2
New beneficiaries	0	0	2	2
Data adjustments	0	0	0	0
Number as of January 1, 2017	47	100	28	175

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT D

Summary Statement of Income and Expenses on an Actuarial (Market) Value Basis

	Year Ended December 31, 2016		Year Ended December 31, 2015	
Net assets at actuarial value at the beginning of the year[1]		$19,456,706		$21,438,870
Contribution income:				
Employer contributions	$2,985,478		$2,442,790	
Member contributions	34,612		43,358	
Less administrative expenses[2]	-78,047		0	
Net contribution income		2,942,043		2,486,148
Investment income:				
Interest, dividends and other income	$451,851		$534,145	
Recognition of capital appreciation	857,796		-2,185,546	
Less interest expense	-37,264		-43,611	
Less investment fees[2]	-96,060		-133,683	
Net investment income		1,176,323		-1,828,695
Total income available for benefits		$4,118,366		$657,453
Less benefit payments		-$5,911,533		-$2,639,617
Change in actuarial value of assets		-$1,793,167		-$1,982,164
Net assets at actuarial value at the end of the year		$17,663,539		$19,456,706

[1] *Based on preliminary unaudited assets*

[2] *The 2015 valuation year did not include an explicit administrative expense assumption; administrative expenses were included with investment fees*

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT E

Summary Statement of Plan Assets

	Year Ended December 31, 2016		Year Ended December 31, 2015	
Cash equivalents and prepaid expenses		$2,668,669		$557,090
Invested securities lending collateral		176,730		679,449
Capital assets		98,198		87,893
Receivables		227,216		416,861
Investments:				
Real assets	$9,202,606		$8,185,064	
Fixed income securities	2,200,932		2,761,573	
Private equity	2,156,553		3,208,239	
Equity securities	1,261,240		3,170,760	
Alternative investments	1,100,092		2,847,856	
Other	56,000		213,380	
Total investments at market value		15,977,423		20,386,872
Total assets		$19,148,236		$22,128,165
Less liabilities		-$1,484,697		-$2,671,459
Net assets at market value*		$17,663,539		$19,456,706
Net assets at actuarial value		$17,663,539		$19,456,706

Note: DROP Account Balances total $8,016,290, or 45.4% of the total assets of the Supplemental Plan

**Based on preliminary unaudited assets*

Segal Consulting

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT F

Development of the Fund Through December 31, 2016

Year Ended December 31	Employer Contributions	Member Contributions	Net Investment Return[1]	Administrative Expenses[2]	Benefit Payments	Actuarial Value of Assets at End of Year
2007	$1,340,414	$37,299	$1,877,281	$0	$1,314,911	$25,254,016
2008	1,243,717	45,468	-7,039,494	0	1,363,912	18,139,795
2009	1,343,717	56,261	2,985,884	0	1,844,905	20,680,752
2010	1,443,717	34,355	924,634	0	1,964,422	21,119,036
2011	1,543,717	26,791	252,054	0	2,119,029	20,822,569
2012	1,954,022	26,688	578,432	0	1,819,155	21,562,556
2013	1,935,588	34,039	2,712,000	0	2,207,338	24,036,845
2014	1,817,136	49,104	-1,091,374	0	3,372,841	21,438,870
2015	2,442,790	43,358	-1,828,695	0	2,639,617	19,456,706
2016	2,985,478	34,612	1,176,323	78,047	5,911,533	17,663,539

[1] *Net of investment fees and administrative expenses prior to 2016; net of investment fees only beginning in 2016. Returns for years ended 2007-2014 were estimated based on prior actuarial valuations. Returns include the effect of changes in asset method for years ending 2012 and 2015.*

[2] *A separate administrative expense assumption did not exist prior to the 2016 valuation*

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT G

Development of Unfunded Actuarial Accrued Liability for Year Ended December 31, 2016

1.	Unfunded actuarial accrued liability at beginning of year		$23,022,828
2.	Changes due to:		
	(a) Expected decrease	-$1,302,779	
	(b) Actual contributions less than recommended	82,919	
	(c) Total		-1,219,860
3.	Expected unfunded actuarial accrued liability		21,802,968
4.	Net loss		1,371,182
5.	Unfunded actuarial accrued liability before changes		$23,174,150
6.	Change due to:		
	(a) Assumption changes not related to plan changes	-$1,192,983	
	(b) Plan provisions changed in HB3158 and related assumption changes	-6,260,872	
	(c) Total		-7,453,855
7.	Unfunded actuarial accrued liability at end of year		$15,720,295
8.	Actuarial accrued liability at beginning of year		$42,479,534
9.	Loss as a percentage of actuarial accrued liability at beginning of year		3.23%

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT H

Section 415 Limitations

Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan.

A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active members could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets.

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of $160,000 indexed for inflation. That limit is $210,000 for 2017. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each member's circumstances, for such things as form of benefits chosen and after tax contributions. There is no retirement age adjustment for public safety.

Benefits in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m).

Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard.

EXHIBIT I
Definitions of Pension Terms

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

Assumptions or Actuarial Assumptions: The estimates on which the cost of the Plan is calculated including:

(a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;

(b) Mortality rates — the death rates of members and pensioners; life expectancy is based on these rates;

(c) Retirement rates — the rate or probability of retirement at a given age;

(d) Withdrawal rates — the rates at which members of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Normal Cost: The amount of contributions required to fund the benefit allocated to the current year of service.

Actuarial Accrued Liability For Actives: The value of all projected benefit payments for current members less the portion that will be paid by future normal costs.

Actuarial Accrued Liability For Pensioners: The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

Unfunded Actuarial Accrued Liability: The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan. There is a wide range of approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

SECTION 3: Supplemental Information for the Dallas Police and Fire Pension System Supplemental Plan

Amortization of the Unfunded Actuarial Accrued Liability:	Payments made over a period of years equal in value to the Plan's unfunded actuarial accrued liability.
Investment Return:	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT I

Summary of Actuarial Valuation Results

The valuation was made with respect to the following data supplied to us:

1. Retired members as of the valuation date (including 28 beneficiaries in pay status)		128
2. Members active during the year ended December 31, 2016		47
Fully vested	47	
Not vested	0	

The actuarial factors as of the valuation date are as follows:

1. Normal cost, including administrative expenses		$167,359
2. Actuarial accrued liability		33,383,834
Retired members and beneficiaries	$30,160,174	
Active members	3,223,660	
3. Actuarial value of assets ($17,663,539 at market value - unaudited)		17,663,539
4. Unfunded actuarial accrued liability		$15,720,295

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT I (continued)

Summary of Actuarial Valuation Results

The determination of the recommended contribution is as follows:

1.	Total normal cost	$109,422
2.	Administrative expenses	57,937
3.	Expected member contributions	-44,580
4.	Employer normal cost: (1) + (2) + (3)	$122,779
5.	Payment on unfunded actuarial accrued liability	1,892,099
6.	Actuarially determined employer contribution: (4) + (5), adjusted for timing	$2,086,639
7.	Total supplemental computation pay	$525,048
8.	Actuarially determined employer contribution as a percentage of total supplemental computation pay: (6) ÷ (7)	397.42%

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT II

History of Employer Contributions

Plan Year Ended December 31	Actuarially Determined Employer Contributions (ADEC)*	Actual Contributions	Percentage Contributed
2011	$1,543,717	$1,543,717	100.0%
2012	1,954,022	1,954,022	100.0%
2013	1,935,588	1,935,588	100.0%
2014	1,817,136	1,817,136	100.0%
2015	2,442,790	2,442,790	100.0%
2016	3,063,584	3,063,584	100.0%
2017	2,086,639	--	--

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT III

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b) - (a)] / (c)
01/01/2012	$20,822,569	$36,329,605	$15,507,036	57.32%	$620,590	2,498.76%
01/01/2013	21,562,556	37,264,925	15,702,369	57.86%	449,726	3,491.54%
01/01/2014	24,036,845	38,777,014	14,740,169	61.99%	521,370	2,827.20%
01/01/2015	21,438,870	41,910,358	20,471,488	51.15%	556,725	3,677.13%
01/01/2016	19,456,706	42,479,534	23,022,828	45.80%	724,503	3,177.74%
01/01/2017	17,663,539	33,383,834	15,720,295	52.91%	525,048	2,994.07%

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT IV

Funded Ratio

A critical piece of information regarding the Plan's financial status is the funded ratio. This ratio compares the actuarial value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors.

The chart below depicts a history of the funded ratios for this plan.

EXHIBIT V

Actuarial Assumptions and Actuarial Cost Method

Rationale for Assumptions:	The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Experience Study Report for the five-year period ended December 31, 2014. Additional changes from the prior year related to the plan changes and modifications based on the Meet and Confer agreement are listed at the end of this exhibit.
Mortality Rates:	
Pre-retirement:	RP-2014 Employee Mortality Table, set back two years for males, projected generationally using Scale MP-2015
Healthy annuitants:	RP-2014 Blue Collar Healthy Annuitant Mortality Table, set forward two years for females, projected generationally using Scale MP-2015
Disabled annuitants:	RP-2014 Disabled Retiree Mortality Table, set back three years for males and females, projected generationally using Scale MP-2015
	The tables above, with adjustments as shown, reasonably reflect the mortality experience of the System as of the measurement date. The mortality tables were then generationally projected using Scale MP-2015 to anticipate future mortality improvement.

Mortality and Disability Rates before Retirement:

	Rate (%)			
	Mortality[1]		Disability[2]	
Age	Male	Female	Fire	Police
20	0.03	0.02	0.10	0.10
25	0.05	0.02	0.15	0.15
30	0.04	0.02	0.20	0.20
35	0.05	0.03	0.25	0.25
40	0.06	0.04	0.30	0.30
45	0.08	0.07	0.35	0.35
50	0.14	0.11	0.40	0.40
55	0.23	0.17	--	--
60	0.38	0.24	--	--
65	1.26	1.05	--	--
70	1.97	1.70	--	--
75	3.15	2.81	--	--
80	5.19	4.71	--	--

[1]Rates shown do not include generational projection; rates beginning at age 65 are for healthy annuitants
[2]100% of disabilities are assumed to be service related

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

Termination Rates Before Retirement:

Withdrawal Rate (%)		
Years of Service	Police	Fire
0	14.00	5.50
1	6.00	4.50
2	5.50	4.00
3	5.00	3.50
4	4.50	3.00
5	4.00	1.50
6	3.50	1.00
7	3.00	0.75
8	2.50	0.50
9	2.00	0.50
10-37	1.00	0.50
38 & over	0.00	0.00

Retirement Rates for 2017:

Police		Fire	
Age	Rate (%)	Age	Rate (%)
Under 50	1.00	Under 50	0.75
50-52	3.00	50-54	2.50
53-54	7.00	55-58	12.00
55	15.00	59-64	25.00
56-57	20.00	65-66	30.00
58-64	25.00	67	100.00
65-66	50.00		
67	100.00		

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

Retirement Rates beginning in 2018:

Current Active DROP Members

- If at least eight years in DROP as of January 1, 2017, 100% retirement rate in 2018
- If less than eight years in DROP as of January 1, 2017, 50% retirement rate in 2018

Non-DROP Active Members

Members hired prior to March 1, 2011 with less than 20 years of service as of September 1, 2017		Members hired prior to March 1, 2011 with at least 20 years of service as of September 1, 2017		Members hired on or after March 1, 2011	
Age	Rate (%)	Age	Rate (%)	Age	Rate (%)
Under 50	0	Under 50	1	Under 50	1
50	10	50	20	50	5
51	5	51	10	51	5
52	5	52	10	52	5
53	5	53	10	53	5
54	5	54	20	54	10
55	15	55	40	55	20
56	10	56	50	56	30
57	5	57	50	57	40
58	60	58	60	58	50
59	50	59	60	59	50
60	50	60	60	60	50
61	50	61	60	61	50
62 & over	100	62 & over	100	62 & over	100

100% retirement rate once the sum of age plus service equals 90
Current terminated vested members are assumed to retire at age 50
Future terminated vested members are assumed to retire at age 58

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

Interest on DROP Accounts:	6.00% per annum, until September 1, 2017 Beginning September 1, 2017: ➤ Annuitant account balances – 2.75% ➤ Active account balances as of September 1, 2017 – 2.75%, payable upon retirement ➤ Active account balances accrued after September 1, 2017 – 0.00%
Utilization of DROP:	0% of Police and Fire members are assumed to elect to enter the DROP
Period in DROP:	Current DROP members with at least eight years in the DROP as of January 1, 2017 are assumed to retire in 2018. Current DROP members with less than eight years in DROP as of January 1, 2017 are assumed to retire once they have been in DROP for eight years.
DROP Payment Period:	Based on expected lifetime as of the later of September 1, 2017 or retirement date. Expected lifetime determined based on an 85%/15% male/female blend of the current healthy annuitant mortality tables.
Unknown Data for Members:	Same age and service as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Percent Married:	75%
Age of Spouse/Children:	Females are assumed to be three years younger than males The youngest child is assumed to be ten years old
Retiree Form of Payment:	100% of married members are assumed to elect a Joint and Survivor annuity
Net Investment Return:	7.25% The net investment return assumption was chosen by the Pension System's Board of Trustees, with input from the actuary. This assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the System's target asset allocation.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

Payroll Growth: 2.75%

Salary Scale for 2017 – 2019:

2017 – 10% if less than 10 years, 7% if 10 – 11 years, 2% if more than 11 years
2018 – 5% if less than 10 years, 2% if more than 10 years
2019 – 10% if less than 10 years, 7% if 10 – 11 years, 2% if more than 11 years

Salary Scale for 2020 and after:

	Rate (%)	
Years of Service	Police	Fire
1	5.20	5.20
2	5.00	5.05
3	4.80	4.90
4	4.60	4.75
5	4.40	4.60
6	4.20	4.45
7	4.00	4.30
8	3.80	4.15
9	3.60	4.00
10	3.40	3.85
11	3.20	3.70
12	3.00	3.55
13	3.00	3.40
14	3.00	3.25
15	3.00	3.10
16 & over	3.00	3.00

Includes allowance for inflation of 2.75% per year.

The salary scale assumption is based on the City's pay plan, along with analysis completed in conjunction with an Experience Study Report for the five-year period ended December 31, 2014. The salary scale for 2017 – 2019 is based on the Meet and Confer agreement.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

Cost-of-living adjustment:	
Prior to October 1, 2049:	0.00%
Beginning October 1, 2049:	2.00%, on original benefit The assumption for the year the COLA begins will be updated on an annual basis and set equal to the year the System is projected to be 70% funded on a market value basis after the COLA is reflected.
Administrative Expenses:	$60,000 per year, payable monthly (equivalent to $57,937 at the beginning of the year)
Actuarial Value of Assets:	Market value of assets
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is the age at the time the member commenced employment. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis, with Normal Cost determined as if the current benefit accrual rate had always been in effect. Actuarial Liability is allocated by salary.
Amortization Methodology:	The actuarially determined contribution is calculated using a rolling 10-year amortization of unfunded actuarially accrued liability.
Change in Assumptions	The following assumption changes are not related to the plan changes: ➤ The salary scale was modified for valuation years 2017 - 2019 in accordance with the Meet and Confer Agreement ➤ DROP interest is assumed to decline from 6.00% to 5.00% effective October 1, 2017, and to 0.00% effective October 1, 2018, per Section 6.14(c) of the plan document as amended and restated through April 16, 2015 The following assumption changes were proposed by the actuary and presented to the Board as part of the plan design work that is incorporated in this valuation. These changes are reflected for the first time in this valuation.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

- The DROP utilization factor was changed from 100% to 0%
- Current DROP members with at least eight years in the DROP as of January 1, 2017 are assumed to retire in 2018. Current DROP members with less than eight years in the DROP as of January 1, 2017 are assumed to retire once they have been in DROP for eight years.
- Retirement rates were changed effective January 1, 2018
- 100% retirement rate once the sum of age plus service equals 90
- New terminated vested members are assumed to retire at age 58
- Beginning September 1, 2017, DROP account balances for annuitants are assumed to earn 2.75% interest; DROP account balances as of September 1, 2017 for active members are assumed to earn 2.75% interest upon retirement; DROP account balances accrued after September 1, 2017 do not earn interest.
- DROP payment period based on an 85%/15% male/female blend of the current healthy annuitant mortality tables
- COLA assumed to be a 2.00% COLA beginning October 1, 2049 and payable every October 1 thereafter

EXHIBIT VI

Summary of Plan Provisions – Members Whose Participation Began Before March 1, 2011

This exhibit summarizes the major provisions of the Dallas Police and Fire Pension System Supplemental Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions. This valuation includes many plan changes not effective until September 1, 2017; the new provisions are listed in this summary.

Plan Year: January 1 through December 31

Plan Status: Ongoing

Normal Retirement – Benefit Earned Prior to September 1, 2017:

Age Requirement 50

Service Requirement 5

Amount The greater of 3% of Average Supplemental Computation Pay times years of Pension Service (maximum 96.0%).

Supplemental Computation Pay is the current rate of pay received by the member, minus the rate of pay the member would receive for the highest civil service rank the member held.

Average Supplemental Computation Pay is determined based on the highest 36 consecutive months of Supplemental Computation Pay.

Normal Retirement – Benefit Earned Beginning September 1, 2017:

Age Requirement 58

Service Requirement 5

Amount The greater of 2.5% of Average Computation Pay times years of Pension Service (maximum 90.0%).

Supplemental Computation Pay is the current rate of pay received by the member, minus the rate of pay the member would receive for the highest civil service rank the member held.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

Average Supplemental Computation Pay is determined based on the highest 60 consecutive months of Supplemental Computation Pay.

20 and Out Reduced Retirement – If Eligible as of September 1, 2017:

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

Benefit Accrued by September 1, 2017

20 & Out Table 1

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

Benefit Accrued Beginning September 1, 2017

20 & Out Table 2

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

20 and Out Reduced Retirement – If Not Eligible as of September 1, 2017:

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

20 & Out Table 2

Age	20 & Out Multiplier
53 & under	2.00%
54	2.10%
55	2.20%

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

56	2.30%
57	2.40%
58 & above	2.50%

Early Retirement – If at least age 45 and less than age 50 as of September 1, 2017:

Age Requirement	45
Service Requirement	5
Amount	Normal pension accrued prior to September 1, 2017 plus the benefit accrued based on the 20 & Out Table 2 for service beginning September 1, 2017, reduced by 2/3 of 1% for each whole month by which the benefit commencement date precedes the normal retirement date.

Early Retirement – If reach age 53 after September 1, 2017:

Age Requirement	53
Service Requirement	5
Amount	Normal pension accrued prior to September 1, 2017 plus the benefit accrued based on the 20 & Out Table 2 for service beginning September 1, 2017. The benefit will be reduced by 2/3 of 1% per month from age 58 for the post-September 1, 2017 benefit.

Non-Service Connected Disability:

Eligibility	Injury or illness (lasting more than 90 days) not related to or incurred while in the performance of the member's job, preventing the member from performing their departmental duties.
Amount	3% of Average Computation Pay for service earned prior to September 1, 2017 and the applicable benefit multiplier from 20 & Out Table 2 times Average Supplemental Computation Pay for service earned beginning September 1, 2017

Service-Connected Disability:

Eligibility	Injury or illness (lasting more than 90 days) obtained while on duty in the performance of the member's job.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

Amount	3% of Average Computation Pay for service earned prior to September 1, 2017 and the applicable benefit multiplier from 20 & Out Table 2 times Average Supplemental Computation Pay for service earned beginning September 1, 2017; if the member has less than 20 years of service, the benefit will be calculated as if they had 20 years at the time of disability.
Benefit Supplement:	
Age Requirement	55
Service Requirement	20 years, waived if member is receiving a service-connected disability
Amount	3% of the total monthly benefit (including any applicable COLA's) payable to the Member when the Member attains age 55. The benefit supplement shall not be less than $75 per month. Beginning September 1, 2017, only those annuitants already receiving the supplement will be eligible to maintain their current supplement, which will not change ongoing; future retirees will not be eligible for the supplement.
Termination Benefit:	
With less than five years of pension service	Upon request, the member's contributions will be returned without interest.
At least five years of pension service	The member may either withdraw contributions or leave contributions in the Plan and receive a monthly benefit to commence no earlier than the member's earliest eligibility for retirement benefits. Retirement benefit is equal to the accrued benefit as of the date of termination.
Pre-Retirement Death Benefit:	
While in active service	The greater of 50% of the Member's accrued benefit or a benefit based on 20 years of service. The benefit may not exceed 45% of Average Supplemental Computation Pay.
After leaving active service, with fewer than five years	A lump sum benefit equal to the return of member contributions with interest.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

After leaving active service, with at least five years	50% of the Member's accrued benefit, with no early retirement reduction
Post-Retirement Death Benefit:	50% of the pension the Member was receiving at the time of their death
Qualified Surviving Children Benefit:	50% of the pension the Member was receiving at the time of their death, divided equally among the children, paid until the youngest child is 19 years old or for life if the child becomes handicapped prior to age 23
Special Survivor Benefit:	
Eligibility	Upon leaving active service or joining DROP: a) the Member was at least 55 years old with at least 20 years of pension service, or b) the sum of the Member's age plus Pension Service was at least 78; **and** Has no Qualified Surviving Children or handicapped children currently eligible for survivor benefits; **and** Whose Qualified Surviving Spouse is at least 55 years old. The Qualified Surviving Spouse does not have to be 55 years old at the time of the Member's death.
Amount	Once all the eligibility conditions are met, the amount the Qualified Surviving Spouse will receive increases from 50% of the Member's pension benefit to a percentage of the Member's pension benefit based on 3% times the number of years of Pension Service the Member worked.
Survivor Benefit if No Qualified Surviving Spouse:	A lump sum that is the actuarial equivalent of 120 monthly payments of the greater of: 50% of the Member's pension benefit at the time of their death, or a benefit based on 20 years of the Member's service.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

DROP:	
Eligibility	Members in active service who are retirement eligible may elect to enter the Deferred Retirement Option Plan (DROP).
Distribution	$3,000/month, if requested, for March 31, 2017 through the month prior to the start of lifetime annuitization. Once the Board has approved the life expectancy tables and interest rates, but no earlier than September 1, 2017, the DROP account balance will be paid over the expected future lifetime of annuitants as of September 1, 2017, and over the expected future lifetime based on the age at retirement of those who retire with a DROP account balance after September 1, 2017.
Interest	The benefit will be accumulated at a rate of 6.0% from October 1, 2016 to August 31, 2017. Beginning September 1, 2017, interest will be determined based on the expected lifetime of the member at retirement. The Board of Trustees will set the interest rates.
Cost-of-Living Adjustments:	The Board may grant an ad hoc COLA based on the actual market return over the prior five years less 5%, not to exceed 4% of the base benefit, if, after granting a COLA, the funded ratio on a market value of assets basis is no less than 70%.
Member Contributions:	January 1, 2017 through August 31, 2017 8.5% of supplemental computation pay if not participating in DROP 4.0% of supplemental computation pay if participating in DROP Effective September 1, 2017 13.5% of supplemental computation pay for all members
Changes in Plan Provisions:	The plan provisions listed in this section reflect the changes effective September 1, 2017 as summarized in Section 1.

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT VI

Summary of Plan Provisions – Members Whose Participation Began on or After March 1, 2011

Normal Retirement:

Age Requirement	55
Service Requirement	5
Amount	2.5% of Average Supplemental Computation Pay for each year of Pension Service, maximum 90% Supplemental Computation Pay is the current rate of pay received by the member, minus the rate of pay the member would receive for the highest civil service rank the member held. Average Supplemental Computation Pay is determined based on the highest 60 consecutive months of Supplemental Computation Pay

Early Retirement:

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

20 and Out Reduced Retirement:

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

20 & Out Table 2

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

Non-Service Connected Disability:	
Eligibility	Injury or illness (lasting more than 90 days) not related to or incurred while in the performance of the member's job, preventing the member from performing their departmental duties.
Amount	The Member's accrued benefit, but not less than a pro-rated minimum benefit.
Service-Connected Disability:	
Eligibility	Injury or illness (lasting more than 90 days) obtained while on duty in the performance of the member's job.
Amount	The greater of 50% of Average Supplemental Computation Pay and the Member's accrued benefit.
Termination Benefit:	
With less than five years of service	Upon request, the member's contributions will be returned without interest.
After five years of service	The member may either withdraw contributions or leave contributions in the Plan and receive a monthly benefit to commence no earlier than the member's earliest eligibility for retirement benefits. Retirement benefit is equal to the accrued benefit as of the date of termination.
Pre-retirement Death Benefit:	
While in active service	The greater of 50% of the Member's accrued benefit or a benefit based on 20 years of service. The benefit may not exceed 45% of Average Supplemental Computation Pay.
After leaving active service, with less than five years	A lump sum benefit equal to the return of member contributions with interest.
After leaving active service, with at least five years	50% of the Member's accrued benefit, with no early retirement reduction

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

Post-Retirement Death Benefit:	50% of the pension the Member was receiving at the time of their death
Qualified Surviving Children Benefit:	50% of the pension the Member was receiving at the time of their death, divided equally among the children, paid until the youngest child is 19 years old or for life if the child becomes handicapped prior to age 23.
Special Survivor Benefit:	
Eligibility	Upon leaving active service or joining DROP: a) the Member was at least 55 years old with at least 20 years of pension service, or b) the sum of the Member's age plus Pension Service was at least 78; **and** Has no Qualified Surviving Children or handicapped children currently eligible for survivor benefits; **and** Whose Qualified Surviving Spouse is at least 55 years old. The Qualified Surviving Spouse does not have to be 55 years old at the time of the Member's death.
Amount	Once all the eligibility conditions are met, the amount the Qualified Surviving Spouse will receive increases from 50% of the Member's pension benefit to a percentage of the Member's pension benefit based on 2.5% times the number of years of Pension Service the Member worked.
Survivor Benefit if No Qualified Surviving Spouse:	A lump sum that is the actuarial equivalent of 120 monthly payments of the greater of: 50% of the Member's pension benefit at the time of their death, or a benefit based on 20 years of the Member's service.
DROP:	
Eligibility	Members in active service who are retirement eligible may elect to enter the Deferred Retirement Option Plan (DROP).

SECTION 4: Reporting Information for the Dallas Police and Fire Pension System Supplemental Plan

Distribution	$3,000/month, if requested, for March 31, 2017 through the month prior to the start of lifetime annuitization. Once the Board has approved the life expectancy tables and interest rates, but no earlier than September 1, 2017, the DROP account balance will be paid over the expected future lifetime of annuitants as of September 1, 2017, and over the expected future lifetime based on the age at retirement of those who retire with a DROP account balance after September 1, 2017.
Interest	The benefit will be accumulated at a rate of 6.0% from October 1, 2016 to August 31, 2017. Beginning September 1, 2017, interest will be determined based on the expected lifetime of the member at retirement. The Board of Trustees will set the interest rates.
COLA:	The Board may grant an ad hoc COLA based on the actual market return over the prior five years less 5%, not to exceed 4% of the base benefit, if, after granting a COLA, the funded ratio on a market value of assets basis is no less than 70%.
Member Contributions:	January 1, 2017 through August 31, 2017 8.5% of supplemental computation pay if not participating in DROP 4.0% of supplemental computation pay if participating in DROP Effective September 1, 2017 13.5% of supplemental computation pay for all members
Changes in Plan Provisions:	The plan provisions listed in this section reflect the changes effective September 1, 2017 as summarized in Section 1.

SECTION 5: GASB Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT 1

Net Pension Liability

The components of the net pension liability of the Supplemental Plan at December 31, 2016 were as follows:

Total pension liability	$40,647,671
System fiduciary net position	17,670,327
System's net pension liability	$22,977,344
System fiduciary net position as a percentage of the total pension liability	43.47%

Plan changes effective September 1, 2017 are not included in the net pension liability as of December 31, 2016. Had these plan changes been included, the December 31, 2016 Net Pension Liability would be approximately $16.2 million.

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of January 1, 2017, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.75%
Real rate of return	4.50%
Investment rate of return	7.25%, net of investment expense, including inflation

The actuarial assumptions used in the January 1, 2017 valuation were based on the results of an experience study of the Pension System for the period January 1, 2010 to December 31, 2014, and based on assumption changes included in the January 1, 2017 valuation. The December 31, 2016 Total Pension Liability does not include assumption changes in the January 1, 2017 valuation that are related to the plan changes effective September 1, 2017. Assumptions are detailed in Exhibit V in Section 4 of this valuation report.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the Plan's target asset allocation are summarized in the table on the next page (net of inflation). This target allocation was approved by the Board of Trustees for the System on March 10, 2016.

SECTION 5: GASB Information for the Dallas Police and Fire Pension System Supplemental Plan

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Global Equity	20%	6.87%
Emerging Market Equity	5%	9.42%
Private Equity	5%	10.47%
Short-Term Core Bonds	2%	1.35%
Global Bonds	3%	1.38%
High Yield and Bank Loans	11%	4.09%
Structured Credit and Absolute Return	6%	5.67%
Emerging Markets Debt	6%	4.71%
Private Debt	5%	7.69%
Natural Resources	5%	7.63%
Infrastructure	5%	6.25%
Real Estate	12%	5.00%
Liquid Real Assets	3%	4.43%
Asset Allocation	10%	4.90%
Cash	2%	1.06%
Total	100%	

*As provided by Segal Marco Advisors, a member of The Segal Group

Discount rate: The discount rate used to measure the total pension liability was 7.10%. The projection of cash flows used to determine the discount rate assumed City and plan member contributions will be made as follows: the City will pay the City's normal cost plus ten-year open amortization of the unfunded actuarial accrued liability; members will pay 8.50% of supplemental computation pay if they have not elected DROP and 4.00% of supplemental computation pay if they have elected DROP. It is assumed that no new entrants enter the Plan. Based on those assumptions, the System's fiduciary net position was not projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to the first 43 periods of projected benefit payments and a 3.78% municipal bond rate was applied for all periods thereafter. The 3.78% municipal bond rate is based on an index of 20-year, tax-exempt general obligation bonds, published weekly by the Federal Reserve. (The chosen rate is the Bond Buyer 20-Bond GO Index rate published closest to, but not later than, the measurement date of December 31, 2016.)

SECTION 5: GASB Information for the Dallas Police and Fire Pension System Supplemental Plan

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

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the Supplemental Plan, calculated using the discount rate of 7.10%, as well as what the Plan's net pension liability would be if it were calculated using a discount rate that is one-percentage-point lower (6.10%) or one-percentage-point higher (8.10%) than the current rate:

	1% Decrease (6.10%)	Current Discount (7.10%)	1% Increase (8.10%)
Supplemental Plan net pension liability	$27,038,680	$22,977,344	$19,552,321

SECTION 5: GASB Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT 2

Schedules of Changes in Net Pension Liability – Last Two Fiscal Years

	2016	2015
Total pension liability		
Service cost	$70,220	$35,635
Interest	2,910,845	2,952,894
Changes of benefit terms	0	0
Differences between expected and actual experience	1,105,788	928,500
Changes of assumptions	-916,752	-600,457
Benefit payments, including refunds of member contributions	-5,911,533	-2,639,617
Net change in total pension liability	-$2,741,432	$676,955
Total pension liability – beginning	43,389,103	42,712,148
Total pension liability – ending (a)	$40,647,671	$43,389,103
Plan fiduciary net position		
Contributions – employer	$3,063,584*	$2,442,790
Contributions – member	34,612	43,358
Net investment and other income	1,142,269	-1,689,665
Benefit payments, including refunds of member contributions	-5,911,533	-2,639,617
Administrative expense	-78,047	-61,125
Interest expense	-37,264	-43,611
Net change in plan fiduciary net position	-$1,786,379	-$1,947,870
Plan fiduciary net position – beginning	19,456,706	21,404,576
Plan fiduciary net position – ending (b)	$17,670,327*	$19,456,706
System's net pension liability – ending (a) – (b)	$22,977,344	$23,932,397
Plan fiduciary net position as a percentage of the total pension liability	43.47%	44.84%
Covered employee payroll	$525,048	$724,503
System's net pension liability as percentage of covered employee payroll	4,376.24%	3,303.28%

Notes to Schedule:

**Assets and employer contributions differ from those used in the actuarial valuation*

Benefit changes: There have not been any changes in plan provisions reflected for the first time in this December 31, 2016 GASB 67 disclosure.

Change of Assumptions: The blended interest rate has changed from 7.19% to 7.10%, with a liability impact of $332,143. See Section 4, Exhibit V for a summary of other assumption changes not related to plan changes effective September 1, 2017; these other assumption changes decreased liability by $1,248,895.

SECTION 5: GASB Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT 3

Schedule of City's Contributions – Last Two Fiscal Years

Year Ended December 31	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency (Excess)	Covered-Employee Payroll	Contributions as a Percentage of Covered Employee Payroll
2015	$2,442,790	$2,442,790	$0	$556,725	438.78%
2016	3,063,584	3,063,584	0	724,503	422.85%

SECTION 5: GASB Information for the Dallas Police and Fire Pension System Supplemental Plan

EXHIBIT 4

Notes to Required Supplementary Information

Valuation date	Actuarially determined contributions are calculated as of January 1, 2016, the beginning of the year for which they are payable
Methods and used assumptions to determine contribution rates:	
Actuarial cost method	Entry age
Amortization method	Level percent of covered payroll, open
Remaining amortization period	10 years
Asset valuation method	Market value of assets
Key actuarial assumptions for 2016 actuarially determined contribution*:	
Investment rate of return	7.25%, net of all expenses
Inflation rate	2.75%
Projected salary increases	Inflation plus merit increases, varying by gorup and service, ranging from 0.25% to 2.45%.
Cost of living adjustments	4.00%
Payroll growth rate	2.75% per annum used to amortize unfunded actuarial liabilities.
Retirement	Group-specific rates based on age
Mortality	*Pre-retirement*: Sex-distinct RP-2014 Employee Mortality Table, set back two years for males, projected generationally using Scale MP-2015 *Healthy annuitants*: Sex-distinct RP-2014 Healthy Annuitant Mortality Table, set forward two years for females, projected generationally using Scale MP-2015 *Disabled annuitants*: Sex-distinct RP-2014 Disabled Retiree Mortality Table, set back three years for males and females, projected generationally using Scale MP-2015
Annualized DROP account returns	7.0% at October 1, 2015 6.0% at October 1, 2016 5.0% at October 1, 2017 and thereafter
DROP entry	Age 50 with 5 years of service. Any active members who satisfy these criteria and have not entered DROP are assumed never to join DROP. Active members who retire with a DROP account are assumed to receive the balance of their account over a 10-year time period.

*Assumptions differ from those used in determination of the December 31, 2016 Total Pension Liability

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DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C5

Topic: **Investment Advisory Committee**

Portions of the discussion under this topic may be closed to the public under the terms of Section 551.074 of the Texas Government Code.

Discussion: At the May 2018 Board meeting, the Board requested a summary document for potential Investment Advisory Committee (IAC) candidates describing the roles and responsibilities and the time commitment of an IAC member. A draft position description will be discussed. In addition, Trustees may discuss seeking interest from potential candidates.

ROLE SPECIFICATION FOR

OUTSIDE INVESTMENT ADVISORY COMMITTEE MEMBERS

DALLAS POLICE & FIRE PENSION SYSTEM

June 2018

Description for: Outside Investment Advisory Committee (IAC) Member

Location: Dallas, Texas

Organization Overview
The Dallas Police and Fire Pension System (DPFP) (www.dpfp.org) is an independently governed entity and a component of the City of Dallas. DPFP serves to provide retirement, death and disability benefits to the City of Dallas police officers and fire fighters. DPFP has approximately 10,000 active members and beneficiaries and $2 billion in assets.

On May 31, 2017, the Texas Legislature passed, and the Governor signed, House Bill 3158. The amendments in HB 3158 set DPFP on a path to solvency with anticipated full funding by 2061. With the new legislation, DPFP has a new governing Board of Trustees (www.dpfp.org/Board/Board-of-Trustees/) made up of 11-members that were fully seated in October 2017. The majority of the new Trustees have strong investment backgrounds. An Investment Advisory Committee (IAC) is required by HB 3158 but has not yet been established. DPFP is seeking interest from potential candidates to fill three outside positions on the IAC, who will serve alongside two current Board Trustees.

The $2 billion investment portfolio is currently in a state of transition from an underperforming legacy portfolio that contains approximately 50% illiquid assets to a more traditional asset allocation. The Board selected a new investment consultant, Meketa, in April 2018. [A new Chief Investment Officer was confirmed by the Board on June 14th and start July 2, 2018.]

Investment Advisory Committee (IAC) Composition & Selection:

- The IAC will be composed of five members: three outside investment professionals with broad portfolio management experience and two current Board Trustees.
- The two current Board members selected for the IAC are Gilbert Garcia and Ray Nixon, whose CV's are attached.
- The IAC will serve at the discretion of the Board of Trustees.
- The Board will vote on and approve all IAC members.
- The current Board members will serve staggered two-year terms on the IAC. Non-Board members will serve a staggered two-year term.
- Each outside investment professional member of the IAC will adhere to the DPFP Ethics Policy.

IAC Roles and Responsibilities:

- The IAC will review all investment-related items in advance of being brought to the Board for action, including reviewing staff and consultant recommendations on adding new managers or dismissing existing managers.
- The IAC will make non-binding recommendations to the Board.
- If requested by the Board, the IAC will review staff and consultant. recommendations on asset allocation targets and ranges and provide an IAC recommendation to the Board.
- On an individual basis, be available to discuss investment issues with staff to the extent they fall within an IAC member's area of expertise.

IAC Meetings and Time Commitment:

- It is expected that IAC meetings will be held quarterly. No standing meeting date has been set for the IAC.
- DPFP Investment Staff and the Investment Consultant will attend IAC meetings to discuss new investment recommendations, investment performance, disposition/liquidation recommendations and other investment-related items.
- IAC members will be provided investment materials in advance of the IAC meetings in order to facilitate meaningful discussions.
- IAC meetings will not be open to the public and will require a quorum of at least three IAC members.
- The IAC will select a chair from its members to serve as liaison to the Board and to preside over IAC meetings. The chair of the IAC, or a designee of the chair, will be expected to attend Board meetings where IAC recommendations are considered.

Professional Experience/ Qualifications:
Outside IAC members are expected to have broad investment management expertise including due diligence, asset allocation and/or investment manager selection experience.

Compensation
IAC members receive no compensation from DPFP. The Board will determine if any potential expenses will be reimbursable.

Potential Conflict Disclosure
As part of the initial IAC selection process the Board will ask all finalists to complete a potential conflicts questionnaire. The signed questionnaire will not be required until the final selection process, however all applicants will be asked to verbally disclose potential conflicts during the interview process. A list of current DPFP investment managers and other services providers has been provided for your information.

Insurance
It is anticipated that IAC members will be covered under a fiduciary insurance policy. The policy provides coverage for acts taken as an IAC member and contains normal exceptions to coverage such as fraudulent or bad faith actions.

Questions
If you have questions about DPFP or what a IAC member's role would be, please feel free to contact Kelly Gottschalk, Executive Director, at 214-638-3863.

DISCUSSION SHEET

ITEM #C6

Topic: **Legal issues**

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.

a. Claims against fiduciaries and other third-party advisors
b. Eddington et.al. v. DPFP
c. Degan et.al. v. DPFP

Discussion: Counsel will brief the Board on these issues.

Regular Board Meeting – Thursday, June 14, 2018

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C7

Topic: **First Quarter 2018 Investment Performance Analysis and Fourth Quarter 2017 Private Markets & Real Assets Review**

Discussion: Staff will present the above reports which were prepared by NEPC. Meketa will begin reporting performance starting with the second quarter of 2018 for the entire portfolio and the first quarter 2018 for private assets.

INVESTMENT SUMMARY

QUARTER ENDING MARCH 31, 2018

DALLAS POLICE & FIRE PENSION SYSTEM

June, 2018

Rhett Humphreys, CFA, Partner

Keith Stronkowsky, CFA, Senior Consultant

BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

Q1 2018 PERFORMANCE & ASSET ALLOCATION

NEPC, LLC

CALENDAR YEAR INDEX PERFORMANCE

	2009	2010	2011	2012	2013	2014	2015	2016	2017	Jan	Feb	Mar	Q1	YTD
S&P 500	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	12.0%	21.8%	5.7%	-3.7%	-2.5%	-0.8%	-0.8%
Russell 1000	28.4%	16.1%	1.5%	16.4%	33.1%	13.2%	0.9%	12.1%	21.7%	5.5%	-3.7%	-2.3%	-0.7%	-0.7%
Russell 2000	27.2%	26.9%	-4.2%	16.3%	38.8%	4.9%	-4.4%	21.3%	14.6%	2.6%	-3.9%	1.3%	-0.1%	-0.1%
Russell 2500	34.4%	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	17.6%	16.8%	3.0%	-4.1%	1.0%	-0.2%	-0.2%
MSCI EAFE	31.8%	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	1.0%	25.0%	5.0%	-4.5%	-1.8%	-1.5%	-1.5%
MSCI EM	78.5%	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	11.2%	37.3%	8.3%	-4.6%	-1.9%	1.4%	1.4%
MSCI ACWI	34.6%	12.7%	-7.3%	16.1%	22.8%	4.2%	-2.4%	7.9%	24.0%	5.6%	-4.2%	-2.1%	-1.0%	-1.0%
Private Equity*	13.7%	19.7%	7.9%	12.5%	20.6%	12.7%	9.6%	8.3%	13.7%*	-	-	-	-	-
BC TIPS	11.4%	6.3%	13.6%	7.0%	-8.6%	3.6%	-1.4%	4.7%	3.0%	-0.9%	-1.0%	1.1%	-0.8%	-0.8%
BC Municipal Bond	12.9%	2.4%	10.7%	6.8%	-2.6%	9.1%	3.3%	0.2%	6.2%	-1.2%	-0.3%	0.4%	-1.1%	-1.1%
BC Muni High Yield	32.7%	7.8%	9.2%	18.1%	-5.5%	13.8%	1.8%	3.0%	9.7%	-0.9%	0.1%	1.5%	0.6%	0.6%
BC US Corp High Yield	58.2%	15.1%	5.0%	15.8%	7.4%	2.5%	-4.5%	17.1%	7.5%	0.6%	-0.8%	-0.6%	-0.9%	-0.9%
BC US Aggregate	5.9%	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	2.6%	4.2%	-1.2%	-0.9%	0.6%	-1.5%	-1.5%
BC Global Aggregate	-6.5%	-5.3%	-5.3%	-4.1%	2.7%	-0.6%	3.3%	2.1%	7.4%	1.2%	-0.9%	1.1%	1.4%	1.4%
BC Long Treasuries	-12.9%	9.4%	29.9%	3.6%	-12.7%	25.1%	-1.2%	1.3%	8.5%	-3.2%	-3.0%	3.0%	-3.3%	-3.3%
BC US Long Credit	16.8%	10.7%	17.1%	12.7%	-6.6%	16.4%	-4.6%	10.2%	13.7%	-1.3%	-3.3%	0.7%	-3.8%	-3.8%
BC US STRIPS 20+ Yr	-36.0%	10.9%	58.5%	3.0%	-21.0%	46.4%	-3.7%	1.4%	10.7%	-4.2%	-4.6%	4.4%	-4.6%	-4.6%
JPM GBI-EM Glob Div	22.0%	15.7%	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	9.9%	14.6%	4.5%	-1.0%	1.0%	4.4%	4.4%
JPM EMBI Glob Div	29.8%	12.2%	7.3%	17.4%	-5.3%	7.4%	1.2%	10.2%	12.2%	0.0%	-2.0%	0.3%	-1.7%	-1.7%
CS Leveraged Loan	44.9%	10.0%	1.8%	9.4%	6.2%	2.1%	-0.4%	9.9%	5.2%	1.1%	0.2%	0.3%	1.6%	1.6%
CS Hedge Fund	18.6%	10.9%	-2.5%	7.7%	9.7%	4.1%	-0.7%	1.2%	7.1%	2.7%	-2.1%	-	0.5%	0.5%
BBG Commodity	18.9%	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	11.8%	0.8%	2.0%	-1.7%	-0.6%	-0.4%	-0.4%
Alerian MLP	76.4%	35.9%	13.9%	4.8%	27.6%	4.8%	-32.6%	18.3%	-6.5%	5.8%	-9.7%	-6.9%	-11.1%	-11.1%
FTSE NAREIT Eqy REITs	28.0%	28.0%	8.3%	18.1%	2.5%	30.1%	3.2%	8.5%	3.5%	-4.2%	-7.7%	3.8%	-8.2%	-8.2%

Source: Bloomberg, Barclays, Alerian, Nareit, MSCI, JP Morgan, Credit Suisse, Thomson One
*Private Equity return represents calendar year pooled IRR and is subject to a one quarter lag

Dallas Police & Fire Pension

TRAILING RETURNS: BY BROAD COMPOSITE

	Market Value ($)	% of Portfolio	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
DPFP	**2,087,889,452**	**100.0**	**0.8**	**8**	**5.2**	**99**	**0.6**	**99**	**0.3**	**99**	**1.5**	**99**	**1.3**	**99**	**6.0**	**Jun-96**
Policy Index			*0.1*	*25*	*10.5*	*30*	*9.2*	*1*	*9.1*	*3*	*8.5*	*5*	*6.7*	*18*	*--*	*Jun-96*
Total Equity	**723,693,481**	**34.7**	**-0.7**	**--**	**-6.9**	**--**	**-2.9**	**--**	**3.0**	**--**	**3.8**	**--**	**--**	**--**	**4.3**	**Dec-10**
Total Equity Policy Index			*-0.3*	*--*	*17.4*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*Dec-10*
Total Fixed Income	**344,022,770**	**16.5**	**1.4**	**24**	**6.2**	**38**	**2.6**	**74**	**3.0**	**48**	**4.9**	**27**	**5.5**	**31**	**5.7**	**Jul-06**
Total Fixed Income Policy Index			*0.9*	*36*	*6.5*	*34*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*Jul-06*
Total Real Assets	**744,324,106**	**35.6**	**2.7**	**--**	**13.4**	**--**	**1.2**	**--**	**-2.8**	**--**	**-2.4**	**--**	**--**	**--**	**-2.4**	**Dec-10**
Total Real Assets Policy Index			*-0.4*	*--*	*8.8*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*Dec-10*
Total GAA	142,255,906	6.8	**-1.9**	**77**	**3.5**	**83**	**3.1**	**63**	**4.0**	**58**	**5.2**	**55**	**4.1**	**72**	**3.9**	**Jul-07**
Total GAA Policy Index			*0.1*	*28*	*9.9*	*35*	*7.7*	*4*	*7.0*	*15*	*7.0*	*17*	*6.9*	*18*	*7.0*	*Jul-07*
Cash Equivalents	**133,593,191**	**6.4**	**0.3**	**--**	**1.1**	**--**	**1.1**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**1.1**	**Apr-15**
91 Day T-Bills			*0.4*	*--*	*1.2*	*--*	*0.5*	*--*	*0.3*	*--*	*0.3*	*--*	*0.3*	*--*	*0.5*	*Apr-15*

Policy Indexes are calculated using policy benchmarks and policy weights of the underlying sub composites.

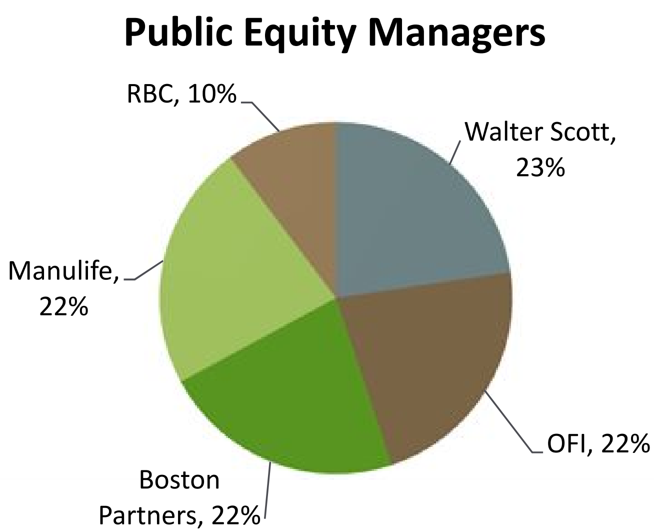
Dallas Police & Fire Pension

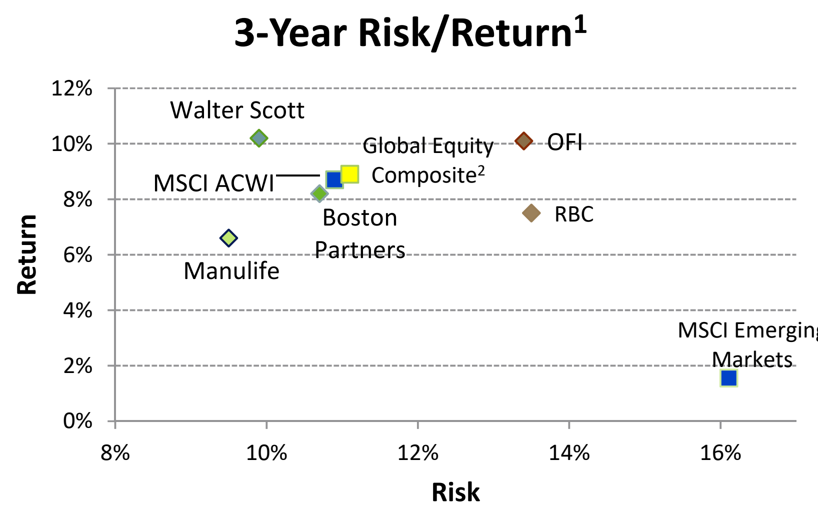
TRAILING RETURNS: BY ASSET CLASS

	Market Value ($)	% of Portfolio	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
DPFP	**2,087,889,452**	**100.0**	**0.8**	**8**	**5.2**	**99**	**0.6**	**99**	**0.3**	**99**	**1.5**	**99**	**1.3**	**99**	**6.0**	**Jun-96**
Policy Index			*0.1*	*25*	*10.5*	*30*	*9.2*	*1*	*9.1*	*3*	*8.5*	*5*	*6.7*	*18*	*--*	*Jun-96*
Global Equity	**437,447,135**	**21.0**	**-0.7**	**43**	**16.7**	**34**	**8.9**	**32**	**10.2**	**38**	**8.7**	**48**	**6.5**	**48**	**6.5**	**Jul-06**
MSCI ACWI Gross			*-0.8*	*47*	*15.4*	*43*	*8.7*	*34*	*9.8*	*45*	*8.5*	*51*	*6.1*	*55*	*6.6*	*Jul-06*
Emerging Markets Equity	**49,784,995**	**2.4**	**-0.9**	**93**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**-0.9**	**Jan-18**
MSCI Emerging Markets Gross			*1.5*	*50*	*25.4*	*37*	*9.2*	*49*	*5.4*	*50*	*2.8*	*68*	*3.4*	*63*	*1.5*	*Jan-18*
Private Equity	**236,461,351**	**11.3**	**-0.8**	**--**	**-26.4**	**--**	**-10.2**	**--**	**-11.0**	**--**	**-5.6**	**--**	**-4.4**	**--**	**-0.7**	**Oct-05**
Russell 3000 + 3%			*0.1*	*--*	*17.2*	*--*	*13.5*	*--*	*16.4*	*--*	*15.7*	*--*	*12.9*	*--*	*11.9*	*Oct-05*
Short Term Core Bonds	**49,972,880**	**2.4**	**-0.3**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**-0.1**	**Jun-17**
BBgBarc US Treasury 1-3 Yr TR			*-0.2*	*--*	*0.0*	*--*	*0.4*	*--*	*0.5*	*--*	*0.7*	*--*	*1.1*	*--*	*-0.2*	*Jun-17*
Global Bonds	**68,938,132**	**3.3**	**4.1**	**3**	**11.1**	**5**	**4.5**	**23**	**2.7**	**54**	**3.5**	**58**	**--**	**--**	**3.7**	**Dec-10**
BBgBarc Global Aggregate TR			*1.4*	*26*	*7.0*	*28*	*3.1*	*55*	*1.5*	*80*	*2.0*	*82*	*2.6*	*84*	*2.1*	*Dec-10*
High Yield	**81,965,612**	**3.9**	**0.1**	**15**	**5.6**	**20**	**5.3**	**39**	**4.7**	**44**	**6.2**	**22**	**--**	**--**	**6.9**	**Dec-10**
BBgBarc Global High Yield TR			*-0.4*	*20*	*6.6*	*8*	*6.7*	*11*	*5.3*	*17*	*6.5*	*17*	*8.3*	*1*	*6.9*	*Dec-10*
Bank Loans	**111,825,508**	**5.4**	**1.5**	**24**	**5.3**	**45**	**4.7**	**20**	**--**	**--**	**--**	**--**	**--**	**--**	**4.3**	**Jan-14**
S&P/LSTA Leveraged Loan TR			*1.4*	*24*	*4.4*	*59*	*4.2*	*28*	*3.9*	*27*	*4.3*	*35*	*5.6*	*30*	*3.8*	*Jan-14*
Emerging Markets Debt	**20,548,625**	**1.0**	**1.1**	**41**	**8.6**	**38**	**7.7**	**13**	**2.4**	**57**	**3.8**	**60**	**--**	**--**	**4.3**	**Dec-10**
50% JPM EMBI/50% JPM GBI-EM			*1.3*	*40*	*8.6*	*38*	*5.7*	*52*	*1.7*	*62*	*3.6*	*60*	*--*	*--*	*3.8*	*Dec-10*
Private Debt	**10,772,012**	**0.5**	**4.1**	**--**	**1.3**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**-7.8**	**Jan-16**
Barclays Global High Yield +2%			*0.1*	*--*	*8.8*	*--*	*8.8*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*12.9*	*Jan-16*
Natural Resources	**200,726,486**	**9.6**	**2.1**	**--**	**-1.5**	**--**	**2.1**	**--**	**4.8**	**--**	**4.7**	**--**	**--**	**--**	**5.7**	**Dec-10**
S&P Global Natural Resources			*-1.8*	*--*	*16.6*	*--*	*6.9*	*--*	*1.8*	*--*	*-1.2*	*--*	*-0.1*	*--*	*-0.4*	*Dec-10*
Infrastructure	**61,591,601**	**2.9**	**1.1**	**--**	**69.9**	**--**	**17.3**	**--**	**11.3**	**--**	**--**	**--**	**--**	**--**	**10.7**	**Jul-12**
S&P Global Infrastructure Index			*-5.5*	*--*	*5.1*	*--*	*4.4*	*--*	*6.9*	*--*	*6.5*	*--*	*3.7*	*--*	*8.2*	*Jul-12*
Real Estate	**482,006,019**	**23.1**	**3.2**	**--**	**5.6**	**--**	**-3.5**	**--**	**-7.1**	**--**	**-5.5**	**--**	**-5.0**	**--**	**3.7**	**Mar-85**
NCREIF Property Index			*1.7*	*--*	*7.1*	*--*	*8.7*	*--*	*10.0*	*--*	*10.6*	*--*	*6.1*	*--*	*8.0*	*Mar-85*
Risk Parity	83,810,806	4.0	**-1.6**	**74**	**8.0**	**55**	**3.7**	**56**	**3.7**	**63**	**6.7**	**23**	**--**	**--**	**6.9**	**Dec-10**
60% MSCI ACWI/40% Barclays Global Agg			*0.0*	*29*	*11.7*	*24*	*6.2*	*12*	*6.2*	*26*	*5.7*	*44*	*4.6*	*59*	*5.9*	*Dec-10*
GTAA	23,685,766	1.1	**1.0**	**9**	**10.4**	**31**	**5.2**	**29**	**5.0**	**48**	**6.1**	**37**	**--**	**--**	**6.1**	**Dec-10**
60% MSCI ACWI/40% Barclays Global Agg			*0.0*	*29*	*11.7*	*24*	*6.2*	*12*	*6.2*	*26*	*5.7*	*44*	*4.6*	*59*	*5.9*	*Dec-10*
Absolute Return	34,759,334	1.7	**-4.3**	**84**	**-9.5**	**93**	**-2.5**	**73**	**5.3**	**19**	**--**	**--**	**--**	**--**	**5.1**	**Aug-11**
HFRX Absolute Return Index			*0.3*	*36*	*3.0*	*43*	*1.7*	*34*	*2.1*	*52*	*1.1*	*54*	*-0.7*	*85*	*1.5*	*Aug-11*
Cash Equivalents	**133,593,191**	**6.4**	**0.3**	**--**	**1.1**	**--**	**1.1**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**1.1**	**Apr-15**
91 Day T-Bills			*0.4*	*--*	*1.2*	*--*	*0.5*	*--*	*0.3*	*--*	*0.3*	*--*	*0.3*	*--*	*0.5*	*Apr-15*

PUBLIC EQUITY: COMPOSITE OVERVIEW

Manager	Benchmark	Asset Class	Descriptions
Boston Partners	MSCI ACWI	Global Equity	Value; Bottom Up
Manulife	MSCI ACWI	Global Equity	Value; Bottom Up
OFI	MSCI ACWI	Global Equity	Growth; Bottom Up
Walter Scott	MSCI ACWI	Global Equity	Growth; Bottom Up
RBC	MSCI Emerging Markets	Emerging Market Equity	Top Down / Bottom up Blend





[1]Boston Partners and Manulife 3-year risk/reward obtained from manager separate account composites. RBC 3-year risk/reward obtained from eVestment separate account composite.
[2]Global Equity Composite consists of Boston Partners, Manulife, OFI, and Walter Scott performance.

*May not add to 100% due to rounding.

Dallas Police & Fire Pension

PUBLIC EQUITY: TRAILING MANAGER RETURNS

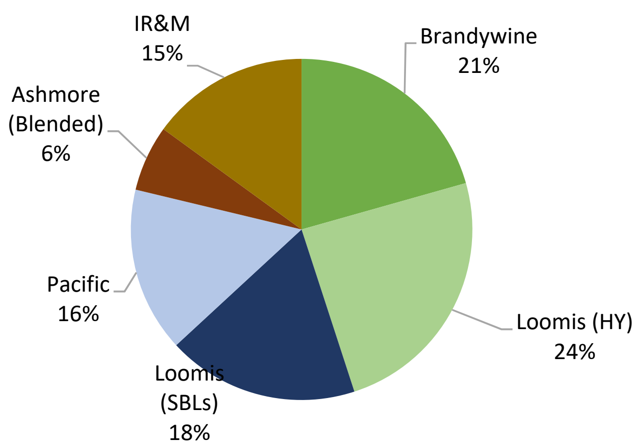
	Market Value ($)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
DPFP	**2,087,889,452**	**100.0**	**0.8**	**5.2**	**0.6**	**0.3**	**1.5**	**1.3**	**6.0**	**Jun-96**
Policy Index			*0.2*	*10.5*	*9.2*	*9.1*	*8.5*	*6.7*	*--*	*Jun-96*
InvestorForce Public DB Net Rank			*8*	*99*	*99*	*99*	*99*	*99*	*77*	*Jun-96*
Public Equity	**487,232,130**	**23.3**	**-0.7**	**16.7**	**8.8**	**10.2**	**8.7**	**6.5**	**6.5**	**Jul-06**
Public Equity Weighted Index			*-0.6*	*15.7*	*8.2*	*9.6*	*8.4*	*6.5*	*6.5*	*Jul-06*
Global Equity	**437,447,135**	**21.0**	**-0.7**	**16.7**	**8.9**	**10.2**	**8.7**	**6.5**	**6.5**	**Jul-06**
MSCI ACWI Gross			*-0.8*	*15.4*	*8.7*	*9.8*	*8.5*	*6.1*	*6.6*	*Jul-06*
eV All Global Equity Net Rank			*43*	*34*	*32*	*38*	*48*	*48*	*41*	*Jul-06*
Boston Partners Global Investors Inc	107,571,477	5.2	-1.3	--	--	--	--	--	8.6	Jul-17
MSCI ACWI Gross			*-0.8*	*15.4*	*8.7*	*9.8*	*8.5*	*6.1*	*10.5*	*Jul-17*
eV Global Large Cap Value Eq Net Rank			*48*	*--*	*--*	*--*	*--*	*--*	*36*	*Jul-17*
Manulife Asset Management LLC	111,137,843	5.3	-3.1	--	--	--	--	--	2.8	Jul-17
MSCI ACWI Gross			*-0.8*	*15.4*	*8.7*	*9.8*	*8.5*	*6.1*	*10.5*	*Jul-17*
eV Global Large Cap Value Eq Net Rank			*88*	*--*	*--*	*--*	*--*	*--*	*96*	*Jul-17*
OFI	108,614,838	5.2	0.5	23.8	10.1	11.8	10.2	8.5	6.5	Oct-07
MSCI ACWI Gross			*-0.8*	*15.4*	*8.7*	*9.8*	*8.5*	*6.1*	*4.7*	*Oct-07*
eV Global Large Cap Growth Eq Net Rank			*70*	*44*	*54*	*50*	*48*	*29*	*43*	*Oct-07*
Walter Scott	110,122,976	5.3	1.2	17.6	10.2	9.6	9.5	--	9.5	Dec-09
MSCI ACWI Gross			*-0.8*	*15.4*	*8.7*	*9.8*	*8.5*	*6.1*	*9.6*	*Dec-09*
eV Global Large Cap Growth Eq Net Rank			*60*	*81*	*51*	*89*	*72*	*--*	*75*	*Dec-09*
Emerging Markets Equity	**49,784,995**	**2.4**	**-0.9**	**--**	**--**	**--**	**--**	**--**	**-0.9**	**Jan-18**
MSCI Emerging Markets Gross			*1.5*	*25.4*	*9.2*	*5.4*	*2.8*	*3.4*	*1.5*	*Jan-18*
eV Emg Mkts Equity Net Rank			*93*	*--*	*--*	*--*	*--*	*--*	*93*	*Jan-18*
RBC	49,784,995	2.4	-0.9	--	--	--	--	--	-0.9	Jan-18
MSCI Emerging Markets			*1.4*	*24.9*	*8.8*	*5.0*	*2.5*	*3.0*	*1.4*	*Jan-18*
eV Emg Mkts Equity Net Rank			*93*	*--*	*--*	*--*	*--*	*--*	*93*	*Jan-18*

March 31, 2018

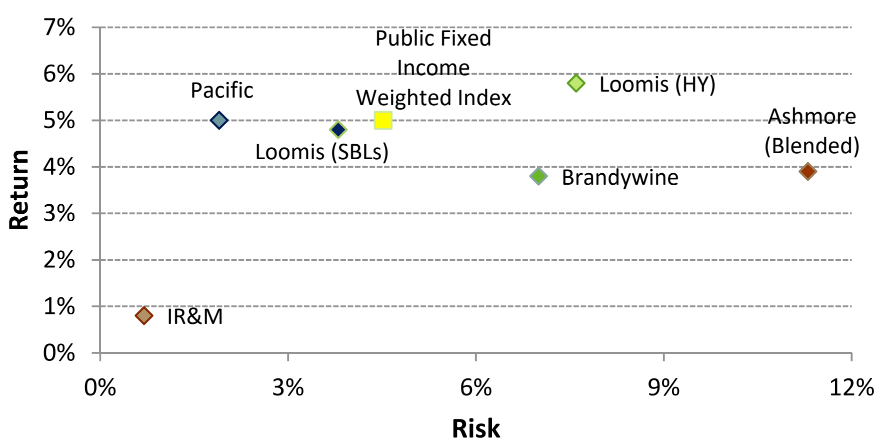
PUBLIC FIXED INCOME: COMPOSITE OVERVIEW

Manager	Benchmark	Asset Class	Descriptions
Brandywine	Barclays Global Aggregate	Global Bonds	Aggressive, but diversified
Loomis (HY)	Barclays Global High Yield	High Yield	Aggressive
Loomis (BLs)	S&P/LSTA US Levered	Bank Loans	Bank Loans (min 65% of portfolio)
Pacific Asset Management	Credit Suisse Leveraged Loan	Bank Loans	Focus on largest, most liquid credits
Ashmore (Blended Currency)	50% JPM EMBI GD/25% JPM ELMI+/25% JPM GBI EM GD	Emerging Market Debt	Blended Currency EMD
IR&M	Barclays 1-3 Yr treasury	Short Term Core Bonds	Short Term Liquidity

Public Fixed Income Managers



3-Year Risk/Return*



*Pacific Asset Management and IR&M 3-year risk/return obtained from manager composites.

Dallas Police & Fire Pension

PUBLIC FIXED INCOME: TRAILING MANAGER

	Market Value ($)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
DPFP	**2,087,889,452**	**100.0**	**0.8**	**5.2**	**0.6**	**0.3**	**1.5**	**1.3**	**6.0**	**Jun-96**
Policy Index			*0.1*	*10.5*	*9.2*	*9.1*	*8.5*	*6.7*	*--*	*Jun-96*
InvestorForce Public DB Net Rank			*8*	*99*	*99*	*99*	*99*	*99*	*77*	*Jun-96*
Public Fixed Income	**333,250,757**	**16.0**	**1.4**	**6.6**	**5.1**	**3.7**	**5.3**	**--**	**5.8**	**Dec-10**
Public Fixed Income Weighted Index			*0.7*	*5.9*	*5.0*	*4.0*	*5.1*	*--*	*5.3*	*Dec-10*
Short Term Core Bonds	**49,972,880**	**2.4**	**-0.3**	**--**	**--**	**--**	**--**	**--**	**-0.1**	**Jun-17**
BBgBarc US Treasury 1-3 Yr TR			*-0.2*	*0.0*	*0.4*	*0.5*	*0.7*	*1.1*	*-0.2*	*Jun-17*
IR&M	49,972,880	2.4	-0.3	--	--	--	--	--	-0.1	Jul-17
BBgBarc US Treasury 1-3 Yr TR			*-0.2*	*0.0*	*0.4*	*0.5*	*0.7*	*1.1*	*-0.2*	*Jul-17*
eV US Short Duration Fixed Inc Net Rank			*52*	*--*	*--*	*--*	*--*	*--*	*72*	*Jul-17*
Global Bonds	**68,938,132**	**3.3**	**4.1**	**11.1**	**4.5**	**2.7**	**3.5**	**--**	**3.7**	**Dec-10**
BBgBarc Global Aggregate TR			*1.4*	*7.0*	*3.1*	*1.5*	*2.0*	*2.6*	*2.1*	*Dec-10*
eV All Global Fixed Inc Net Rank			*3*	*5*	*23*	*54*	*58*	*--*	*57*	*Dec-10*
Brandywine	68,938,132	3.3	4.1	11.1	3.8	2.5	4.4	5.5	5.3	Oct-04
BBgBarc Global Aggregate TR			*1.4*	*7.0*	*3.1*	*1.5*	*2.0*	*2.6*	*3.7*	*Oct-04*
eV All Global Fixed Inc Net Rank			*3*	*5*	*36*	*57*	*35*	*31*	*43*	*Oct-04*
High Yield	**81,965,612**	**3.9**	**0.1**	**5.6**	**5.3**	**4.7**	**6.2**	**--**	**6.9**	**Dec-10**
BBgBarc Global High Yield TR			*-0.4*	*6.6*	*6.7*	*5.3*	*6.5*	*8.3*	*6.9*	*Dec-10*
eV Global High Yield Fixed Inc Net Rank			*15*	*20*	*39*	*44*	*22*	*--*	*5*	*Dec-10*
Loomis Sayles	81,965,612	3.9	0.1	5.6	5.8	5.7	6.3	8.8	9.8	Oct-98
BBgBarc Global High Yield TR			*-0.4*	*6.6*	*6.7*	*5.3*	*6.5*	*8.3*	*8.6*	*Oct-98*
eV Global High Yield Fixed Inc Net Rank			*15*	*20*	*26*	*14*	*20*	*1*	*1*	*Oct-98*

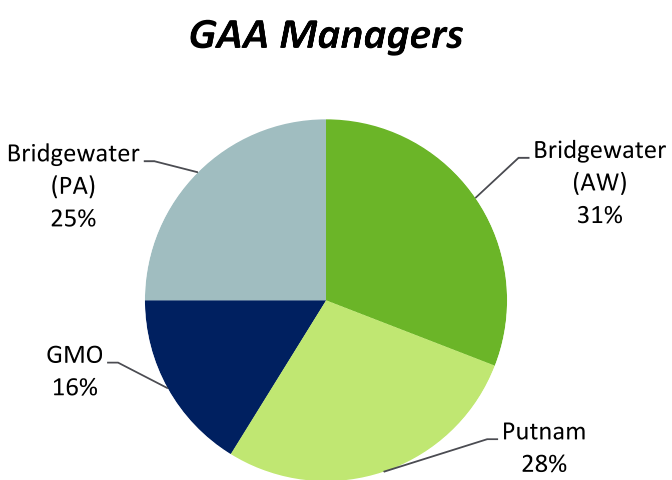
Dallas Police & Fire Pension

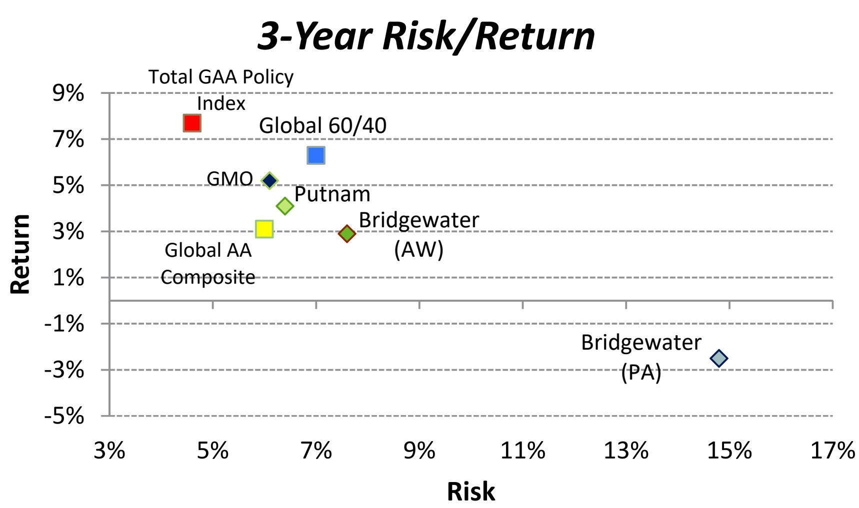
PUBLIC FIXED INCOME: TRAILING MANAGER

	Market Value ($)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Bank Loans	**111,825,508**	**5.4**	**1.5**	**5.3**	**4.7**	**--**	**--**	**--**	**4.3**	**Jan-14**
S&P/LSTA Leveraged Loan TR			*1.4*	*4.4*	*4.2*	*3.9*	*4.3*	*5.6*	*3.8*	*Jan-14*
eV All Global Fixed Inc Net Rank			*24*	*45*	*20*	*--*	*--*	*--*	*26*	*Jan-14*
Loomis Sayles Senior Rate and Fixed Income	60,239,104	2.9	1.6	5.6	4.8	--	--	--	4.4	Jan-14
S&P/LSTA Leveraged Loan TR			*1.4*	*4.4*	*4.2*	*3.9*	*4.3*	*5.6*	*3.8*	*Jan-14*
eV US Float-Rate Bank Loan Fixed Inc Net Rank			*14*	*6*	*19*	*--*	*--*	*--*	*16*	*Jan-14*
Pacific Asset Management	51,586,404	2.5	1.3	--	--	--	--	--	3.2	Aug-17
Credit Suisse Leveraged Loan			*1.6*	*4.6*	*4.3*	*4.2*	*4.5*	*5.4*	*3.1*	*Aug-17*
eV US Float-Rate Bank Loan Fixed Inc Net Rank			*36*	*--*	*--*	*--*	*--*	*--*	*18*	*Aug-17*
Emerging Markets Debt	**20,548,625**	**1.0**	**1.1**	**8.6**	**7.7**	**2.4**	**3.8**	**--**	**4.3**	**Dec-10**
50% JPM EMBI/50% JPM GBI-EM			*1.3*	*8.6*	*5.7*	*1.7*	*3.6*	*--*	*3.8*	*Dec-10*
eV All Emg Mkts Fixed Inc Net Rank			*41*	*38*	*13*	*57*	*60*	*--*	*54*	*Dec-10*
Ashmore EM Blended Debt	20,548,625	1.0	1.1	--	--	--	--	--	2.8	Dec-17
Ashmore Blended Debt Benchmark			*0.8*	*7.5*	*--*	*--*	*--*	*--*	*1.9*	*Dec-17*
eV All Emg Mkts Fixed Inc Net Rank			*41*	*--*	*--*	*--*	*--*	*--*	*38*	*Dec-17*

GLOBAL ASSET ALLOCATION: COMPOSITE OVERVIEW

Manager	Benchmark	Asset Class	Descriptions
Bridgewater (All Weather)	91 Day T-bill +7%	Risk Parity	Passive approach
Bridgewater (PAMM)	HFRX Absolute Return	Absolute Return	Global Macro Hedge Fund
GMO	CPI +5%	GTAA	Unconstrained
Putnam	Global 60/40	Risk Parity	Active approach





Dallas Police & Fire Pension

GLOBAL ASSET ALLOCATION:TRAILING RETURNS

	Market Value ($)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
DPFP	**2,087,889,452**	**100.0**	**0.8**	**5.2**	**0.6**	**0.3**	**1.5**	**1.3**	**6.0**	**Jun-96**
Policy Index			*0.1*	*10.5*	*9.2*	*9.1*	*8.5*	*6.7*	*--*	*Jun-96*
InvestorForce Public DB Net Rank			*8*	*99*	*99*	*99*	*99*	*99*	*77*	*Jun-96*
Total GAA	**142,255,906**	**6.8**	**-1.9**	**3.5**	**3.1**	**4.0**	**5.2**	**4.1**	**3.9**	**Jul-07**
Total GAA Policy Index			*0.1*	*9.9*	*7.7*	*7.0*	*7.0*	*6.9*	*7.0*	*Jul-07*
eV All Global Balanced / TAA Net Rank			*77*	*83*	*63*	*58*	*55*	*72*	*69*	*Jul-07*
Risk Parity	**83,810,806**	**4.0**	**-1.6**	**8.0**	**3.7**	**3.7**	**6.7**	**--**	**6.9**	**Dec-10**
60% MSCI ACWI/40% Barclays Global Agg			*0.0*	*11.7*	*6.2*	*6.2*	*5.7*	*4.6*	*5.9*	*Dec-10*
eV All Global Balanced / TAA Net Rank			*74*	*55*	*56*	*63*	*23*	*--*	*22*	*Dec-10*
Bridgewater All Weather	44,138,547	2.1	-1.6	7.4	2.9	3.2	7.0	4.9	5.8	Sep-07
91 Day T-Bill + 7%			*2.1*	*8.2*	*7.6*	*7.4*	*7.3*	*7.3*	*7.5*	*Sep-07*
eV All Global Balanced / TAA Net Rank			*74*	*59*	*65*	*67*	*17*	*56*	*21*	*Sep-07*
Putnam	39,672,259	1.9	-1.6	8.6	4.1	3.6	4.7	--	6.1	Dec-09
60% MSCI World (Net) / 40% CITI WGBI			*0.3*	*11.6*	*6.3*	*6.4*	*5.9*	*4.6*	*6.4*	*Dec-09*
eV All Global Balanced / TAA Net Rank			*74*	*46*	*46*	*64*	*61*	*--*	*47*	*Dec-09*
GTAA	**23,685,766**	**1.1**	**1.0**	**10.4**	**5.2**	**5.0**	**6.1**	**--**	**6.1**	**Dec-10**
60% MSCI ACWI/40% Barclays Global Agg			*0.0*	*11.7*	*6.2*	*6.2*	*5.7*	*4.6*	*5.9*	*Dec-10*
eV All Global Balanced / TAA Net Rank			*9*	*31*	*29*	*48*	*37*	*--*	*38*	*Dec-10*
GMO	23,685,766	1.1	1.0	10.4	5.2	5.0	6.1	5.2	5.0	Sep-07
CPI + 5% (Seasonally Adjusted)			*1.9*	*7.5*	*7.0*	*6.5*	*6.7*	*6.6*	*6.8*	*Sep-07*
eV All Global Balanced / TAA Net Rank			*9*	*31*	*29*	*48*	*37*	*51*	*41*	*Sep-07*
Absolute Return	**34,759,334**	**1.7**	**-4.3**	**-9.5**	**-2.5**	**5.3**	**--**	**--**	**5.1**	**Aug-11**
HFRX Absolute Return Index			*0.3*	*3.0*	*1.7*	*2.1*	*1.1*	*-0.7*	*1.5*	*Aug-11*
eV Alt All Macro Rank			*84*	*93*	*73*	*19*	*--*	*--*	*20*	*Aug-11*
Bridgewater Pure Alpha	34,759,334	1.7	-4.3	-9.5	-2.5	5.3	--	--	5.1	Aug-11
HFRX Absolute Return Index			*0.3*	*3.0*	*1.7*	*2.1*	*1.1*	*-0.7*	*1.5*	*Aug-11*
eV Alt All Macro Rank			*84*	*93*	*73*	*19*	*--*	*--*	*20*	*Aug-11*

RISK/RETURN & COMPLIANCE ANALYSIS

NEPC, LLC

Dallas Police & Fire Pension

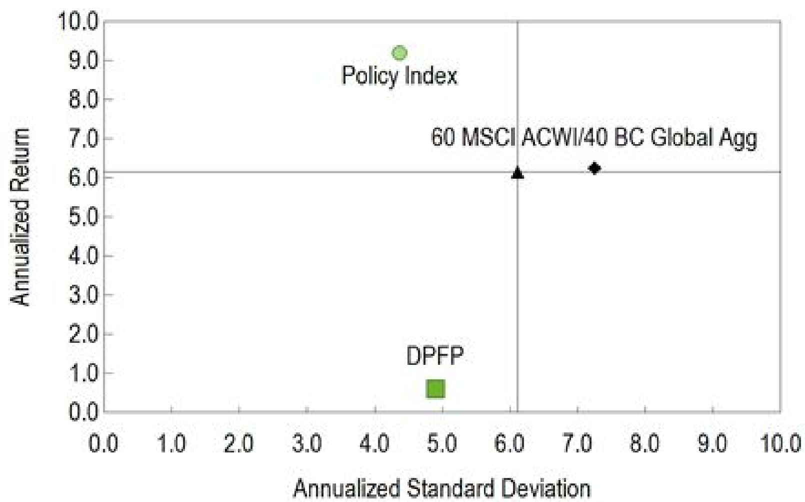
TOTAL FUND RISK/RETURN

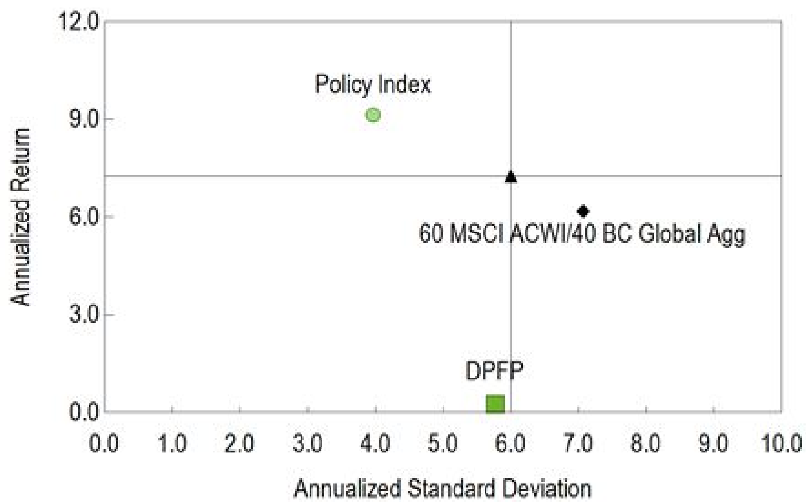
3 Years Ending March 31, 2018	Anlzd Ret	Rank	Anlzd Std Dev	Rank
DPFP	0.6%	99	4.9%	6
Policy Index	9.2%	1	4.4%	3
60 MSCI ACWI/40 BC Global Agg	6.2%	45	7.3%	93
InvestorForce Public DB Net Median	6.2%	--	6.1%	--

5 Years Ending March 31, 2018	Anlzd Ret	Rank	Anlzd Std Dev	Rank
DPFP	0.3%	99	5.8%	38
Policy Index	9.1%	3	4.0%	2
60 MSCI ACWI/40 BC Global Agg	6.2%	88	7.1%	91
InvestorForce Public DB Net Median	7.3%	--	6.0%	--

	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
DPFP	0.0	99	0.0	99
Policy Index	2.0	1	3.3	1
60 MSCI ACWI/40 BC Global Agg	0.8	82	1.4	37
InvestorForce Public DB Net Median	0.9	--	1.3	--

	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
DPFP	0.0	99	0.0	99
Policy Index	2.2	1	4.1	1
60 MSCI ACWI/40 BC Global Agg	0.8	95	1.7	70
InvestorForce Public DB Net Median	1.2	--	1.9	--





POLICY COMPLIANCE TEST: TRADITIONAL MANAGERS

3 Year Rolling Excess Return Violations:

Manager	Return Rank	NEPC Recommendation
Global Equity		
OFI	54	HOLD
Walter Scott	51	HOLD
GAA		
Bridewater AW	65	HOLD
Bridgewater PA	73	HOLD

3 Year Rolling Risk-Adjusted Excess Return Violations:

Manager	Sharpe Ratio Rank	NEPC Recommendation
Public Fixed Income		
IR&M	55	HOLD
Brandywine	70	HOLD
Loomis Sayles HY	96	HOLD
Loomis Sayles SBL	82	HOLD
GAA		
Bridgewater AW	71	HOLD
Bridgewater PA	64	HOLD

Qualitative Concerns:

Manager	NEPC Status
N/A	N/A

Note: 'N/A' denotes that the Board has voted to terminate the manager in question. However, market exposure will be maintained with managers that have previously been approved for liquidation and to rebalance if additional cash is needed.

ASSET ALLOCATION

NEPC, LLC

ASSET ALLOCATION: BROAD COMPOSITES

	Market Value $	% of Portfolio	Policy %
Total Equity	723,693,481	34.7%	30%
Total Fixed Income	344,022,770	16.5%	33%
Total Real Assets	744,324,106	35.6%	25%
Total GAA	142,255,906	6.8%	10%
Cash	133,593,191	6.4%	2%
Total DPFP	**2,087,889,452**	**100%**	**100%**

ASSET ALLOCATION: BY ASSET CLASS

	Current Allocation $	Current Allocation %	Policy %
Global Equity	437,447,135	21.0%	20%
Emerging Market Equity	49,784,995	2.4%	5%
Private Equity	236,461,351	11.3%	5%
Total Equity	723,693,481	34.7%	30%
Short-Term Core Bonds	49,972,880	2.4%	2%
High Yield	81,965,612	3.9%	5%
Bank Loans	111,825,508	5.4%	6%
Emerging Market Debt	20,548,625	1.0%	6%
Global Bonds	68,938,132	3.3%	3%
Structured & AR Credit	--	0.0%	6%
Private Debt	10,772,012	0.5%	5%
Total Fixed Income	344,022,770	16.5%	33%
Natural Resources	200,726,486	9.6%	5%
Infrastructure	61,591,601	2.9%	5%
Real Estate	482,006,019	23.1%	12%
Real Assets – Liquid	--	0.0%	3%
Total Real Assets	744,324,106	35.6%	25%
Risk Parity	83,810,806	4.0%	5%
GTAA	23,685,766	1.1%	3%
Absolute Return	34,759,334	1.7%	2%
Total GAA	142,255,906	6.8%	10%
Cash	133,593,191	6.4%	2%
Total	**2,087,889,452**	**100%**	**100%**

ASSET ALLOCATION: PORTFOLIO LOOKTHROUGH

	Lookthrough %	Actual %	Policy %
US Equity	10.2%	--	--
International Equity	10.0%	--	--
Emerging Markets Eq	3.7%	2.4%	5%
Global Equity	--	21.0%	20%
Private Equity	11.3%	11.3%	5%
Total Equity	35.2%	34.7%	30%
Short-Term Core Bonds	2.4%	2.4%	2%
High Yield	3.9%	3.9%	5%
Bank Loans	5.4%	5.4%	6%
Emerging Market Debt	1.2%	1.0%	6%
Global Bonds	5.6%	3.3%	3%
Structured & AR Credit	--	--	6%
Private Debt	0.5%	0.5%	5%
Total Fixed Income	19.0%	16.5%	33.0%

	Lookthrough %	Actual %	Policy %
Natural Resources	9.6%	9.6%	5%
Infrastructure	3.0%	3.0%	5%
Real Estate	23.1%	23.7%	12%
Real Assets – Liquid	--	--	3%
Total Real Assets	35.0%	35.6%	25%
Risk Parity	--	4.0%	5%
GTAA	--	1.1%	3%
Absolute Return	--	1.7%	2%
Hedge Funds*	2.6%	--	--
Total GAA	2.6%	6.8%	10%
Cash	6.4%	6.5%	2%

*Hedge Fund lookthrough exposure due to GMO and Bridgewater Pure Alpha Major Markets allocations.

ATTRIBUTION*

- **Selection Effect**
  - Contribution to excess return due to the over/under weighting of managers within asset classes
    - The Selection Effect of **0.037%** is due to the outperformance of the DPFP Global Equity return vs. the Global Equity Index return. Based on policy, DPFP selected outperforming managers vs. the index.
      - Policy Weight*(Global Equity Return – Global Equity Index)= Selection Effect
- **Allocation Effect**
  - Contribution to excess return due to the over/under weighting of asset classes
    - The Allocation Effect of **-0.029%** is due to the overweighting of the Global Equity allocation vs. the Global Equity Policy Allocation and also the underperformance of the Global Equity Index, -0.841% vs. the Total Plan Index, 1.150%. DPFP was overweight to an underperforming sector resulting in a negative Allocation Effect for the quarter.
      - (Current Allocation – Policy Allocation)*(Global Equity Index – Total Policy Index)= Allocation Index
- **Interaction Effect**
  - Is the resulting combination of the allocation and selection effects
    - (Global Equity Weight – Policy Weight)*(Global Equity Return – Global Equity Index Return)= Interaction Effect

*The attribution effects shown are for the quarter. To get the quarterly attribution effects the effects are first calculated monthly then linked using the Mencharo linking method to get the quarterly effects.

ATTRIBUTION ANALYSIS: BY ASSET CLASS – 3 MONTHS ENDING MARCH 31, 2018

	Portfolio Weights		Returns		Attribution Effects By			
	DPFP	Policy	DPFP	Index	Selection	Allocation	Interaction	Total*
Global Equity	21.0%	20.0%	-0.668%	-0.841%	0.037%	-0.029%	0.000%	0.008%
Emerging Markets Equity	2.4%	5.0%	-0.918%	1.466%	-0.124%	-0.043%	0.064%	-0.103%
Private Equity	11.3%	5.0%	-0.804%	0.095%	-0.048%	-0.021%	-0.022%	-0.091%
Short Term Core Bonds	2.4%	2.0%	-0.266%	-0.156%	-0.002%	-0.002%	0.000%	-0.005%
Global Bonds	3.3%	3.0%	4.069%	1.362%	0.080%	0.005%	0.004%	0.089%
High Yield	3.9%	5.0%	0.086%	-0.360%	0.022%	0.006%	-0.005%	0.023%
Bank Loans	5.4%	6.0%	1.456%	1.448%	0.000%	-0.010%	0.000%	-0.009%
Structured & A/R Credit	0.0%	6.0%	0.000%	1.505%	-0.090%	-0.082%	0.090%	-0.082%
Emerging Markets Debt	1.0%	6.0%	1.113%	1.329%	-0.013%	-0.059%	0.011%	-0.061%
Private Debt	0.5%	5.0%	4.063%	0.136%	0.195%	0.000%	-0.174%	0.021%
Natural Resources	9.6%	5.0%	2.055%	-1.781%	0.192%	-0.086%	0.182%	0.287%
Infrastructure	2.9%	5.0%	1.145%	-5.514%	0.337%	0.122%	-0.144%	0.314%
Real Estate	23.1%	12.0%	3.188%	1.700%	0.178%	0.161%	0.180%	0.519%
Liquid Real Assets	0.0%	3.0%	0.000%	1.858%	-0.056%	-0.052%	0.056%	-0.052%
Risk Parity	4.0%	5.0%	-1.614%	0.010%	-0.082%	0.001%	0.015%	-0.066%
GTAA	1.1%	3.0%	1.015%	0.010%	0.030%	0.002%	-0.018%	0.013%
Absolute Return	1.7%	2.0%	-4.291%	0.299%	-0.091%	-0.001%	0.010%	-0.082%
Cash Equivalents	6.4%	2.0%	0.346%	0.384%	-0.001%	-0.007%	-0.001%	-0.009%
Total*	**100.0%**	**100.0%**	**0.865%**	**0.150%**	**0.565%**	**-0.095%**	**0.245%**	**0.716%**

*Total column may not add up due to rounding.
**Global Equity attribution is compared to the MSCI ACWI Index.

ATTRIBUTION ANALYSIS: BY ASSET CLASS – 12 MONTHS ENDING MARCH 31, 2018

	Portfolio Weights		Returns		Attribution Effects By			
	DPFP	Policy	DPFP	Index	Selection	Allocation	Interaction	Total*
Global Equity	16.3%	20.00%	16.719%	15.440%	0.247%	-0.340%	-0.232%	-0.325%
Emerging Markets Equity	0.0%	5.00%	20.918%	25.371%	-0.204%	-0.670%	0.139%	-0.735%
Private Equity	10.9%	5.00%	-26.397%	17.191%	-2.290%	0.386%	-3.695%	-5.599%
Short Term Core Bonds	2.4%	2.00%	-0.099%	-0.003%	-0.002%	0.028%	0.005%	0.031%
Global Bonds	3.1%	3.00%	11.104%	6.974%	0.126%	-0.001%	0.001%	0.127%
High Yield	3.9%	5.00%	5.610%	6.649%	-0.052%	0.043%	0.014%	0.005%
Bank Loans	5.2%	6.00%	5.294%	4.430%	0.053%	0.147%	-0.019%	0.181%
Structured & A/R Credit	0.0%	6.00%	0.000%	6.224%	-0.388%	0.259%	0.388%	0.259%
Emerging Markets Debt	0.9%	6.00%	8.580%	8.609%	0.003%	0.096%	-0.002%	0.097%
Private Debt	0.8%	5.00%	1.272%	8.771%	-0.368%	0.072%	0.307%	0.010%
Natural Resources	11.3%	5.00%	-1.547%	16.582%	-0.926%	0.363%	-1.203%	-1.766%
Infrastructure	2.9%	5.00%	69.886%	5.149%	3.360%	0.213%	0.747%	4.320%
Real Estate	25.5%	12.00%	5.614%	7.133%	-0.171%	-0.430%	-0.227%	-0.828%
Liquid Real Assets	0.0%	3.00%	0.000%	7.465%	-0.232%	0.092%	0.232%	0.092%
Risk Parity	3.9%	5.00%	7.965%	11.709%	-0.185%	-0.017%	0.046%	-0.156%
GTAA	1.0%	3.00%	10.419%	11.709%	-0.038%	-0.024%	0.026%	-0.037%
Absolute Return	1.7%	2.00%	-9.461%	3.025%	-0.266%	0.024%	0.037%	-0.205%
Cash Equivalents	10.3%	2.00%	1.099%	1.164%	-0.001%	-0.754%	-0.001%	-0.756%
Total*	**100 .0%**	**100.00%**	**5.233%**	**10.518%**	**-1.335%**	**-0.513%**	**-3.437%**	**-5.285%**

*Total column may not add up due to rounding.
**Global Equity attribution is compared to the MSCI ACWI Index.

APPENDIX

NEPC, LLC

FOOTNOTES

1. **Sustainable Asset Management** was included in the Global Natural Resources composite from 11/1/2008 to 3/31/2015 and included in the Global Equity composite from 4/1/2015 to present.
2. **Hudson Clean Energy** was included in the Global Natural Resources composite from 1/1/2010 to 3/31/2015 and included in the Private Markets composite from 4/1/2015 to 12/31/2015 and the Private Equity composite from 1/1/2016 to present.
3. **RREEF** was included in the Real Estate composite from 2/1/1999 to 12/31/2009 and included in the Global Equity composite from 1/1/2010 to present.
4. **Highland Crusader** was included in the Global Fixed Income composite from 7/1/2003 to 12/31/2015 and included in the Private Credit composite from 1/1/2016 to present.
5. **Highland Capital Management** was included in the Global Fixed Income composite from 1/1/2007 to 12/31/2015 and included in the Private Credit composite from 1/1/2016 to present.
6. **Oaktree Fund IV** was included in the Global Fixed Income composite from 1/1/2002 to 3/31/2015 and included in the Private Markets composite from 4/1/2015 to 12/31/2015 and included in the Private Credit composite from 1/1/2016 to present.
7. **Global Infrastructure composite** was included in the Private Markets composite history until 6/30/2012.
8. **Private Equity composite** includes Private Credit managers until 12/31/2015. From 01/01/2016 to present the Private Equity and Credit managers are now in separate composites.
9. **Policy index** changed on 4/1/2016 from 20% MSCI ACWI, 15% S&P 500+2%, 10% Global Natural Resources Benchmark, 15% Barclays Global Agg, 20% CPI+5%, 10% CPI +5%, 15% NCREIF PI to 20% MSCI ACWI (gross), 5% MSCI EM Equity (gross), 5% Russell 3000 +3%, 2% Barclays UST 1-3 Yr, 3% Barclays Global Agg, 5% Barclays Global HY, 6% S&P Leveraged Loan Index, 6% HFRI RV: FI (50/50- Abs/Corp), 6%50% JPM EMBI/50% JPM GBI-EM, 5% Barclays Global HY +2%, 5% S&P Global Nat Res, 5% S&P Global Infra, 12% NCREIF, 3% CPI +5%, 5% 60% MSCI ACWI/40% Barclays Global Agg, 3% 60% MSCI ACWI/40% Barclays Global Agg, 2% HFRX Abs Ret Index, 2% 90 Day T-Bill.
10. **Natural Resources** benchmark changed from the Global Natural Resources benchmark from 12/1/2010 to 12/31/2015 to the S&P Global Natural Resources benchmark 1/1/2016 to present.
11. **Infrastructure benchmark** changed from CPI +5% from 7/1/2012 to 12/31/2015 to S&P Global Infrastructure benchmark 1/1/2016 to present.
12. **Total Asset Allocation benchmark** changed from CPI+ 5% from 7/1/2007 to 12/31/2015 to 80% 60/40 MSCI ACWI & Barclays Global Agg and 20% HFRX Absolute Return Index 1/1/2016 to present.
13. **Global Equity Index and Public Equity Index** are both allocation indexes, consisting of the manager's weighting in the composite multiplied by the manager's benchmark).
14. **Global Equity Composite data** consists of Boston Partners, Manulife, OFI, and Walter Scott performance.

GLOSSARY OF INVESTMENT TERMINOLOGY

Alpha - Measures the relationship between the fund performance and the performance of another fund or benchmark index and equals the excess return while the other fund or benchmark index is zero.

Alpha Jensen - The average return on a portfolio over and above that predicted by the capital asset pricing model (CAPM), given the portfolio's beta and the average market return. Also known as the abnormal return or the risk adjusted excess return.

Annualized Excess Return over Benchmark - Annualized fund return minus the annualized benchmark return for the calculated return.

Annualized Return - A statistical technique whereby returns covering periods greater than one year are converted to cover a 12 month time span.

Beta - Measures the volatility or systematic risk and is equal to the change in the fund's performance in relation to the change in the assigned index's performance.

Information Ratio - A measure of the risk adjusted return of a financial security, asset, or portfolio.

Formula:
(Annualized Return of Portfolio - Annualized Return of Benchmark)/Annualized Standard Deviation(Period Portfolio Return – Period Benchmark Return). To annualize standard deviation, multiply the deviation by the square root of the number of periods per year where monthly returns per year equals 12 and quarterly returns is four periods per year.

R-Squared – Represents the percentage of a fund's movements that can be explained by movements in an index. R-Squared values range from 0 to 100. An R-Squared of 100 denotes that all movements of a fund are completely explained by movements in the index.

Sharpe Ratio - A measure of the excess return or risk premium per unit of risk in an investment asset or trading strategy.

Sortino Ratio - A method to differentiate between good and bad volatility in the Sharpe Ratio. The differentiation of up and down volatility allows the calculation to provide a risk adjusted measure of a security or fund's performance without upward price change penalties.

Formula:
*Calculation Average (X-Y)/Downside Deviation (X-Y) * 2*
Where X=Return Series X Y = Return Series Y which is the risk free return (91 day T-bills)

Standard Deviation - The standard deviation is a statistical term that describes the distribution of results. It is a commonly used measure of volatility of returns of a portfolio, asset class, or security. The higher the standard deviation the more volatile the returns are.

Formula:
(Annualized Return of Portfolio – Annualized Return of Risk Free) / Annualized Standard Deviation (Portfolio Returns)

Tracking Error - Tracking error, also known as residual risk, is a measure of the degree to which a portfolio tracks its benchmark. It is also a measure of consistency of excess returns. Tracking error is computed as the annualized standard deviation of the difference between a portfolio's return and that of its benchmark.

Formula:
*Tracking Error = Standard Deviation (X-Y) * √(# of periods per year)*
Where X = periods portfolio return and Y = the period's benchmark return
For monthly returns, the periods per year = 12
For quarterly returns, the periods per year = 4

Treynor Ratio - A risk-adjusted measure of return based on systematic risk. Similar to the Sharpe ratio with the difference being the Treynor ratio uses beta as the measurement of volatility.

Formula:
(Portfolio Average Return - Average Return of Risk-Free Rate)/Portfolio Beta

Up/Down Capture Ratio - A measure of what percentage of a market's returns is "captured" by a portfolio. For example, if the market declines 10% over some period, and the manager declines only 9%, then his or her capture ratio is 90%. In down markets, it is advantageous for a manager to have as low a capture ratio as possible. For up markets, the higher the capture ratio the better. Looking at capture ratios can provide insight into how a manager achieves excess returns. A value manager might typically have a lower capture ratio in both up and down markets, achieving excess returns by protecting on the downside, whereas a growth manager might fall more than the overall market in down markets, but achieve above-market returns in a rising market.

UpsideCapture = TotalReturn(FundReturns)/TotalReturns(BMReturn) when Period Benchmark Return is > = 0

DownsideCapture = TotalReturn(FundReturns)/TotalReturns(BMReturn) when Benchmark <0

Source: InvestorForce

GLOSSARY OF INVESTMENT TERMINOLOGY

 # Of Portfolios/Observations[1] – The total number of data points that make up a specified universe

Allocation Index[3] - The allocation index measures the value added (or subtracted) to each portfolio by active management. It is calculated monthly: The portfolio asset allocation to each category from the prior month-end is multiplied by a specified market index.

Asset Allocation Effect[2] - Measures an investment manager's ability to effectively allocate their portfolio's assets to various sectors. The allocation effect determines whether the overweighting or underweighting of sectors relative to a benchmark contributes positively or negatively to the overall portfolio return. Positive allocation occurs when the portfolio is over weighted in a sector that outperforms the benchmark and underweighted in a sector that underperforms the benchmark. Negative allocation occurs when the portfolio is over weighted in a sector that underperforms the benchmark and under weighted in a sector that outperforms the benchmark.

Agency Bonds (Agencies)[3] - The full faith and credit of the United States government is normally not pledged to payment of principal and interest on the majority of government agencies issuing these bonds, with maturities of up to ten years. Their yields, therefore, are normally higher than government and their marketability is good, thereby qualifying them as a low risk-high liquidity type of investment. They are eligible as security for advances to the member banks by the Federal Reserve, which attests to their standing.

Asset Backed Securities (ABS)[3] - Bonds which are similar to mortgage-backed securities but are collateralized by assets other than mortgages; commonly backed by credit card receivables, auto loans, or other types of consumer financing.

Attribution[3] - Attribution is an analytical technique that allows us to evaluate the performance of the portfolio relative to the benchmark. A proper attribution tells us where value was added or subtracted as a result of the manager's decisions.

Average Effective Maturity[4] - For a single bond, it is a measure of maturity that takes into account the possibility that a bond might be called back to the issuer.

For a portfolio of bonds, average effective maturity is the weighted average of the maturities of the underlying bonds. The measure is computed by weighing each bond's maturity by its market value with respect to the portfolio and the likelihood of any of the bonds being called. In a pool of mortgages, this would also account for the likelihood of prepayments on the mortgages.

Batting Average[1] - A measurement representing an investment manager's ability to meet or beat an index.

Formula: Divide the number of days (or months, quarters, etc.) in which the manager beats or matches the index by the total number of days (or months, quarters, etc.) in the period of question and multiply that factor by 100.

Brinson Fachler (BF) Attribution[1] - The BF methodology is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio's underlying performance. The main advantage of the BF methodology is that rather than using the overall return of the benchmark, it goes a level deeper than BHB and measures whether the benchmark sector, country, etc. outperformed/or underperformed the overall benchmark.

Brinson Hood Beebower (BHB) Attribution[1] - The BHB methodology shows that excess return must be equal to the sum of all other factors (i.e., allocation effect, selection effect, interaction effect, etc.). The advantage to using the BHB methodology is that it is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio's underlying performance.

Corporate Bond (Corp) [4] - A debt security issued by a corporation and sold to investors. The backing for the bond is usually the payment ability of the company, which is typically money to be earned from future operations. In some cases, the company's physical assets may be used as collateral for bonds.

Correlation[1] - A range of statistical relationships between two or more random variables or observed data values. A correlation is a single number that describes the degree of relationship between variables.

Data Source: [1]InvestorForce, [2]Interaction Effect Performance Attribution, [3]NEPC, LLC, [4]Investopedia, [5]Hedgeco.net

Source: InvestorForce

GLOSSARY OF INVESTMENT TERMINOLOGY

Coupon[4] – The interest rate stated on a bond when it is issued. The coupon is typically paid semiannually. This is also referred to as the "coupon rate" or "coupon percent rate."

Currency Effect[1] - Is the effect that changes in currency exchange rates over time affect excess performance.

Derivative Instrument[3] - A financial obligation that derives its precise value from the value of one or more other instruments (or assets) at the same point of time. For example, the relationship between the value of an S&P 500 futures contract (the derivative instrument in this case) is determined by the value of the S&P 500 Index and the value of a U.S. Treasury bill that matures at the expiration of the futures contract.

Downside Deviation[1] - Equals the standard deviation of negative return or the measure of downside risk focusing on the standard deviation of negative returns.

Formula:
Annualized Standard Deviation (Fund Return - Average Fund Return) where average fund return is greater than individual fund returns, monthly or quarterly.

Duration[3] - Duration is a measure of interest rate risk. The greater the duration of a bond, or a portfolio of bonds, the greater its price volatility will be in response to a change in interest rates. A bond's duration is inversely related to interest rates and directly related to time to maturity.

Equity/Debt/Cash Ratio[1] – The percentage of an investment or portfolio that is in Equity, Debt, and/or Cash (i.e. A 7/89/4 ratio represents an investment that is made up of 7% Equity, 89% Debt, and 4% Cash).

Foreign Bond[3] - A bond that is issued in a domestic market by a foreign entity, in the domestic market's currency. A foreign bond is most often issued by a foreign firm to raise capital in a domestic market that would be most interested in purchasing the firm's debt. For foreign firms doing a large amount of business in the domestic market, issuing foreign bonds is a common practice.

Hard Hurdle[5] – is a hurdle rate that once beaten allows a fund manager to charge a performance fee on only the funds above the specified hurdle rate.

High-Water Mark[4] - The highest peak in value that an investment fund/account has reached. This term is often used in the context of fund manager compensation, which is performance based. Some performance-based fees only get paid when fund performance exceeds the high-water mark. The high-water mark ensures that the manager does not get paid large sums for poor performance.

Hurdle Rate[4] - The minimum rate of return on an investment required, in order for a manager to collect incentive fees from the investor, which is usually tied to a benchmark.

Interaction Effects[2] - The interaction effect measures the combined impact of an investment manager's selection and allocation decisions within a sector. For example, if an investment manager had superior selection and over weighted that particular sector, the interaction effect is positive. If an investment manager had superior selection, but underweighted that sector, the interaction effect is negative. In this case, the investment manager did not take advantage of the superior selection by allocating more assets to that sector. Since many investment managers consider the interaction effect to be part of the selection or the allocation, it is often combined with the either effect.

Median[3] - The value (rate of return, market sensitivity, etc.) that exceeds one-half of the values in the population and that is exceeded by one-half of the values. The median has a percentile rank of 50.

Modified Duration[3] - The percentage change in the price of a fixed income security that results from a change in yield.

Mortgage Backed Securities (MBS)[3] - Bonds which are a general obligation of the issuing institution but are also collateralized by a pool of mortgages.

Municipal Bond (Muni) [4] - A debt security issued by a state, municipality or county to finance its capital expenditures.

Net Investment Change[1] – Is the change in an investment after accounting for all Net Cash Flows.

Performance Fee[4] - A payment made to a fund manager for generating positive returns. The performance fee is generally calculated as a percentage of investment profits, often both realized and unrealized.

Data Source: [1]InvestorForce, [2]Interaction Effect Performance Attribution, [3]NEPC, LLC, [4]Investopedia, [5]Hedgeco.net

Source: InvestorForce

GLOSSARY OF INVESTMENT TERMINOLOGY

Policy Index[3] - A custom benchmark designed to indicate the returns that a passive investor would earn by consistently following the asset allocation targets set forth in this investment policy statement.

Price to Book (P/B)[4] - A ratio used to compare a stock's market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter's book value per share, also known as the "price-equity ratio".

Price to Earnings (P/E)[3] - The weighted equity P/E is based on current price and trailing 12 months earnings per share (EPS).

Price to Sales (P/S)[4] - A ratio for valuing a stock relative to its own past performance, other companies, or the market itself. Price to sales is calculated by dividing a stock's current price by its revenue per share for the trailing 12 months.

Return on Equity (ROE)[4] - The amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

Selection (or Manager) Effect[2] - Measures the investment manager's ability to select securities within a given sector relative to a benchmark. The over or underperformance of the portfolio is weighted by the benchmark weight, therefore, selection is not affected by the manager's allocation to the sector. The weight of the sector in the portfolio determines the size of the effect—the larger the sector, the larger the effect is, positive or negative.

Soft Hurdle rate[5] – is a hurdle rate that once beaten allows a fund manager to charge a performance fee based on the entire annualized return.

Tiered Fee[1] – A fee structure that is paid to fund managers based on the size of the investment (i.e. 1.00% fee on the first $10M invested, 0.90% on the next $10M, and 0.80% on the remaining balance).

Total Effects[2] - The active management (total) effect is the sum of the selection, allocation, and interaction effects. It is also the difference between the total portfolio return and the total benchmark return. You can use the active management effect to determine the amount the investment manager has added to a portfolio's return.

Total Return[1] - The actual rate of return of an investment over a specified time period. Total return includes interest, capital gains, dividends, and distributions realized over a defined time period.

Universe[3] - The list of all assets eligible for inclusion in a portfolio.

Upside Deviation[1] – Standard Deviation of Positive Returns

Weighted Avg. Market Cap.[4] - A stock market index weighted by the market capitalization of each stock in the index. In such a weighting scheme, larger companies account for a greater portion of the index. Most indexes are constructed in this manner, with the best example being the S&P 500.

Yield (%)[3] - The current yield of a security is the current indicated annual dividend rate divided by current price.

Yield to Maturity[3] -The discount rate that equates the present value of cash flows, both principal and interest, to market price.

Data Source: [1]InvestorForce, [2]Interaction Effect Performance Attribution, [3]NEPC, LLC, [4]Investopedia, [5]Hedgeco.net

Source: InvestorForce

INFORMATION DISCLOSURE

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PRIVATE MARKETS REVIEW
(Abbreviated Report)

DALLAS POLICE & FIRE PENSION SYSTEM

Fourth Quarter, 2017

Rhett Humphreys, CFA, Partner
Keith Stronkowsky, CFA, Senior Consultant
Michael Yang, Senior Research Consultant

BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

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Information Disclosure

May, 2018

Trustees
Dallas Police & Fire Pension System
4100 Harry Hines Blvd – Suite 100
Dallas, TX 75219

RE: Private Markets Strategy – 4th Quarter 2017

Dear Trustees:

We are pleased to present the December 31, 2017 Private Markets Report for Dallas Police & Fire Pension System, (DPFP). The report provides a variety of performance analysis for the private markets portfolio. The reports include trailing performance, performance by investment stage and vintage year performance.

The DPFP experienced a positive quarter with a nominal IRR of 1.50%. The annualized IRR of the private markets portfolio since inception was 1.10% at quarter end. Since inception, the Total Value to Paid In multiple (current valuation plus cumulative distributions, divided by total capital calls) was 1.05.

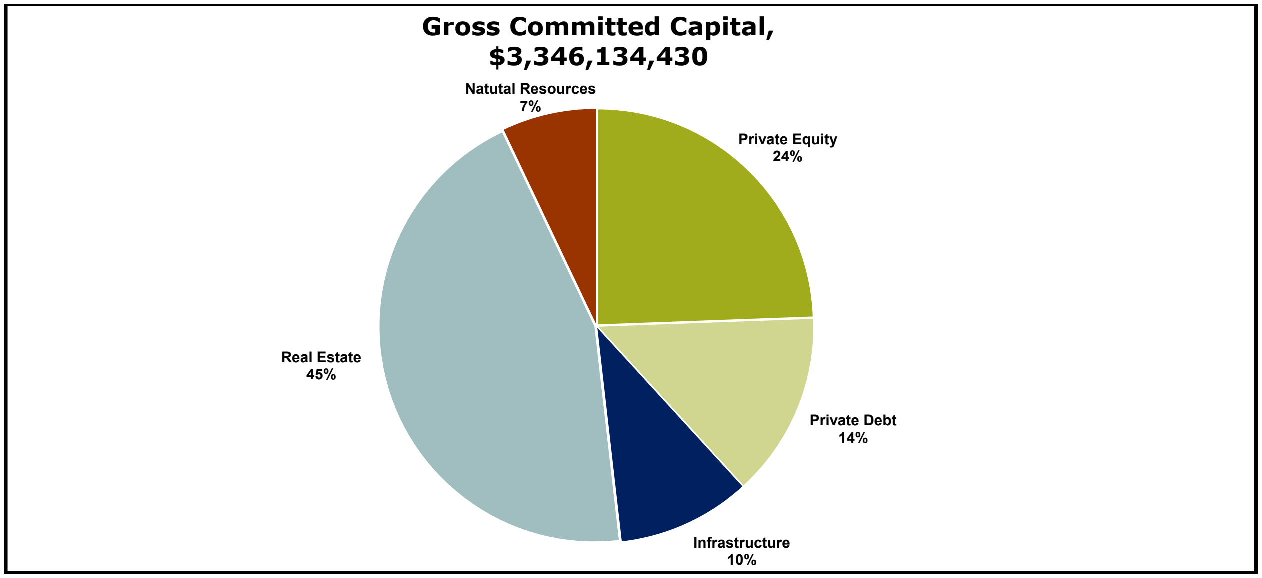
The following table presents the status of the DPFP private markets portfolio as of December 31, 2017:

Since Inception Commitments	Terminated Commitments	Amount Funded	Amount Distributed	Reported Value	Call Ratio	Distribution Ratio
$3,346,134,430	$153,554,416	$3,166,942,899	$2,317,170,840	$1,039,012,619	94.64%	73.17%

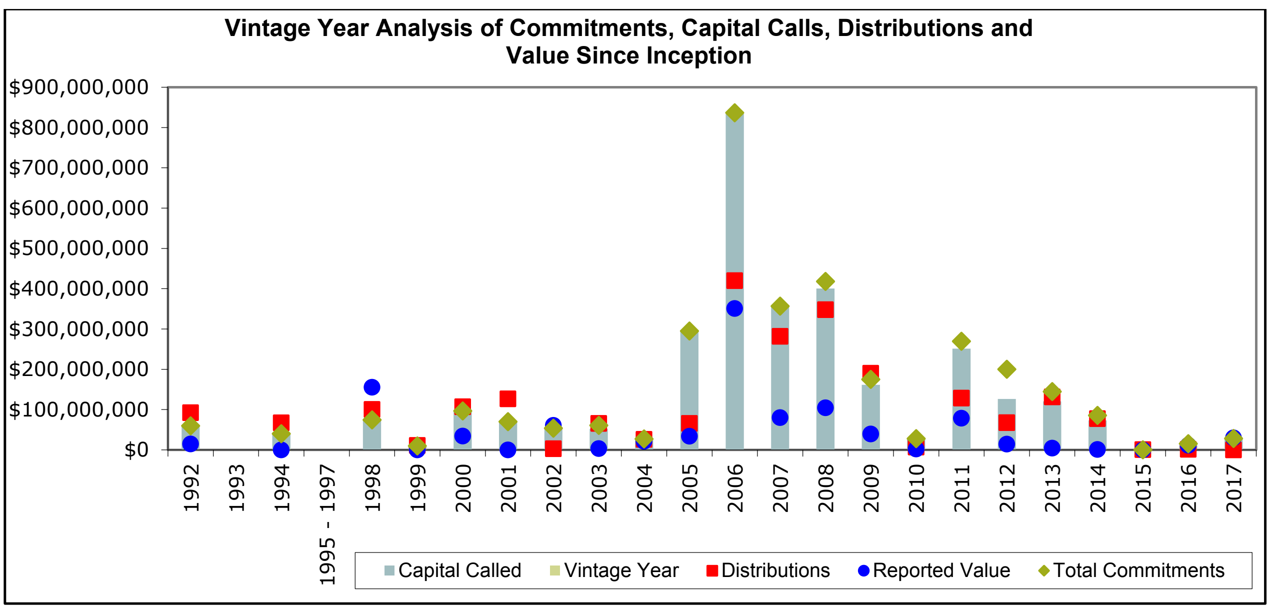
Unfunded Commitment	Market Exposure (Reported Value + Unfunded Commitment)	Total Fund Composite as of 12/31/2017	Private Markets Target	Reported Value of Total Fund	Market Exposure as a % Total Fund
$46,292,868	$1,085,305,487	$2,099,918,772	Varies By Category	49.48%	51.68%

Total Value (Reported Value + Distributions)	Total Value To Capital Call Ratio	Internal Rate of Return IRR, Since Inception (October 13, 1994)
$3,356,183,459	1.05	1.10%

As of December 31, 2017, the DPFP has made commitments totaling $3,346.13 million to 88 private markets assets.



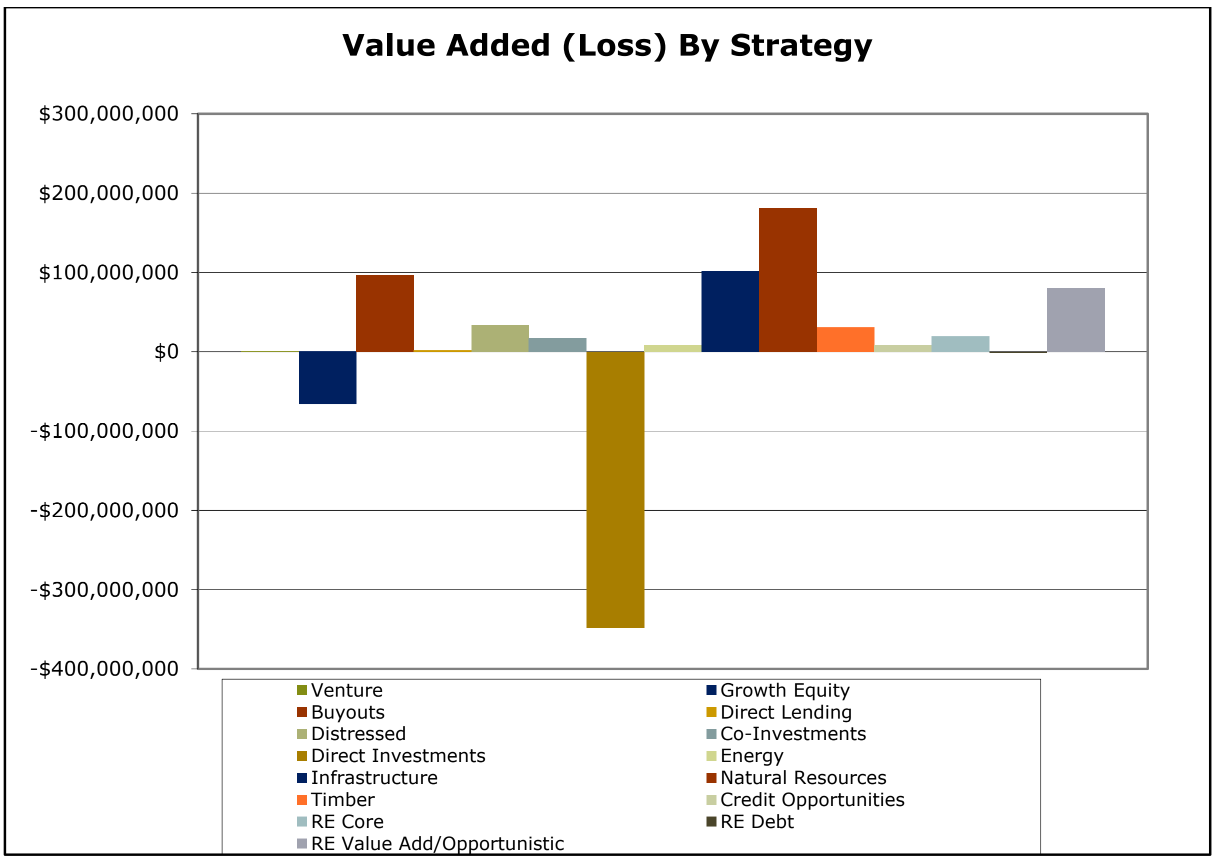
The following chart provides an analysis of the vintage year performance comparing the capital calls to the distributions and reported value for the private markets program:



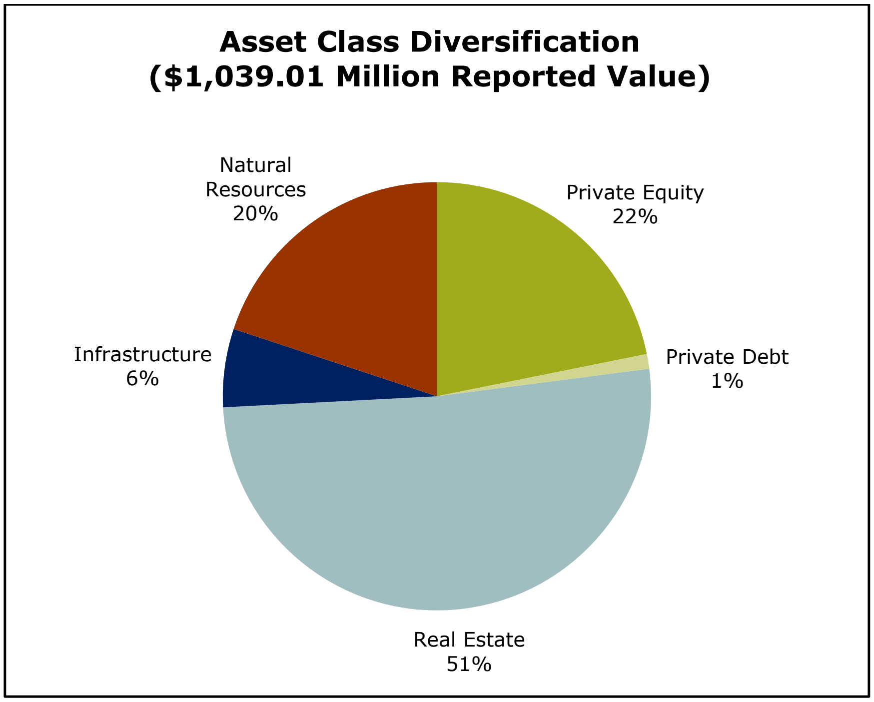
During the quarter-ended December 31, 2017, the DPFP private markets portfolio funded 17 investments and received 22 distributions from its funds. The summary of the cash flows follows:

Amount Funded for the Quarter	Number of Funds Calling Capital	Distributions for the Quarter	Number of Funds Making Distributions	Net Cash/Stock Flows for the Quarter
$3,733,436	17	$45,266,623	17	$41,533,186

Since inception the DPFP private markets portfolio added $163.10 million in value to the DPFP. Investment strategies adding value include Venture $0.29 million, Buyouts $96.27 million, Direct Lending $1.21 million, Distressed $33.44 million, Co-investments $17.48 million, Energy $8.67 million, Infrastructure $101.70 million, Natural Resources $181.30 million, Timber $30.76 million, Credit Opportunities $8.28 million, RE Core $19.21 million, RE Value Add/Opportunistic $79.95 million. Strategies losing value include Growth Equity ($66.27) million, Direct Investments ($348.32) million, and RE Debt ($0.88) million.



As of December 31, 2017, the private markets funds in the DPFP portfolio had the following investment strategy diversification based on the investment fund's reported value:



We thank you for the opportunity to work with the DPFP and look forward to continued success in the future.

Dallas Police & Fire Pension System

Performance Analysis - Total Private Markets Program

12/31/2017

Investment Name	Commitment Amount	Paid in Capital	Capital to be Funded	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR (SI)
Private Equity / Debt	$ 1,278,370,965	$ 1,176,757,647	$ 39,139,281	$ 1,062,050,553	$ 238,456,964	$ 1,300,507,517	$ 97,655,274	92%	0.88	1.08	2.10%
Real Assets	$ 2,067,763,466	$ 1,990,185,252	$ 7,153,587	$ 1,255,120,287	$ 800,555,655	$ 2,055,675,942	$ 65,442,596	96%	0.63	1.03	0.64%
Total	**$ 3,346,134,430**	**$ 3,166,942,899**	**$ 46,292,868**	**$ 2,317,170,840**	**$ 1,039,012,619**	**$ 3,356,183,459**	**$ 163,097,870**	**95%**	**0.73**	**1.05**	**1.10%**

Performance Analysis - Private Markets Subsectors

Investment Name	Commitment Amount	Paid in Capital	Capital to be Funded	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR (SI)[1]
Private Equity	$ 817,067,403	$ 738,023,676	$ 38,315,926	$ 580,845,366	$ 226,874,281	$ 807,719,647	$ 54,729,004	90%	0.77	1.07	1.76%
Private Debt	$ 461,303,562	$ 438,733,970	$ 823,355	$ 481,205,187	$ 11,582,683	$ 492,787,870	$ 42,926,270	95%	1.07	1.10	2.75%
Natural Resources	$ 236,406,706	$ 236,406,706	$ -	$ 241,584,128	$ 206,889,255	$ 448,473,383	$ 212,066,677	100%	1.02	1.90	9.26%
Real Estate	$ 1,497,356,760	$ 1,463,107,600	$ 2,286,685	$ 682,545,338	$ 532,236,698	$ 1,214,782,036	$ (248,325,564)	98%	0.47	0.83	-3.67%
Infrastructure	$ 334,000,000	$ 290,670,946	$ 4,866,901	$ 330,990,822	$ 61,429,702	$ 392,420,523	$ 101,701,483	87%	1.14	1.35	7.58%
Total	**$ 3,346,134,430**	**$ 3,166,942,899**	**$ 46,292,868**	**$ 2,317,170,840**	**$ 1,039,012,619**	**$ 3,356,183,459**	**$ 163,097,870**	**95%**	**0.73**	**1.05**	**1.10%**

Notes:

1. IRR's are since inception as of the following dates: Private Equity (10.13.94), Private Debt (12.20.01), Real Estate (3.31.99), Natural Resources (3.12.99), Infrastructure (10.3.07)

PRIVATE EQUITY & DEBT REVIEW

DALLAS POLICE & FIRE PENSION SYSTEM

Fourth Quarter, 2017

BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

Private Equity and Private Debt

The following table presents the status of the DPFP **PRIVATE EQUITY** portfolio as of December 31, 2017:

Since Inception Commitments	Terminated Commitments	Amount Funded	Amount Distributed	Reported Value	Call Ratio	Distribution Ratio
$817,067,403	$61,293,673	$738,023,676	$580,845,366	$226,874,281	90.33%	38.05%

Unfunded Commitment	Market Exposure (Reported Value + Unfunded Commitment)	Total Fund Composite as of 12/31/2017	Private Equity Target	Reported Value of Total Fund	Market Exposure as a % Total Fund
$38,315,926	$265,190,207	$2,099,918,772	5%	10.80%	12.63%

Total Value (Reported Value + Distributions)	Total Value To Capital Call Ratio	Internal Rate of Return IRR, Since Inception
$807,719,647	1.07	1.76%

The following table presents the status of the DPFP **PRIVATE DEBT** portfolio as of December 31, 2017:

Since Inception Commitments	Terminated Commitments	Amount Funded	Amount Distributed	Reported Value	Call Ratio	Distribution Ratio
$461,303,562	$21,763,165	$438,733,970	$481,205,187	$11,582,683	95.11%	109.68%

Unfunded Commitment	Market Exposure (Reported Value + Unfunded Commitment)	Total Fund Composite as of 12/31/2017	Private Debt Target	Reported Value of Total Fund	Market Exposure as a % Total Fund
$823,355	$12,406,038	$2,099,918,772	5%	0.55%	0.59%

Total Value (Reported Value + Distributions)	Total Value To Capital Call Ratio	Internal Rate of Return IRR, Since Inception
$492,787,870	1.10	2.75%

Dallas Police & Fire Pension System

Private Equity & Debt Funds - Executive IRR Summary

12/31/2017

#	Investment Name	Vintage Year	Commitment Amount	QTD	YTD	1 Year	3 Year	5 Year	Inception
	Active Funds:								
1	BankCap Partners Fund I	2007	20,000,000	4.96	16.62	16.62	13.98	8.02	2.39
2	Highland Crusader Fund	2003	50,955,397	9.81	-15.61	-15.61	-10.73	-1.72	4.20
3	Hudson Clean Energy Partners	2009	25,000,000	-16.23	-35.55	-35.55	-26.95	-20.11	-15.40
4	Huff Alternative Fund[3]	2000	66,795,718	-0.05	-1.24	-1.24	4.83	3.48	1.75
5	Huff Energy Fund[3]	2006	100,000,000	-0.01	0.80	0.80	2.55	-10.12	2.90
6	Industry Ventures Partnership Holdings IV	2016	5,000,000	3.77	32.66	32.66			25.22
7	Lone Star CRA Fund[3]	2008	50,000,000	0.00	-34.38	-34.38	-29.77	-27.27	-10.82
8	Lone Star Growth Capital[3]	2006	16,000,000	0.00	-84.40	-84.40	-47.72	-35.74	1.94
9	Lone Star Opportunities Fund V, LP[3]	2012	75,000,000	0.00	-75.28	-75.28	-62.89	-61.47	-61.29
10	Miscellaneous Private Equity Expenses	2016	185,839						
11	North Texas Opportunity Fund	2000	10,000,000	-9.48	-9.09	-9.09	-27.47	-22.48	0.82
12	OCM Opportunities Fund IV	2001	50,000,000	-4.41	-12.27	-12.27	9.67	13.80	28.36
13	Riverstone Credit Partners	2016	10,000,000	2.25	8.12	8.12			12.92
14	Yellowstone Energy Ventures II, L.P.	2008	5,283,254	0.01	-6.74	-6.74	-33.29	-35.33	-27.71
	Total: Active Funds		**484,220,208**	**-0.28**	**-23.09**	**-23.09**	**-10.97**	**-12.84**	**1.25**
	Completed Funds:								
1	Ashmore Global Special Situations Fund IV[1]	2007	70,000,000		-5.61	-5.61	-25.96	-15.73	-10.12
2	BankCap Partners Opportunity Fund, LP[2]	2013	20,000,000				-1.74		-5.69
3	CDK Southern Cross	2008	1,535,316				-99.99	-43.64	-20.08
4	Highland Credit Ops	2006	35,348,165	3.42	3.04	3.04	3.04	9.44	-2.06
5	Huff Alternative Income Fund	2008	47,300,000					-2.21	-4.01
6	Kainos Capital Partners, L.P.[2]	1994	40,000,000						17.82
7	Levine Leichtman Capital Partners IV[2]	2013	35,000,000				28.58		24.76
8	Levine Leichtman Capital Partners V, L.P.[2]	2008	50,000,000				26.05	14.37	20.12
9	Levine Leichtman Deep Value Fund	2013	25,000,000				16.20		15.26
10	Levine Leichtman Private Capital Solutions II, L.P.[2]	2006	75,000,000				-0.03	-5.52	0.73
11	Lone Star Fund IX (U.S.), L.P.[1]	2012	25,000,000				1.46	1.98	1.30
12	Lone Star Fund VII (U.S.), L.P.[1]	2014	35,000,000		-2.33	-2.33			-3.28
13	Lone Star Fund VIII (U.S.), L.P.[1]	2011	25,000,000		-2.03	-2.03	-11.80	56.29	47.54
14	Merit Energy Partners E-I[1]	2013	25,000,000		-2.51	-2.51	-2.29		16.26
15	Merit Energy Partners F-I[1]	2004	7,018,930		-20.57	-20.57	-21.87	-6.81	14.48
16	Merit Energy Partners G, LP[1]	2005	8,748,346		-20.57	-20.57	-27.73	-25.02	-17.19
17	Merit Energy Partners H, LP[1]	2008	39,200,000		-20.57	-20.57	-18.29	-15.70	-9.96
18	Oaktree Loan Fund 2X[1]	2010	10,000,000		-20.57	-20.57	-15.36	-14.47	-13.78
19	Oaktree Power Fund III[1]	2007	60,000,000		-6.65	-6.65	-41.69	-11.88	2.24
20	Pharos Capital Co-Investment, LLC	2011	30,000,000		-6.65	-6.65	19.06	12.47	12.35
21	Pharos Capital Co-Investments, LP	2007	20,000,000					18.25	-9.92
22	Pharos Capital Partners IIA, L.P.[1]	2008	40,000,000		-27.37	-27.37	-7.79	29.91	8.42
23	Pharos Capital Partners III, LP[1]	2005	20,000,000				-40.65	-19.59	-2.39
24	Pharos Capital Partners III, LP	2012	50,000,000				-21.07	-18.74	-19.95
	Total: Completed Funds		**794,150,757**	**3.42**	**-6.26**	**-6.26**	**-1.33**	**4.17**	**2.76**
	Total: Dallas Police & Fire Pension System		**1,278,370,965**	**-0.20**	**-22.28**	**-22.28**	**-7.18**	**-5.98**	**2.10**

1. Funds sold in Evercore secondary sale during Q1 2017
2. Funds sold in Evercore secondary sale during Q4 2016
3. Q4 2017 valuations are preliminary pending final audit.

Dallas Police & Fire Pension System

Private Equity & Debt Funds - Performance Analysis by Investment Strategy

12/31/2017

Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR
Venture													
1 Industry Ventures Partnership Holdings IV	2016	5,000,000	1,725,000	3,275,000	0	20,462	1,998,028	2,018,490	293,490	35%	0.01	1.17	25.22%
Subtotal: Venture		**5,000,000**	**1,725,000**	**3,275,000**	**0**	**20,462**	**1,998,028**	**2,018,490**	**293,490**	**35%**	**0.01**	**1.17**	**25.22%**
Growth Equity													
1 BankCap Partners Fund I	2007	20,000,000	20,000,000	0	0	15,348,386	9,162,930	24,511,316	4,511,316	100%	0.77	1.23	2.39%
2 Hudson Clean Energy Partners	2009	25,000,000	24,994,470	0	0	3,661,896	6,956,781	10,618,677	-14,375,793	100%	0.15	0.42	-15.40%
3 Lone Star CRA Fund[3]	2008	50,000,000	57,519,050	0	0	12,928,698	39,215,558	52,144,256	-5,374,794	115%	0.22	0.91	-10.82%
4 Lone Star Growth Capital[3]	2006	16,000,000	12,800,000	16,000,000	0	12,800,000	1,590,420	14,390,420	1,590,420	80%	1.00	1.12	1.94%
5 Lone Star Opportunities Fund V, LP[3]	2012	75,000,000	56,250,000	18,750,000	0	531,444	14,194,022	14,725,466	-41,524,534	75%	0.01	0.26	-61.29%
6 North Texas Opportunity Fund	2000	10,000,000	10,000,000	0	0	8,911,187	1,827,685	10,738,872	738,872	100%	0.89	1.07	0.82%
Subtotal: Growth Equity		**196,000,000**	**181,563,520**	**34,750,000**	**0**	**54,181,611**	**72,947,396**	**127,129,007**	**-54,434,512**	**84%**	**0.30**	**0.70**	**-15.23%**
Buyouts													
1 Huff Alternative Fund[3]	2000	66,795,718	66,795,718	0	12,022,676	57,386,716	32,418,587	89,805,303	10,986,909	100%	0.73	1.14	1.75%
Subtotal: 120 Buyouts		**66,795,718**	**66,795,718**	**0**	**12,022,676**	**57,386,716**	**32,418,587**	**89,805,303**	**10,986,909**	**100%**	**0.73**	**1.14**	**1.75%**
Direct Lending													
1 Riverstone Credit Partners	2016	10,000,000	9,176,645	823,355	102,142	1,238,017	9,248,336	10,486,353	1,207,566	92%	0.13	1.13	12.92%
Subtotal: Direct Lending		**10,000,000**	**9,176,645**	**823,355**	**102,142**	**1,238,017**	**9,248,336**	**10,486,353**	**1,207,566**	**92%**	**0.13**	**1.13**	**12.92%**
Distressed													
1 OCM Opportunities Fund IV	2001	50,000,000	50,000,000	0	0	82,508,450	8,588	82,517,038	32,517,038	100%	1.65	1.65	28.36%
Subtotal: Distressed		**50,000,000**	**50,000,000**	**0**	**0**	**82,508,450**	**8,588**	**82,517,038**	**32,517,038**	**100%**	**1.65**	**1.65**	**28.36%**
Direct Investment													
1 Miscellaneous Private Equity Expenses	2016	185,839	185,839	0	0	0	0	0	-185,839	100%	0.00	0.00	N/A
Subtotal: Direct Investment		**185,839**	**185,839**	**0**	**0**	**0**	**0**	**0**	**-185,839**	**100%**	**0.00**	**0.00**	**N/A**
Energy													
1 Huff Energy Fund[3]	2006	100,000,000	99,880,021	119,979	-947,331	4,477,394	119,403,284	123,880,678	24,947,988	100%	0.05	1.25	2.90%
2 Yellowstone Energy Ventures II, L.P.	2008	5,283,254	5,112,307	170,947	0	1,458,572	106,986	1,565,558	-3,546,749	97%	0.29	0.31	-27.71%
Subtotal: Energy		**105,283,254**	**104,992,328**	**290,926**	**-947,331**	**5,935,966**	**119,510,270**	**125,446,236**	**21,401,239**	**100%**	**0.06**	**1.21**	**2.43%**
Credit Opportunities													
1 Highland Crusader Fund	2003	50,955,397	50,955,397	0	0	62,263,032	2,325,759	64,588,791	13,633,394	100%	1.22	1.27	4.20%
Subtotal: Credit Opportunities		**50,955,397**	**50,955,397**	**0**	**0**	**62,263,032**	**2,325,759**	**64,588,791**	**13,633,394**	**100%**	**1.22**	**1.27**	**4.20%**
Total: Active Funds		**484,220,208**	**465,394,447**	**39,139,281**	**11,177,487**	**263,534,254**	**238,456,964**	**501,991,218**	**25,419,284**	**96%**	**0.55**	**1.05**	**1.25%**

Dallas Police & Fire Pension System

Private Equity & Debt Funds - Performance Analysis by Investment Strategy

12/31/2017

	Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR
Completed Funds:														
1	Ashmore Global Special Situations Fund IV[1]	2007	70,000,000	70,012,300	0	0	39,652,711	0	39,652,711	-30,359,589	100%	0.57	0.57	-10.12%
2	BankCap Partners Opportunity Fund, LP[2]	2013	20,000,000	19,587,052	0	0	18,266,454	0	18,266,454	-1,320,597	100%	0.93	0.93	-5.69%
3	CDK Southern Cross	2008	1,535,316	1,535,316	0	0	0	0	0	-1,535,316	100%	0.00	0.00	-20.08%
4	Highland Credit Ops	2006	35,348,165	35,348,165	0	0	29,994,190	0	29,994,190	-5,353,975	100%	0.85	0.85	-2.06%
5	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	100%	0.86	0.86	-4.01%
6	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	100%	1.59	1.59	17.82%
7	Kainos Capital Partners, L.P.[2]	2013	35,000,000	30,316,015	0	0	43,263,688	0	43,263,688	12,947,673	100%	1.43	1.43	24.76%
8	Levine Leichtman Capital Partners IV[2]	2008	50,000,000	38,009,085	0	0	78,916,788	0	78,916,788	40,907,703	100%	2.08	2.08	20.12%
9	Levine Leichtman Capital Partners V, L.P.[2]	2013	25,000,000	19,181,272	0	-4,405	24,506,336	0	24,506,336	5,329,470	100%	1.28	1.28	15.26%
10	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	100%	1.03	1.03	0.73%
11	Levine Leichtman Private Capital Solutions II, L.P.[2]	2012	25,000,000	17,961,807	0	-175	18,691,764	0	18,691,764	730,132	100%	1.04	1.04	1.30%
12	Lone Star Fund IX (U.S.), L.P.[1]	2014	35,000,000	24,241,467	0	0	23,459,730	0	23,459,730	-781,738	100%	0.97	0.97	-3.28%
13	Lone Star Fund VII (U.S.), L.P.[1]	2011	25,000,000	23,469,024	0	0	41,624,566	0	41,624,566	18,155,542	100%	1.77	1.77	47.54%
14	Lone Star Fund VIII (U.S.), L.P.[1]	2013	25,000,000	22,564,537	0	0	28,017,551	0	28,017,551	5,453,014	100%	1.24	1.24	16.26%
15	Merit Energy Partners E-I[1]	2004	7,018,930	7,031,052	0	-1,741	14,975,776	0	14,975,776	7,946,464	100%	2.13	2.13	14.48%
16	Merit Energy Partners F-I[1]	2005	8,748,346	8,749,275	0	0	3,801,206	0	3,801,206	-4,948,069	100%	0.43	0.43	-17.19%
17	Merit Energy Partners G, LP[1]	2008	39,200,000	39,320,050	0	0	26,756,651	0	26,756,651	-12,563,399	100%	0.68	0.68	-9.96%
18	Merit Energy Partners H, LP[1]	2010	10,000,000	10,033,415	0	0	6,870,451	0	6,870,451	-3,162,964	100%	0.68	0.68	-13.78%
19	Oaktree Loan Fund 2X[1]	2007	60,000,000	60,004,628	0	0	65,066,951	0	65,066,951	5,062,323	100%	1.08	1.08	2.24%
20	Oaktree Power Fund III[1]	2011	30,000,000	16,167,147	0	0	23,839,959	0	23,839,959	7,672,812	100%	1.47	1.47	12.35%
21	Pharos Capital Co-Investment, LLC	2007	20,000,000	20,000,000	0	0	10,019,157	0	10,019,157	-9,980,843	100%	0.50	0.50	-9.92%
22	Pharos Capital Co-Investments, LP	2008	40,000,000	40,000,000	0	0	67,459,271	0	67,459,271	27,459,271	100%	1.69	1.69	8.42%
23	Pharos Capital Partners IIA, L.P.[2]	2005	20,000,000	20,080,306	0	0	17,715,199	0	17,715,199	-2,365,108	100%	0.88	0.88	-2.39%
24	Pharos Capital Partners III, LP[2]	2012	50,000,000	28,397,038	0	-54,286	20,196,932	0	20,196,932	-8,145,820	100%	0.71	0.71	-19.95%
	Total: Completed Funds		**794,150,757**	**711,363,200**	**0**	**14,917,109**	**798,516,299**	**0**	**798,516,299**	**72,235,990**	**96%**	**1.10**	**1.10**	**2.76%**
	Total: Dallas Police & Fire Pension System		**1,278,370,965**	**1,176,757,647**	**39,139,281**	**26,094,596**	**1,062,050,553**	**238,456,964**	**1,300,507,517**	**97,655,274**	**92%**	**0.88**	**1.08**	**2.10%**

1. Funds sold in Evercore secondary sale during Q1 2017
2. Funds sold in Evercore secondary sale during Q4 2016
3. Q4 2017 valuations are preliminary pending final audits.

Dallas Police & Fire Pension System
As of 12/31/2017

Growth Equity

Fund Name	Vintage Year	Sample Size	IRR Fund	IRR 1st Quartile	IRR Median	IRR 3rd Quartile	DPI Fund	DPI 1st Quartile	DPI Median	DPI 3rd Quartile	TVPI Fund	TVPI 1st Quartile	TVPI Median	TVPI 3rd Quartile	Quartile Rank IRR	Quartile Rank DPI	Quartile Rank TVPI	Benchmark
BankCap Partners Fund I	2007	18	2.39%	14.90%	10.02%	3.46%	0.77x	1.64x	1.08x	0.56x	1.23x	2.38x	1.56x	1.18x	4	3	3	U.S. Growth Equity
Hudson Clean Energy Partners	2009	7	-15.40%	---	10.00%	---	0.15x	---	0.75x	---	0.42x	---	1.64x	---	NA	NA	NA	U.S. Growth Equity
Lone Star CRA Fund	2008	7	-10.82%	---	11.06%	---	0.22x	---	1.30x	---	0.91x	---	1.68x	---	NA	NA	NA	U.S. Growth Equity
Lone Star Growth Capital	2006	12	1.94%	13.63%	6.37%	4.57%	1.00x	1.57x	1.31x	1.16x	1.12x	1.97x	1.35x	1.24x	4	4	4	U.S. Growth Equity
Lone Star Opportunities Fund V, LP	2012	12	-61.29%	16.06%	13.76%	11.26%	0.01x	0.59x	0.28x	0.05x	0.26x	1.60x	1.49x	1.42x	4	4	4	U.S. Growth Equity
North Texas Opportunity Fund	2000	13	0.82%	9.74%	4.40%	-4.42%	0.89x	1.66x	1.33x	0.76x	1.07x	1.70x	1.33x	0.76x	3	3	3	U.S. Growth Equity

Buyouts

Fund Name	Vintage Year	Sample Size	IRR Fund	IRR 1st Quartile	IRR Median	IRR 3rd Quartile	DPI Fund	DPI 1st Quartile	DPI Median	DPI 3rd Quartile	TVPI Fund	TVPI 1st Quartile	TVPI Median	TVPI 3rd Quartile	Quartile Rank IRR	Quartile Rank DPI	Quartile Rank TVPI	Benchmark
Huff Alternative Fund	2000	54	1.75%	22.18%	14.27%	10.28%	0.73x	2.25x	1.86x	1.52x	1.14x	2.41x	1.93x	1.54x	4	4	4	U.S. Buyout

Direct Lending

Fund Name	Vintage Year	Sample Size	IRR Fund	IRR 1st Quartile	IRR Median	IRR 3rd Quartile	DPI Fund	DPI 1st Quartile	DPI Median	DPI 3rd Quartile	TVPI Fund	TVPI 1st Quartile	TVPI Median	TVPI 3rd Quartile	Quartile Rank IRR	Quartile Rank DPI	Quartile Rank TVPI	Benchmark
Riverstone Credit Partners	2016	140	12.92%	18.52%	6.96%	-6.60%	0.13x	0.01x	0.00x	0.00x	1.13x	1.16x	1.05x	0.95x	2	1	2	U.S. All PE

Distressed

Fund Name	Vintage Year	Sample Size	IRR Fund	IRR 1st Quartile	IRR Median	IRR 3rd Quartile	DPI Fund	DPI 1st Quartile	DPI Median	DPI 3rd Quartile	TVPI Fund	TVPI 1st Quartile	TVPI Median	TVPI 3rd Quartile	Quartile Rank IRR	Quartile Rank DPI	Quartile Rank TVPI	Benchmark
OCM Opportunities Fund IV	2001	2	28.36%	---	---	---	1.65x	---	---	---	1.65x	---	---	---	NA	NA	NA	U.S. Distressed

Energy

Fund Name	Vintage Year	Sample Size	IRR Fund	IRR 1st Quartile	IRR Median	IRR 3rd Quartile	DPI Fund	DPI 1st Quartile	DPI Median	DPI 3rd Quartile	TVPI Fund	TVPI 1st Quartile	TVPI Median	TVPI 3rd Quartile	Quartile Rank IRR	Quartile Rank DPI	Quartile Rank TVPI	Benchmark
Huff Energy Fund	2006	11	2.90%	12.02%	1.76%	-3.99%	0.05x	1.31x	0.99x	0.57x	1.25x	1.57x	1.08x	0.86x	2	4	2	U.S. Energy
Yellowstone Energy Ventures II, L.P.	2008	13	-27.71%	9.30%	5.87%	1.01%	0.29x	0.97x	0.71x	0.45x	0.31x	1.46x	1.36x	1.05x	4	4	4	U.S. Energy

Credit Opportunities

Fund Name	Vintage Year	Sample Size	IRR Fund	IRR 1st Quartile	IRR Median	IRR 3rd Quartile	DPI Fund	DPI 1st Quartile	DPI Median	DPI 3rd Quartile	TVPI Fund	TVPI 1st Quartile	TVPI Median	TVPI 3rd Quartile	Quartile Rank IRR	Quartile Rank DPI	Quartile Rank TVPI	Benchmark
Highland Crusader Fund	2003	6	4.20%	0.00%	12.63%	0.00%	1.22x	0.00x	1.60x	0.00x	1.27x	0.00x	1.64x	0.00x	1	1	1	Global Distressed

Venture

Fund Name	Vintage Year	Sample Size	IRR Fund	IRR 1st Quartile	IRR Median	IRR 3rd Quartile	DPI Fund	DPI 1st Quartile	DPI Median	DPI 3rd Quartile	TVPI Fund	TVPI 1st Quartile	TVPI Median	TVPI 3rd Quartile	Quartile Rank IRR	Quartile Rank DPI	Quartile Rank TVPI	Benchmark
Industry Ventures Partnership Holdings IV	2016	58	25.22%	19.04%	4.24%	-9.85%	0.01x	0.00x	0.00x	0.00x	1.17x	1.17x	1.04x	0.93x	1	NA	1	U.S. Venture

1. Benchmark data is from Cambridge Associates/ThomsonOne as of 12.31.2017
2. Data includes active funds only.

PRIVATE REAL ASSETS REVIEW
(Real Estate, Infrastructure, Natural Resources)

DALLAS POLICE & FIRE PENSION SYSTEM

Fourth Quarter, 2017

BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

Real Estate and Real Assets

The following table presents the status of the DPFP **REAL ESTATE** portfolio as of December 31, 2017:

Since Inception Commitments	Terminated Commitments	Amount Funded	Amount Distributed	Reported Value	Call Ratio	Distribution Ratio
$1,497,356,760	$32,035,426	$1,463,107,600	$682,545,338	$532,236,698	97.71%	26.15%

Unfunded Commitment	Market Exposure (Reported Value + Unfunded Commitment)	Total Fund Composite as of 12/31/2017	Real Estate Target	Reported Value of Total Fund	Market Exposure as a % Total Fund
$2,286,685	$534,523,384	$2,099,918,772	12%	25.35%	25.45%

Total Value (Reported Value + Distributions)	Total Value To Capital Call Ratio	Internal Rate of Return IRR, Since Inception
$1,214,782,036	0.83	-3.67%

The following table presents the status of the DPFP **NATURAL RESOURCES** portfolio as of December 31, 2017:

Since Inception Commitments	Terminated Commitments	Amount Funded	Amount Distributed	Reported Value	Call Ratio	Distribution Ratio
$236,406,706	$0	$236,406,706	$241,584,128	$206,889,255	100.00%	102.19%

Unfunded Commitment	Market Exposure (Reported Value + Unfunded Commitment)	Total Fund Composite as of 12/31/2017	Natural Resources Target	Reported Value of Total Fund	Market Exposure as a % Total Fund
$0	$206,889,255	$2,099,918,772	3%	9.85%	9.85%

Total Value (Reported Value + Distributions)	Total Value To Capital Call Ratio	Internal Rate of Return IRR, Since Inception
$448,473,383	1.90	9.26%

The following table presents the status of the DPFP **INFRASTRUCTURE** portfolio as of December 31, 2017:

Since Inception Commitments	Terminated Commitments	Amount Funded	Amount Distributed	Reported Value	Call Ratio	Distribution Ratio
$334,000,000	$38,462,152	$290,670,946	$330,990,822	$61,429,702	79.85%	113.87%

Unfunded Commitment	Market Exposure (Reported Value + Unfunded Commitment)	Total Fund Composite as of 12/31/2017	Infrastructure Target	Reported Value of Total Fund	Market Exposure as a % Total Fund
$4,866,901	$66,296,603	$2,099,918,772	5%	2.93%	3.16%

Total Value (Reported Value + Distributions)	Total Value To Capital Call Ratio	Internal Rate of Return IRR, Since Inception
$392,420,524	1.35	7.58%

Dallas Police & Fire Pension System

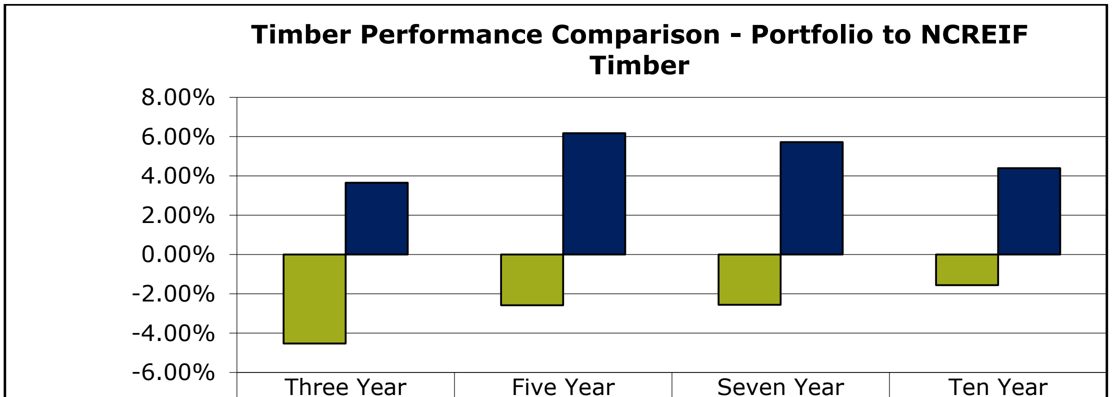
Total Real Assets Program - Investment Strategy Performance Analysis

12/31/2017

Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR
Direct Investments		**902,740,801**	**902,740,800**	**0**	**0**	**199,697,716**	**501,626,519**	**701,324,235**	**-201,416,566**	**100%**	**0.22**	**0.78**	**-4.17%**
RE Core		**39,205,318**	**39,205,318**	**0**	**0**	**25,699,944**	**28,974,636**	**54,674,580**	**15,469,262**	**100%**	**0.66**	**1.39**	**5.62%**
RE Debt		**4,500,000**	**4,500,000**	**0**	**0**	**4,084,829**	**959,288**	**5,044,117**	**544,117**	**100%**	**0.91**	**1.12**	**5.75%**
RE Value Add/Opportun													
1 Hearthstone MS II Homebuilding Investors	1999	10,000,000	7,973,058	1,008,131	0	10,989,565	0	10,989,565	3,016,507	80%	1.38	1.38	26.70%
2 Hearthstone MS III Homebuilding Investors	2003	10,000,000	1,221,446	1,278,554	0	3,497,890	676,255	4,174,145	2,952,699	12%	2.86	3.42	24.66%
Subtotal: RE Value Add/Opportun		**20,155,554**	**9,350,058**	**2,286,685**	**0**	**15,039,617**	**676,255**	**15,715,872**	**6,365,814**	**80%**	**1.61**	**1.68**	**26.04%**
Infrastructure													
1 AIRRO	2008	37,000,000	36,103,160	896,840	-369,904	16,714,775	24,479,260	41,194,035	5,460,778	98%	0.47	1.15	2.46%
2 AIRRO II	2013	10,000,000	7,395,879	2,604,121	-412,312	58,731	4,453,999	4,512,730	-2,470,837	74%	0.01	0.65	-10.21%
3 J.P. Morgan Maritime Fund, L.P.	2009	50,000,000	48,634,059	1,365,941	-10,321	2,707,451	32,496,443	35,203,894	-13,419,843	97%	0.06	0.72	-10.57%
Subtotal: Infrastructure		**97,000,000**	**92,133,099**	**4,866,901**	**-792,537**	**19,480,958**	**61,429,702**	**80,910,659**	**-10,429,902**	**95%**	**0.21**	**0.89**	**-2.95%**
Natural Resources													
1 Hancock Agricultural	1998	74,420,001	74,420,001	0	0	100,196,343	155,526,332	255,722,675	181,302,674	100%	1.35	3.44	15.90%
Subtotal: Natural Resources		**74,420,001**	**74,420,001**	**0**	**0**	**100,196,343**	**155,526,332**	**255,722,675**	**181,302,674**	**100%**	**1.35**	**3.44**	**15.90%**
Timber													
1 BTG International Timberland	2006	80,107,009	80,107,009	0	0	16,000,000	36,725,887	52,725,887	-27,381,122	100%	0.20	0.66	-6.92%
2 FIA Timberland	1992	59,649,696	59,649,696	0	0	92,321,865	14,637,036	106,958,901	47,309,205	100%	1.55	1.79	7.63%
Subtotal: Timber		**139,756,705**	**139,756,705**	**0**	**0**	**108,321,865**	**51,362,923**	**159,684,788**	**19,928,083**	**100%**	**0.78**	**1.14**	**2.54%**
Total: Active Funds & Investments		**1,277,778,379**	**1,262,105,981**	**7,153,587**	**-792,537**	**472,521,272**	**800,555,655**	**1,273,076,926**	**11,763,483**	**99%**	**0.37**	**1.01**	**0.17%**
Total: Completed Funds & Investments		**789,985,087**	**728,079,272**	**0**	**840,631**	**782,599,016**	**0**	**782,599,016**	**53,679,113**	**97%**	**1.07**	**1.07**	**1.73%**
Total: Dallas Police & Fire Pension System		**2,067,763,466**	**1,990,185,252**	**7,153,587**	**48,094**	**1,255,120,287**	**800,555,655**	**2,055,675,942**	**65,442,596**	**96%**	**0.63**	**1.03**	**0.64%**

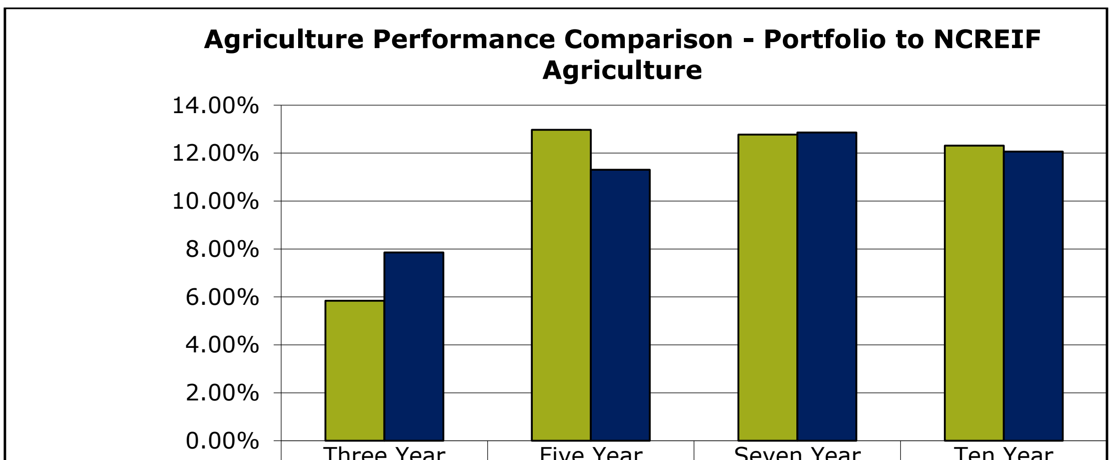
Timber and Agriculture Benchmarks

The following graph shows the performance of the DPFP **Timber** portfolio vs. the NCREIF Timber Index* as of December 31, 2017:



	Three Year	Five Year	Seven Year	Ten Year
DPFP Timber	-4.53%	-2.58%	-2.56%	-1.56%
NCREIF Timber	3.65%	6.17%	5.72%	4.39%

The following graph shows the performance of the DPFP **Agriculture** portfolio vs. the NCREIF Agriculture Index* as of December 31, 2017:

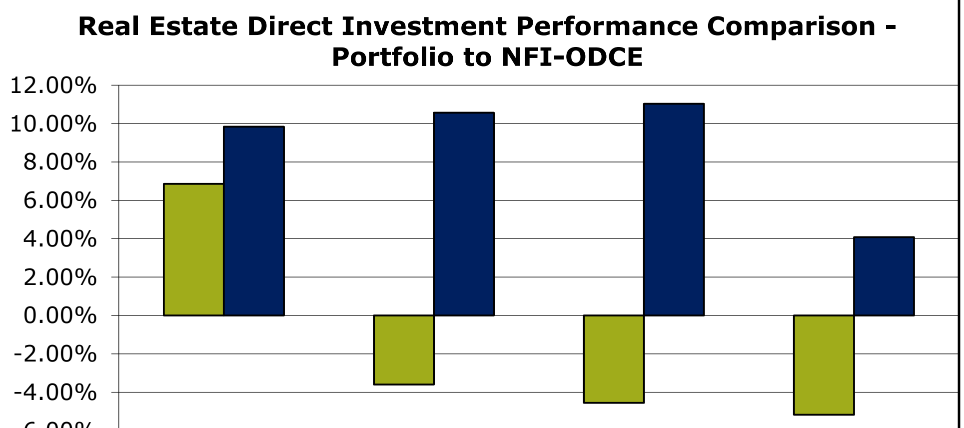


	Three Year	Five Year	Seven Year	Ten Year
DPFP Agriculture	5.84%	12.97%	12.77%	12.31%
NCREIF Agriculture	7.85%	11.30%	12.86%	12.07%

*NCREIF Agriculture and Timber index returns are calculated gross of fees and on a time-weighted basis, NEPC has used an assumed fee of 100 basis points. DPFP returns are calculated net of fees using a money-weighted return

Real Estate Benchmark

The following graph shows the performance of the DPFP **Direct Investment Real Estate** portfolio vs. the NCREIF NFI-ODCE Index** as of December 31, 2017:



	Three Year	Five Year	Seven Year	Ten Year
DPFP Direct Investments	6.86%	-3.60%	-4.55%	-5.17%
NFI-ODCE Index	9.84%	10.57%	11.04%	4.08%

**NFI-ODCE Index returns are net of fees and calculated on a time-weighted basis; DPFP returns are calculated net of fees using a money-weighted return

Dallas Police & Fire Pension System
As of 12/31/2017

U.S. RE

Fund Name	Vintage Year	Sample Size	IRR Fund	IRR 1st Quartile	IRR Median	IRR 3rd Quartile	DPI Fund	DPI 1st Quartile	DPI Median	DPI 3rd Quartile	TVPI Fund	TVPI 1st Quartile	TVPI Median	TVPI 3rd Quartile	Quartile Rank IRR	Quartile Rank DPI	Quartile Rank TVPI	Benchmark
Hearthstone MS II Homebuilding Investors	1999	16	26.70%	17.81%	10.20%	9.23%	1.38x	1.78x	1.50x	1.40x	1.38x	1.80x	1.51x	1.40x	1	4	4	U.S RE
Hearthstone MS III Homebuilding Investors	2003	25	24.66%	20.10%	10.80%	-1.62%	2.86x	1.76x	1.39x	0.91x	3.42x	1.76x	1.51x	0.91x	1	1	1	U.S RE

Infrastructure

Fund Name	Vintage Year	Sample Size	IRR Fund	IRR 1st Quartile	IRR Median	IRR 3rd Quartile	DPI Fund	DPI 1st Quartile	DPI Median	DPI 3rd Quartile	TVPI Fund	TVPI 1st Quartile	TVPI Median	TVPI 3rd Quartile	Quartile Rank IRR	Quartile Rank DPI	Quartile Rank TVPI	Benchmark
AIRRO	2008	10	2.46%	11.73%	8.22%	7.08%	0.47x	1.34x	0.80x	0.60x	1.15x	1.86x	1.57x	1.45x	4	4	4	Infrastructure
AIRRO II	2013	7	-10.21%	---	-0.44%	---	0.01x	---	0.04x	---	0.65x	---	0.99x	---	NA	NA	NA	Infrastructure
J.P. Morgan Maritime Fund, L.P.	2009	3	-10.57%	---	---	---	0.06x	---	---	---	0.72x	---	---	---	NA	NA	NA	Infrastructure

1. Benchmark data is from Cambridge Associates/ThomsonOne as of 12.31.2017
2. Data includes active funds only.

APPENDIX

Vintage Year Performance Analysis

DALLAS POLICE & FIRE PENSION SYSTEM

Fourth Quarter, 2017

BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

Dallas Police & Fire Pension System

Private Equity & Debt - Vintage Year Performance Analysis

12/31/2017

	Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR
1994														
1	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	100%	1.59	1.59	17.82%
	Subtotal: 1994		**40,000,000**	**40,000,000**	**0**	**2,018,676**	**66,940,198**	**0**	**66,940,198**	**24,921,522**	**100%**	**1.59**	**1.59**	**17.82%**
2000														
1	Huff Alternative Fund	2000	66,795,718	66,795,718	0	12,022,676	57,386,716	32,418,587	89,805,303	10,986,909	100%	0.73	1.14	1.75%
2	North Texas Opportunity Fund	2000	10,000,000	10,000,000	0	0	8,911,187	1,827,685	10,738,872	738,872	100%	0.89	1.07	0.82%
	Subtotal: 2000		**76,795,718**	**76,795,718**	**0**	**12,022,676**	**66,297,903**	**34,246,272**	**100,544,175**	**11,725,781**	**100%**	**0.75**	**1.13**	**1.63%**
2001														
1	OCM Opportunities Fund IV	2001	50,000,000	50,000,000	0	0	82,508,450	8,588	82,517,038	32,517,038	100%	1.65	1.65	28.36%
	Subtotal: 2001		**50,000,000**	**50,000,000**	**0**	**0**	**82,508,450**	**8,588**	**82,517,038**	**32,517,038**	**100%**	**1.65**	**1.65**	**28.36%**
2003														
1	Highland Crusader Fund	2003	50,955,397	50,955,397	0	0	62,263,032	2,325,759	64,588,791	13,633,394	100%	1.22	1.27	4.20%
	Subtotal: 2003		**50,955,397**	**50,955,397**	**0**	**0**	**62,263,032**	**2,325,759**	**64,588,791**	**13,633,394**	**100%**	**1.22**	**1.27**	**4.20%**
2004														
1	Merit Energy Partners E-I	2004	7,018,930	7,031,052	0	-1,741	14,975,776	0	14,975,776	7,946,464	100%	2.13	2.13	14.48%
	Subtotal: 2004		**7,018,930**	**7,031,052**	**0**	**-1,741**	**14,975,776**	**0**	**14,975,776**	**7,946,464**	**100%**	**2.13**	**2.13**	**14.48%**
2005														
1	Merit Energy Partners F-I	2005	8,748,346	8,749,275	0	0	3,801,206	0	3,801,206	-4,948,069	100%	0.43	0.43	-17.19%
2	Pharos Capital Partners IIA, L.P.	2005	20,000,000	20,080,306	0	0	17,715,199	0	17,715,199	-2,365,108	100%	0.88	0.88	-2.39%
	Subtotal: 2005		**28,748,346**	**28,829,581**	**0**	**0**	**21,516,405**	**0**	**21,516,405**	**-7,313,177**	**100%**	**0.75**	**0.75**	**-5.35%**
2006														
1	Highland Credit Ops	2006	35,348,165	35,348,165	0	0	29,994,190	0	29,994,190	-5,353,975	100%	0.85	0.85	-2.06%
2	Huff Energy Fund	2006	100,000,000	99,880,021	119,979	-947,331	4,477,394	119,403,284	123,880,678	24,947,988	100%	0.05	1.25	2.90%
3	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	100%	1.03	1.03	0.73%
4	Lone Star Growth Capital	2006	16,000,000	12,800,000	16,000,000	0	12,800,000	1,590,420	14,390,420	1,590,420	80%	1.00	1.12	1.94%
	Subtotal: 2006		**226,348,165**	**223,028,186**	**16,119,979**	**10,078,331**	**135,959,808**	**120,993,704**	**256,953,512**	**23,846,996**	**93%**	**0.58**	**1.10**	**1.49%**
2007														
1	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	100%	0.57	0.57	-10.12%
2	BankCap Partners Fund I	2007	20,000,000	20,000,000	0	0	15,348,386	9,162,930	24,511,316	4,511,316	100%	0.77	1.23	2.39%
3	Oaktree Loan Fund 2X	2007	60,000,000	60,004,628	0	0	65,066,951	0	65,066,951	5,062,323	100%	1.08	1.08	2.24%
4	Pharos Capital Co-Investment, LLC	2007	20,000,000	20,000,000	0	0	10,019,157	0	10,019,157	-9,980,843	100%	0.50	0.50	-9.92%
	Subtotal: 2007		**170,000,000**	**170,016,928**	**0**	**0**	**130,087,205**	**9,162,930**	**139,250,135**	**-30,766,793**	**100%**	**0.77**	**0.82**	**-3.70%**
2008														
1	CDK Southern Cross	2008	1,535,316	1,535,316	0	0	0	0	0	-1,535,316	100%	0.00	0.00	-20.08%
2	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	100%	0.86	0.86	-4.01%
3	Levine Leichtman Capital Partners IV	2008	50,000,000	38,009,085	0	0	78,916,788	0	78,916,788	40,907,703	100%	2.08	2.08	20.12%
4	Lone Star CRA Fund	2008	50,000,000	57,519,050	0	0	12,928,698	39,215,558	52,144,256	-5,374,794	115%	0.22	0.91	-10.82%
5	Merit Energy Partners G, LP	2008	39,200,000	39,320,050	0	0	26,756,651	0	26,756,651	-12,563,399	100%	0.68	0.68	-9.96%
6	Pharos Capital Co-Investments, LP	2008	40,000,000	40,000,000	0	0	67,459,271	0	67,459,271	27,459,271	100%	1.69	1.69	8.42%

Dallas Police & Fire Pension System

Private Equity & Debt - Vintage Year Performance Analysis

12/31/2017

	Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR
7	Yellowstone Energy Ventures II, L.P.	2008	5,283,254	5,112,307	170,947	0	1,458,572	106,986	1,565,558	-3,546,749	97%	0.29	0.31	-27.71%
	Subtotal: 2008		**233,318,570**	**225,850,056**	**170,947**	**1,933,378**	**227,312,525**	**39,322,544**	**266,635,069**	**38,851,636**	**100%**	**1.00**	**1.17**	**4.33%**
2009														
1	Hudson Clean Energy Partners	2009	25,000,000	24,994,470	0	0	3,661,896	6,956,781	10,618,677	-14,375,793	100%	0.15	0.42	-15.40%
	Subtotal: 2009		**25,000,000**	**24,994,470**	**0**	**0**	**3,661,896**	**6,956,781**	**10,618,677**	**-14,375,793**	**100%**	**0.15**	**0.42**	**-15.40%**
2010														
1	Merit Energy Partners H, LP	2010	10,000,000	10,033,415	0	0	6,870,451	0	6,870,451	-3,162,964	100%	0.68	0.68	-13.78%
	Subtotal: 2010		**10,000,000**	**10,033,415**	**0**	**0**	**6,870,451**	**0**	**6,870,451**	**-3,162,964**	**100%**	**0.68**	**0.68**	**-13.78%**
2011														
1	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	100%	1.77	1.77	47.54%
2	Oaktree Power Fund III	2011	30,000,000	16,167,147	0	0	23,839,959	0	23,839,959	7,672,812	100%	1.47	1.47	12.35%
	Subtotal: 2011		**55,000,000**	**39,636,171**	**0**	**0**	**65,464,525**	**0**	**65,464,525**	**25,828,354**	**72%**	**1.65**	**1.65**	**28.09%**
2012														
1	Levine 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	100%	1.04	1.04	1.30%
2	Lone Star Opportunities Fund V, LP	2012	75,000,000	56,250,000	18,750,000	0	531,444	14,194,022	14,725,466	-41,524,534	75%	0.01	0.26	-61.29%
3	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	100%	0.71	0.71	-19.95%
	Subtotal: 2012		**150,000,000**	**102,608,845**	**18,750,000**	**-54,461**	**39,420,140**	**14,194,022**	**53,614,162**	**-48,940,222**	**85%**	**0.38**	**0.52**	**-37.75%**
2013														
1	BankCap Partners Opportunity Fund, LP	2013	20,000,000	19,587,052	0	0	18,266,454	0	18,266,454	-1,320,597	100%	0.93	0.93	-5.69%
2	Kainos Capital Partners, L.P.	2013	35,000,000	30,316,015	0	0	43,263,688	0	43,263,688	12,947,673	100%	1.43	1.43	24.76%
3	Levine Leichtman Capital Partners V, L.P.	2013	25,000,000	19,181,272	0	-4,405	24,506,336	0	24,506,336	5,329,470	100%	1.28	1.28	15.26%
4	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	100%	1.24	1.24	16.26%
	Subtotal: 2013		**105,000,000**	**91,648,876**	**0**	**-4,405**	**114,054,030**	**0**	**114,054,030**	**22,409,559**	**98%**	**1.24**	**1.24**	**15.63%**
2014														
1	Lone Star Fund IX (U.S.), L.P.	2014	35,000,000	24,241,467	0	0	23,459,730	0	23,459,730	-781,738	100%	0.97	0.97	-3.28%
	Subtotal: 2014		**35,000,000**	**24,241,467**	**0**	**0**	**23,459,730**	**0**	**23,459,730**	**-781,738**	**69%**	**0.97**	**0.97**	**-3.28%**
2016														
1	Industry Ventures Partnership Holdings IV	2016	5,000,000	1,725,000	3,275,000	0	20,462	1,998,028	2,018,490	293,490	35%	0.01	1.17	25.22%
2	Miscellaneous Private Equity Expenses	2016	185,839	185,839	0	0	0	0	0	-185,839	100%	0.00	0.00	N/A
3	Riverstone Credit Partners	2016	10,000,000	9,176,645	823,355	102,142	1,238,017	9,248,336	10,486,353	1,207,566	92%	0.13	1.13	12.92%
	Subtotal: 2016		**15,185,839**	**11,087,485**	**4,098,354**	**102,142**	**1,258,479**	**11,246,364**	**12,504,843**	**1,315,216**	**73%**	**0.11**	**1.12**	**12.35%**
	Total: Dallas Police & Fire Pension System		**1,278,370,965**	**1,176,757,647**	**39,139,281**	**26,094,596**	**1,062,050,553**	**238,456,964**	**1,300,507,517**	**97,655,274**	**92%**	**0.88**	**1.08**	**2.10%**

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C8

Topic: **Private Asset Cash Flow Projection Update**

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.

Discussion: Staff will provide an update on the private asset cash flow projection model first discussed at the February Board meeting. The cash flow model projects estimated contributions to and distributions from private assets over the next 5 years to evaluate the expected time frame to reduce DPFP's exposure to these assets.

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C9

Topic: **2017 Financial Audit Status**

Discussion: Staff will update the Board on the status and findings to date related to the 2017 financial statement audit.

Regular Board Meeting – Thursday, June 14, 2018

DISCUSSION SHEET

ITEM #C10

Topic: **Qualified Domestic Relations Order Policy Revision**

Discussion: Staff is proposing changes to the Qualified Domestic Relations Order Policy to conform to the changes to Article 6243a-1 brought on by HB 3158. Additionally, staff is proposing that DPFP adopt the requirement that all QDROs conform to Section 804 of the Texas Government Code.

Staff Recommendation: **Approve** the Qualified Domestic Relations Policy as amended.

DALLAS POLICE & FIRE PENSION SYSTEM

QUALIFIED DOMESTIC RELATIONS ORDER POLICY

As Amended Through June 14, 2018

DALLAS POLICE AND FIRE PENSION SYSTEM QUALIFIED DOMESTIC RELATIONS ORDER POLICY

Adopted October 12, 1989
As Amended Through June 14, 2018

A. PURPOSE

1. This policy provides rules governing the partition of a Member's or Pensioner's interest under Article 6243a-1 of Vernon's Revised Civil Statutes (the "Combined Pension Plan") of the Dallas Police and Fire Pension System ("DPFP") and of the Supplemental Pension Plan for the Police and Fire Departments of the City of Dallas, Texas (the "Supplemental Pension Plan"), where applicable, pursuant to a Qualified Domestic Relations Order ("QDRO") and payments made to an Alternate Payee when a domestic relations order ("DRO") is determined to be a QDRO. This policy will change from time to time as case law and legislation develop.

2. Any reference in this policy to a provision of the Combined Pension Plan shall also be considered a reference to the comparable provision of the Supplemental Pension Plan if the applicant is a Member of the Supplemental Pension Plan and such plans are collectively referred to in this policy as the "Plan."

3. The Executive Director may develop written procedures to implement this policy.

B. DEFINITIONS

1. **Alternate Payee:** means a Member's or Pensioner's spouse, former spouse, child or other dependent who is recognized by a DRO as having a right to receive all or a portion of the benefits payable under the Plan with respect to such Member or Pensioner.

2. **Domestic Relations Order ("DRO"):** means any judgment, decree or order (including approval of a property settlement) which relates to the provision of child support, alimony payments or marital property rights to a spouse, former spouse, child or other dependent of a Member or Pensioner, and is made pursuant to any state domestic relations law (including a community property law).

3. **Earliest Retirement Age/Earliest Benefit Commencement for Alternate Payee:** means the earlier of:

   (a) The date on which the Member is entitled to a distribution under the Plan, or

B. DEFINITIONS (continued)

(b) The later of:

- The date the Member attains age 58, or
- The date the Member could begin receiving benefits under the Plan if the Member separated from service.

4. **Qualified Domestic Relations Order or QDRO:** means a DRO which creates or recognizes the existence of the rights of an Alternate Payee, or assigns to an Alternate Payee the right to receive all or a portion of the benefits payable to a Member or Pensioner under the Plan, and is determined by the Executive Director to satisfy the requirements of Section 804 of the Texas Government Code (the "Government Code") and this policy.

Other terms used in this policy shall have the meaning those terms have in the Plan unless the context in which they are used indicates that a different meaning is intended.

C. APPLICABLE LAW

1. The Plan provides the general rule that benefits accrued under the Plan may not be assigned or alienated. However, the Plan also provides that benefits thereunder are subject to division pursuant to the terms of a QDRO. Further, the Executive Director is charged with determining the qualification of a DRO according to this policy as approved by the Board.

2. A DRO will not be a QDRO if it provides or purports to provide benefits that have not been accrued at the time of the divorce of the Member or Pensioner and Alternate Payee or any earlier effective date of the DRO. For example, a DRO will not be a QDRO if it purports to award DROP benefits to an Alternate Payee that have not been credited to a Member's DROP account on the date of divorce.

3. The community property interest in the Member's retirement pension is determined as if the Member began to participate in the Plan on the date of marriage and ended that participation on the date of dissolution of the marriage. The Member has a separate property interest in the monthly accrued benefit the Member has a right to receive on normal retirement age, as defined by the Plan, based upon service performed prior to the date of the marriage, regardless of whether the benefit had vested.

C. APPLICABLE LAW (continued)

4. An administrative order, or other document that is not a DRO, fails to meet the QDRO requirements of Section 804 of the Government Code and this policy.

D. ADDITIONAL RULES FOR DETERMINING AND ADMINISTERINGA QDRO

In order for a DRO to be a QDRO it must clearly specify the information described in Paragraph 1, below, and may not contain any of the provisions described in Paragraph 2.

1. A QDRO must clearly specify the following:

(a) The name and last known mailing address, if any, of the Member or Pensioner and the name and mailing address of each Alternate Payee covered by the DRO.

(b) The amount or percentage of the Member's or Pensioner's benefits to be paid by DPFP to each Alternate Payee covered by the DRO, or the manner in which such amount or percentage is to be determined.

(c) The number of payments or period to which such order applies.

(d) Each plan (the Combined Pension Plan and the Supplemental Pension Plan) to which the DRO applies.

Although not a requirement for "qualification" of a DRO, for the purpose of calculating the relative property interests of an Alternate Payee(s) and a Member or Pensioner in a plan benefit, and for purposes of income tax reporting, DPFP will require written proof or a sworn and notarized statement signed by the Alternate Payee specifying the following:

- The Social Security number of the Alternate Payee(s).
- The birth date of the Alternate Payee(s).

2. A DRO will not be a QDRO if it requires any of the following:

(a) Any type or form of benefit, or any option not otherwise provided under the Plan.

(c) Benefits to be paid to an Alternate Payee that are required to be paid to another Alternate Payee under another DRO previously determined to be a QDRO.

D. ADDITIONAL RULES FOR DETERMINING AND ADMINISTERING A QDRO (continued)

2. A DRO will not be a QDRO if it requires any of the following: (continued)

(b) Increased benefits (determined on the basis of actuarial value), or

(c) Benefits to be paid to an Alternate Payee that are required to be paid to another Alternate Payee under another DRO previously determined to be a QDRO.

3. Notwithstanding Paragraph 1, above, a DRO shall not fail to be a QDRO solely because it requires that payment of benefits to an Alternate Payee commence before the Member has terminated Active Service so long as payments are not required to commence before the Member's earliest Retirement Age. Also, a DRO will not fail to be a QDRO solely because it provides for the payment to an Alternate Payee of some or all of the Group B member contributions of a member who is still in active service.

4. The Executive Director shall have no duty to determine whether a DRO that complies with Section 804 of the Government Code and this policy complies with any state domestic relations law, including any community property law. However, the Executive Director shall have discretion to briefly delay payments that he or she believes are inconsistent with any law, while providing notice of the perceived defect to the parties and the court.

5. Other than for a temporary support order, any portion of a Member's or Pensioner's monthly pension benefit that is payable to an Alternate Payee shall be paid in the form of an annuity over the life of the Alternate Payee unless the Member is still on Active Service and the Alternate Payee elects to satisfy the payment obligation by receiving all or a portion of the Member's contributions. Any portion of a Member's or Pensioner's DROP account that is awarded to an Alternate Payee shall be split off into a separate account and shall be paid as provided for in the Deferred Retirement Option Plan Policy. The Alternate Payee shall be treated as the owner of the separate DROP account. The Alternate Payee may not elect to defer monthly payments into a DROP account.

D. ADDITIONAL RULES FOR DETERMINING AND ADMINISTERING A QDRO (continued)

6. The benefit of the Member or Pensioner shall be reduced by the present value of the award to the Alternate Payee. However, a Member whose contributions are paid out pursuant to a QDRO shall have a right to restore those Member contributions so long as the Member has not terminated from Active Service or entered DROP.

E. PLAN PROCEDURES WITH RESPECT TO DRO'S

The Executive Director shall establish uniform and consistent procedures to determine whether a DRO meets the requirements of this policy and the applicable provisions of Section 804 of the Government Code and to administer payments under those DRO's that are determined to be QDRO's.

APPROVED on June 14, 2018, by the Board of Trustees of the Dallas Police and Fire Pension System.

William F. Quinn
Chairman

ATTEST:

Kelly Gottschalk
Secretary

QUALIFIED DOMESTIC RELATIONS ORDER POLICY

As Amended Through June~~February~~ 14~~1~~, 2018~~6~~

DALLAS POLICE AND FIRE PENSION SYSTEM QUALIFIED DOMESTIC RELATIONS ORDER POLICY

Adopted October 12, 1989
As Amended Through June~~February~~ 14~~1~~, 2018~~6~~

A. PURPOSE

1. This policy provides rules governing the partition of a Member's or Pensioner's interest under Article 6243a-1 of Vernon's Revised Civil Statutes (the "Combined Pension Plan") of the Dallas Police and Fire Pension System ("DPFP") and of the Supplemental Pension Plan for the Police and Fire Departments of the City of Dallas, Texas (the "Supplemental Pension Plan"), where applicable, pursuant to a Qualified Domestic Relations Order ("QDRO") and payments made to an Alternate Payee when a domestic relations order ("DRO") is determined to be a QDRO. This policy will change from time to time as case law and legislation develop.

2. Any reference in this policy to a provision of the Combined Pension Plan shall also be considered a reference to the comparable provision of the Supplemental Pension Plan if the applicant is a Member of the Supplemental Pension Plan and such plans are collectively referred to in this policy as the "Plan."

3. The Executive Director may develop written procedures to implement this policy.

B. DEFINITIONS

1. **Alternate Payee:** means a Member's or Pensioner's spouse, former spouse, child or other dependent who is recognized by a DRO as having a right to receive all or a portion of the benefits payable under the Plan with respect to such Member or Pensioner.

2. **Domestic Relations Order ("DRO"):** means any judgment, decree or order (including approval of a property settlement) which relates to the provision of child support, alimony payments or marital property rights to a spouse, former spouse, child or other dependent of a Member or Pensioner, and is made pursuant to any state domestic relations law (including a community property law).

3. **Earliest Retirement Age/Earliest Benefit Commencement for Alternate Payee:~~.~~** ~~Earliest Retirement Age~~ means the earlier of:

   (a) The date on which the Member is entitled to a distribution under the Plan, or

B. DEFINITIONS (continued)

(b) The later of:

- The date the Member attains age 58~~0~~, or
- The date the Member could begin receiving benefits under the Plan if the Member separated from service.

4. **Qualified Domestic Relations Order or QDRO:** means a DRO which creates or recognizes the existence of the rights of an Alternate Payee, or assigns to an Alternate Payee the right to receive all or a portion of the benefits payable to a Member or Pensioner under the Plan, and is determined by the Executive Director to satisfy the requirements of Section 804~~414(p)~~ of the Texas Government~~Internal Revenue~~ Code (the “Government Code”) and this policy.

Other terms used in this policy shall have the meaning those terms have in the Plan unless the context in which they are used indicates that a different meaning is intended.

C. APPLICABLE LAW

1. The Plan provides the general rule that benefits accrued under the Plan may not be assigned or alienated. However, the Plan also provides that benefits thereunder are subject to division pursuant to the terms of a QDRO. Further, the Executive Director is charged with determining the qualification of a DRO according to this policy as approved by the Board.

~~**2.** The Board has not elected to adopt the provisions of Subchapters A and C, Chapter 804 of the Government Code. Instead, the Plan provides that a QDRO shall have the meaning provided by Section 414(p) of the Code, provided, however, that death benefits that may become available to the survivors of a deceased Member or Pensioner are status benefits that are not community property and may not be awarded to an Alternate Payee under a QDRO.~~

~~**3.**~~ 2. A DRO will not be a QDRO if it provides or purports to provide benefits that have not been accrued at the time of the divorce of the Member or Pensioner and Alternate Payee or any earlier effective date of the DRO. For example, a DRO will not be a QDRO if it purports to award DROP benefits to an Alternate Payee that have not been credited to a Member’s DROP account on the date of divorce.

C. APPLICABLE LAW (continued)

~~**4.** Texas case law precludes an award to an Alternate Payee to the extent such an award would invade a Member's or Pensioner's separate property. *See Berry v. Berry*, 647.~~

3. ~~S.W.2d 945, 947 (Tex. 1983), citing *Cameron v. Cameron*, 641 S.W.2d 210 (Tex. 1982). Also, T~~The community property interest in the Member's retirement pension is determined as if the Member began to participate in the Plan on the date of marriage and ended that participation on the date of dissolution of the marriage. The Member has a separate property interest in the monthly accrued benefit the Member has a right to receive on normal retirement age, as defined by the Plan, based upon service performed prior to the date of the marriage, regardless of whether the benefit had vested.

~~**5.**~~**4.** An administrative order, or other document that is not a DRO, fails to meet the QDRO requirements of Section 804~~414(p)~~ of the Government Code and this policy.

D. ADDITIONAL RULES FOR DETERMINING AND ADMINISTERINGA QDRO

In order for a DRO to be a QDRO it must clearly specify the information described in Paragraph 1, below, and may not contain any of the provisions described in Paragraph 2.

1. A QDRO must clearly specify the following:

(a) The name and last known mailing address, if any, of the Member or Pensioner and the name and mailing address of each Alternate Payee covered by the DRO.

(b) The amount or percentage of the Member's or Pensioner's benefits to be paid by DPFP to each Alternate Payee covered by the DRO, or the manner in which such amount or percentage is to be determined.

(c) The number of payments or period to which such order applies.

(d) Each plan (the Combined Pension Plan and the Supplemental Pension Plan) to which the DRO applies.

Although not a requirement for "qualification" of a DRO, for the purpose of calculating the relative property interests of an Alternate Payee(s) and a Member or Pensioner in a plan benefit, and for purposes of income tax reporting, DPFP will require written proof or a sworn and notarized statement signed by the Alternate Payee specifying the following:

- The Social Security number of the Alternate Payee(s).

D. ADDITIONAL RULES FOR DETERMINING AND ADMINISTERING A QDRO (continued)

- The birth date of the Alternate Payee(s).

2. A DRO will not be a QDRO if it requires any of the following:

(a) Any type or form of benefit, or any option not otherwise provided under the Plan.

(b) Increased benefits (determined on the basis of actuarial value), or

(c) Benefits to be paid to an Alternate Payee that are required to be paid to another Alternate Payee under another DRO previously determined to be a QDRO.

3. Notwithstanding Paragraph 1, above, a DRO shall not fail to be a QDRO solely because it requires that payment of benefits to an Alternate Payee commence before the Member has terminated Active Service so long as payments are not required to commence before the Member's earliest Retirement Age. Also, a DRO will not fail to be a QDRO solely because it provides for the payment to an Alternate Payee of some or all of the Group B member contributions of a member who is still in active service.

4. The Executive Director shall have no duty to determine whether a DRO that complies with Section 804~~414(p)~~ of the Government Code and this policy complies with any state domestic relations law, including any community property law. However, the Executive Director shall have discretion to briefly delay payments that he or she believes are inconsistent with any law, while providing notice of the perceived defect to the parties and the court.

5. Other than for a temporary support order, any portion of a Member's or Pensioner's monthly pension benefit that is payable to an Alternate Payee shall be paid in the form of an annuity over the life of the Alternate Payee unless the Member is still on Active Service and the Alternate Payee elects to satisfy the payment obligation by receiving all or a portion of the Member's contributions. Any portion of a Member's or Pensioner's DROP account that is awarded to an Alternate Payee shall be split off into a separate account and shall be paid as provided for in the Deferred Retirement Option Plan Policy. The Alternate Payee shall be treated as the owner of the separate DROP account. ~~and may, subject to Paragraph D.6. below, elect to receive payment in any form that could have been elected by the Member or Pensioner, such as payable as a lump sum or payments upon request. However, t~~The Alternate Payee may not elect to defer monthly payments into a DROP account.

D. ADDITIONAL RULES FOR DETERMINING AND ADMINISTERING A QDRO (continued)

~~**6.** DPFP will pay to an Alternate Payee the full distribution of the portion of a Member's or Pensioner's DROP account awarded to the Alternate Payee within six months after the transfer of funds to the Alternate Payee's DROP account. However, an Alternate Payee owner of a DROP account as of May 14, 2015 shall take distributions from his or her DROP account in substantially equal amounts each year, as defined in the Board's DROP Policy and Procedure, that will result in the total distribution of the DROP account before the tenth anniversary of the date such distributions commenced.~~

6. The benefit of the Member or Pensioner shall be reduced by the present value of the award to the Alternate Payee. However, a Member whose ~~Member~~ contributions are paid out pursuant to a QDRO shall have a right to restore those Member contributions so long as the Member has not terminated from Active Service or entered DROP.

E. PLAN PROCEDURES WITH RESPECT TO DRO'S

The Executive Director shall establish uniform and consistent procedures to determine whether a DRO meets the requirements of this policy and the applicable provisions of Section 804~~414(p)~~ of the Government Code and to administer payments under those DRO's that are determined to be QDRO's.

APPROVED on June~~February~~ 14~~1~~, 2018~~6~~, by the Board of Trustees of the Dallas Police and Fire Pension System.

William F. Quinn
Chairman

ATTEST:

Kelly Gottschalk
Secretary

DALLAS POLICE & FIRE PENSION SYSTEM

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C11

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 – June 14, 2018

		ATTENDING	**APPROVED**
1. Conference:	**Harvard Business School: Leading with Finance**	**BD**	**01/18/2018**
Dates:	May 9, 2018 (6 weeks)		
Location:	Online course		
Est. Cost:	$1,500		
2. Conference:	**IFEBP: Wharton Alternative Investments**		
Dates:	July 30-August 1, 2018		
Location:	San Francisco, CA		
Est. Cost:	$5,500		
3. Conference:	**TEXPERS Summer Educational Forum**		
Dates:	August 12-14, 2018		
Location:	San Antonio, TX		
Est. Cost:	$1,500		
4. Conference:	**NCPERS Public Pension Funding Forum**		
Dates:	September 16-18, 2018		
Location:	Cambridge, MA		
Est. Cost:	TBD		
5. Conference:	**NCPERS Public Safety Conference**		
Dates:	October 28-31, 2018		
Location:	Las Vegas, NV		
Est. Cost:	TBD		

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C12

Topic:	**Board Members' reports on meetings, seminars and/or conferences attended**	
Discussion:	**Conference:** **Harvard Business School: HBX CORe**	**BD**
	Dates: February 6, 2018 (12 weeks)	
	Location: Online course	

Regular Board Meeting – Thursday, June 14, 2018

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #C13

Topic: **Hardship Requests from DROP Members**

Portions of the discussion under this topic may be closed to the public under the terms of Section 551.078 of the Texas Government Code.

Discussion: The Executive Director will review with the Board for their consideration any applications under the DROP Policy that have not been approved.

Staff Recommendation: To be provided at the meeting.

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #D1

Topic: **Reports and concerns of active members and pensioners of the Dallas Police and Fire Pension System**

Discussion: This is a Board-approved open forum for active members and pensioners to address their concerns to the Board and staff.

DALLAS POLICE & FIRE PENSION SYSTEM

DISCUSSION SHEET

ITEM #D2

Topic: **Executive Director's report**

Associations' newsletters

- NCPERS Monitor (May 2018)
- NCPERS Monitor (June 2018)

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

Regular Board Meeting – Thursday, June 14, 2018

THE NCPERS

MONITOR

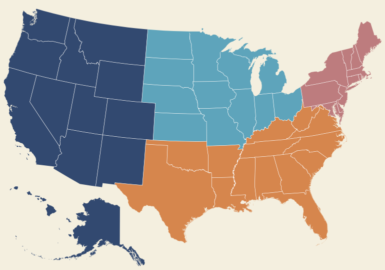
The Latest in Legislative News

MAY 2018

In This Issue

Photo Illustration © 2018, istockphoto

There are two developments on the tax policy regulatory front that deserve the attention of the public pension community.



This month we will highlight issues in New York, Wisconsin, Colorado and Louisiana.

Photo Illustration © 2018, istockphoto

The latest advancements in asset allocation, risk management, and other pressing issues for pensions took center stage at a recent international conference, with a strong helping hand from NCPERS.

Webinar Gives Secure Choice An Upbeat Outlook for 2018

Photo Illustration © 2018, istockphoto

The Secure Choice movement is a positive sign that "we may be close to a tipping point when it comes to strengthening retirement security in this country," according to Angela Antonelli, executive director of Georgetown University's Center for Retirement Initiatives.

Speaking April 16 to an NCPERS webinar, Antonelli said state initiatives to expand retirement savings options for private-sector workers may lead to "significant progress in the not-too-distant future." That is striking, because for 40 years, "the needle has not moved in any meaningful way," she said.

Antonelli reported on the current status of state-facilitated retirement savings programs such as Secure Choice, which have been created to fill a gap for private-sector workers who lack access to a pension or other workplace retirement benefits. Between 40 and 45 states and municipalities have contemplated creating such programs in recent years, and 10 states and one city (Seattle) have created programs, she noted.

"About 20 percent of the states in about three years have enacted the programs. That is tremendous progress to make," Antonelli said.

CONTINUED ON PAGE 3

Recent Regulatory Developments

By Tony Roda

Photo illustration © 2018, istockphoto

There are two developments on the tax policy regulatory front that deserve the attention of the public pension community. First, the Office of Management and Budget will now be reviewing certain tax regulations following the formulation and review of those regulations at the Department of the Treasury. Second, the Treasury Department is requesting public comments on the expansion of the determination letter program.

OMB-OIRA Review of Tax Regulations

For 35 years an arrangement has been in place between the U.S. Department of the Treasury and the Office of Management and Budget with regard to the regulatory review process for tax regulations. Under the arrangement, very few tax regulations were ever reviewed by OMB's Office of Information and Regulatory Affairs (OIRA).

On April 11, 2018, the Trump Administration changed the ground rules for review of tax regulations. A Memorandum of Agreement (MOA) between the Treasury Department and OIRA outlines the new process. Notably, the MOA provides for OIRA review where the tax regulatory action is likely to result in a rule that may:

- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Raise novel legal or policy issues, such as prescribing a rule of conduct backed by an assessable payment; or
- Have an annual non-revenue effect on the economy of $100 million or more, measured against a no-action baseline.

The general review period at OIRA is 45 days, although certain regulations related to the recently-enacted Tax Cuts and Jobs Act of 2017 may receive review within 10 days, provided there is agreement for the expedited treatment between Treasury and OIRA.

The tax community in Washington, D.C. has been abuzz about this change. Certainly, there is deep technical tax policy expertise at the Treasury Department, which often draws upon additional and often more practical knowledge at the Internal Revenue Service (IRS). While OIRA is said to be beefing up its tax policy team, it is unlikely to ever match Treasury-IRS. So what is the practical point of this additional layer of review?

Be that as it may, OMB-OIRA is now on the field on tax regulations and likely to stay on the field for the duration of the Trump Administration. For those of us in an advocacy role this new layer

CONTINUED ON PAGE 7

SECURE CHOICE CONTINUED FROM PAGE 1

The Secure Choice movement has taken root because states and cities are increasingly aware that the problem of inadequate retirement savings could eventually land in their laps. "They have to worry about the reality of their aging citizens and residents," Antonelli said. "There are significant budgetary and economic consequences of insufficient retirement incomes."

The problem is not just that future retirees aren't saving enough; it's compounded by the fact that they are living longer and therefore need to stretch whatever savings they do have. "Ten thousand Americans are retiring every day," she noted, adding that today's 20-year-olds can expect to live to be 100.

Employers have a role to play in solving the retirement savings shortfall because there is clear evidence that payroll deductions are the most effective method of saving. Workers who have access to an employer-sponsored plan are 15 times more likely to save than those who do not, Antonelli said.

In the course of an hour-long presentation, Antonelli provided an update on the states that have enacted program, broke down the types of programs they have offered, examined legal and regulatory hurdles, and discussed the future outlook for these programs.

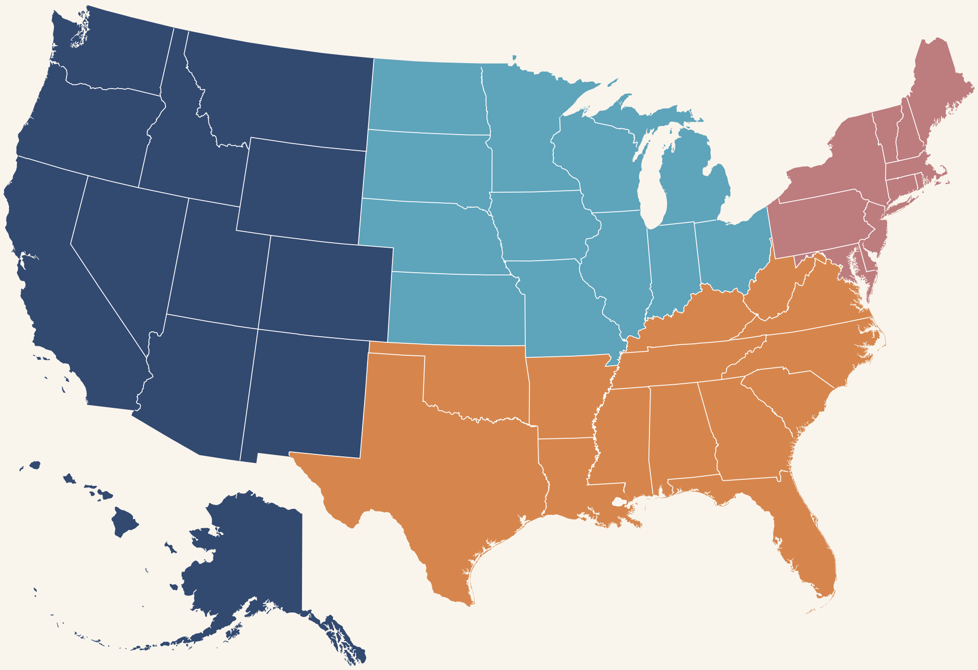
She noted that five states—California, Connecticut, Illinois, Maryland, Oregon—and the city of Seattle have created mandatory auto-IRA programs. Vermont and Massachusetts have authorized multiple-employer 401(k) plans. Washington and New Jersey have created marketplaces that use online portals to provide workers with access to programs. And New York Governor Andrew Cuomo on April 2 signed into law a budget that included a voluntary IRA program.

Another sign for optimism, Antonelli said, is the fact that three of the programs (Vermont, Seattle, and New York) were created after the Trump Administration successfully pushed Congress last year to repeal ERISA safe harbor regulations that would have made it easier for states to create Secure Choice plans. Fifteen states and cities have moved forward with Secure Choice options so far in 2018, she noted. The mandatory auto-IRA option remains the most popular with the states despite the safe harbor repeal.

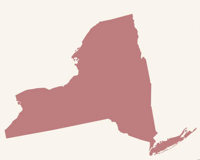
The complete webinar, including a PowerPoint presentation, is available for viewing on YouTube. Search for "2018 Secure Choice Update." ◆

NCPERS Around the Regions

This month we will highlight issues in New York, Wisconsin, Colorado and Louisiana.



NORTHEAST: New York



A family-owned manufacturer of spicy candies and snacks is eager to participate in New York State's newly enacted Secure Choice program.

The owners of Little Bird Kitchen in Plainview, N.Y., told Newsday they would sign up for the program because they can't afford to offer a retirement plan to their five employees. The program will help the company, which has annual sales of $250,000, with hiring and retention, co-owner Corey Meyer said.

Governor Andrew M. Cuomo on April 2 signed a budget bill that included the Secure Choice Savings Program for employers of small businesses, independent contractors, and freelancers. The law will allow workers to save through payroll deductions up to the annual limits set for Roth individual retirement accounts. (Currently $5,500 for workers younger than 50 and $6,500 for those 50 and older.)

Upon enactment, New York became the 10th state to authorize a Secure Choice program to foster retirement savings by private sector workers who lack workplace access to a pension or other retirement benefit. An 11th jurisdiction, the city of Seattle, has also authorized Secure Choice.

New York is the first state to set up a voluntary IRA program; employers will not be obliged to sign up and will be responsible only for enabling payroll deductions to the Roth individual retirement accounts. Four other states and Seattle have adopted auto-IRA programs.

There is no word yet on when New York's program will officially open its doors, but the legislation calls for it to be developed in roughly two years. The program will operate under the oversight of a seven-member board, which will hire a financial services company to run the plan.

MIDWEST: Wisconsin

The Wisconsin Retirement System's investment returns exceeded expectations in 2017, gaining 16.2 percent. It was the fifth year in a row that the program exceeded expectations. As a result, starting in May, the Badger State's 203,000 retired state workers will receive 2.4 percent extra per

CONTINUED ON PAGE 5

AROUND THE REGIONS CONTINUED FROM PAGE 4

year in pension payouts. The average increase for participants in the state's Core Fund will be $560.66 per year.

The 2017 performance story is dominated by a 24 percent return from global equity, according to Vicki Hearing, communications manager for the State of Wisconsin Investment Board, which manages the assets. At the opposite extreme, investment grade bonds returned only 4 percent, she noted.

The performance-based adjustment to Wisconsin Retirement System annuity payouts effectively serves as the state's cost-of-living adjustment (COLA), Keith Brainard, research director for NASRA, the National Association of State Retirement Administrators, told Watchdog.org, which works to ensure transparency in state governments.

Brainard said Wisconsin's state pension system "is very well funded, and they have been for years. Part of the reason is that they have this self-correcting COLA provision. Besides that, state and political subdivisions always pay their required contributions, and projected, promised benefits are relatively modest," Brainard said in the Watchdog.org interview.

The rate of mortality among retired Wisconsin employees is affecting the Wisconsin Retirement System's annuity reserve and the level of payouts, according to a Madison.com news report. In addition, this year's 2.4 percent increase is far below 2017's annual 16.2 percent return because returns are smoothed out over a five-year period to avoid sharp swings up and down.

Diane Wilcenski, executive director of the Wisconsin Retired Educators Association, told Madison.com that the pension increase of more than $500 is enough to make an impact. "I think that's a substantial amount for people," she said. "We'd all like more, but that's not reality."

In addition to the Core Fund, which covers all retired state workers in Wisconsin, a voluntary plan known as the Variable Fund also produced unexpectedly strong results. Some 41,000 Wisconsin state employees are in the more volatile Variable Fund, which returned 23.3 percent in 2017. Retirees in this plan will see an extra $1,538.39 per year on average in their paychecks starting with the May pay period, the state's Department of Employees Trust Funds announced.

Hearing said the 2017 returns are higher than SWIB would prudently expect over the next five years. She added that returns in 2018 are likely to be driven by earnings growth and default risk. Geopolitical risk is adding to volatility, which tends to reduce returns, she added.

Mark Lamkins, communications director for the Wisconsin Department of Employee Trust Funds, noted that the state's pension system is a hybrid defined benefit plan, containing elements of both a 401(k) plan and a traditional pension. Wisconsin's more than 632,000 current and former government employees and retirees get to share in the excess returns in the good years, but also bear downside risk.

Key components of the plan design include:

- Contribution rates are generally split evenly between employees and employers and adjusted annually.
- Post-retirement adjustments depend on investment performance and can be reduced based on annual returns.
- There are no guaranteed COLAs.
- Annuities cannot be reduced below the original amount set at retirement.

WEST: Colorado

The Colorado House of Representatives on May 2 passed a revised version of SB-200 after stripping away provisions that that would have created a 401(k) style savings plan. At press time, the bill was awaiting action in the state Senate.

The bill makes changes to the hybrid defined benefit plan administered by the state's Public Employees Retirement Association (PERA). The goal, PERA stated on its website, is "eliminating, with a high probability, the unfunded actuarial accrued liability of each of PERA's divisions and thereby reach a 100% funded ratio for each division within the next 30 years."

PERA plan participants opposed an earlier version of SB 200, which would have increased their required pension contributions and modified their benefits. The Secure PERA coalition successfully pushed to remove a defined-contribution option from the bill.

The House-passed bill retained amendments agreed to on April 17 by the House Finance Committee. Among them: The state will contribute $225 million directly to PERA in 2018-19 and approximately 3 percent of payroll annually after that. The provision replaces provisions that would have increased member contributions by 3 percent and employer contributions by 2 percent.

The committee also increased the "highest average salary" measure for calculating benefits from the three highest years to the five highest years for non-vesting and new employees.

CONTINUED ON PAGE 7

NCPERS **Executive Directors Corner**

NCPERS Plays Central Role In World Pensions Forum

The latest advancements in asset allocation, risk management, and other pressing issues for pensions took center stage at a recent international conference, with a strong helping hand from NCPERS.

Photo Illustration © 2018, istockphoto

The Seventh Annual World Pensions & Investments Forum, organized by the World Pension Council, drew 200 participants to Paris for a day and a half of meetings on March 22 and 23. NCPERS was on hand for two important roles: providing registration and other back office logistical support and serving our customary role of emceeing and participating in the program. It was our second year of involvement with the forum, which draws central bankers, finance ministry officials, representatives from multinational organizations such as the World Bank, and pension executives.

It was my honor on the first day to emcee the event and lead a discussion of the best-in-class options for pension design on the final day of the forum. I was joined by the Honorable Nick Sherry, former Minister Corporate Law & Superannuation, Australia for a session that touched on modern defined benefit and defined contribution plans, hybrid pensions, and alternative retirement savings options, including Secure Choice.

Other panel sessions included long-term investment and risk management trends; infrastructure investment; gender diversity; sustainable investing; and advances in actuarial science.

The Seventh Annual World Pensions & Investments Forum, organized by the World Pension Council, drew 200 participants to Paris for a day and a half of meetings on March 22 and 23.

This international forum offers a big booster shot of intellectual energy in exchange for a short time commitment. There is simply no other conference where executive management and investment professionals from U.S. pension plans regularly gather with their peers from around the globe for high-level discussions.

By supporting this event and the World Pension Council, NCPERS is contributing to a non-profit policy organization that produces innovative research and analysis on pensions. The World Pension Council rests on the belief that pensions can open up the way to higher standards of social welfare and economic security—and that's a view we can all get behind.

We are looking forward to future conferences and would like more executive management and investment professionals from the U.S to plan to participate. It would be both gratifying and productive if NCPERS could gather a delegation in 2019 to give the U.S. an even larger voice and presence at this important event. If you are interested, let's talk! You can reach me via email at hank@ncpers.org and we'll find time to discuss how you can be part of next year's World Pensions & Investment s Forum. ◆

REGULATORY DEVELOPMENTS CONTINUED FROM PAGE 2

of review provides a second bite at the apple for those regulations subject to OIRA's new role. Some commentators believe this review will not be substantively impactful. However, there a few items to keep in mind: (1) the first two criteria that would trigger OIRA review are quite broad; (2) OMB-OIRA is within the Office of the President and OMB Director Mick Mulvaney is extremely close to President Trump; and (3) it should come without saying, but presidential politics can come into play in narrow as well as broad public policy decisions.

Determination Letter Program

Revenue Procedure 2016-37 limited the determination letter program effective January 1, 2017 for individually designed plans to initial plan qualification, plan termination and certain other limited circumstances identified in subsequent guidance. Rev. Proc. 2016-37 also stated that the Treasury Department and IRS will consider each year whether to enlarge the program to these as-yet-unspecified, "other limited circumstances."

In this vein, Treasury Notice 2018-34 was recently released. It requests public comments on the enlargement of the program. Using language from Rev. Proc. 2016-37, the Treasury Notice recites certain circumstances for consideration, including "…significant law changes, new approaches to plan design, and the inability of certain types of plans to convert to pre-approved plan documents." The Notice further states that, "Comments…should not merely state the type of plan, but should also specify the issues applicable to that type of plan that would justify review of that particular plan type under the…program. Such issues may include specific plan features and special plan designs applicable to that type of plan, or unresolved questions of qualification in form with respect to that type of plan." Written comments are due on or prior to June 4, 2018.

It is unclear at this stage whether Treasury Notice 2018-34 is simply the rote exercise outlined by Rev. Proc. 2016-37 of periodically requesting comments or whether it envisions a new openness on the part of the Trump Administration to substantially enlarge the program.

Please be advised that NCPERS will closely monitor these two regulatory developments as well as anything further the Trump Administration initiates that may impact state and local governmental pension plans. ◆

__Tony Roda__ is a partner at the Washington, D.C. law and lobbying firm Williams & Jensen, where he specializes in legislative and regulatory issues affecting state and local pension plans. He represents NCPERS and individual pension plans in California, Ohio, Tennessee and Texas.

AROUND THE REGIONS CONTINUED FROM PAGE 5

SOUTH: Louisiana

Louisiana's Senate on April 24 shelved legislation to create a hybrid pension plan for future employees that would have incorporated defined-contribution features. The bill, SB 14, also would have raised the retirement age to 65. The legislation was put aside after reaching the full Senate for action on April 17, following approval by the State Senate Finance Committee.

Public pension advocates organized 53,000 phone calls to Louisiana lawmakers asking them to oppose the legislation. Opposition from Governor John Bel Edwards stalled the initiative. An analysis performed by the Louisiana Legislative Auditor indicated that the legislation would have increased costs to the retirement system by $9.9 million.

The legislation, sponsored by state Senator Barrow Peacock, was supported by the Louisiana State Employees Retirement System, or LASERS.

LASERS said its research had shown that the current plan would not provide retirement security for the vast majority of new hires, and that only 5 percent would be in the plan long enough to receive an unreduced retirement benefit. It said it aimed to create a secure base benefit for employees in the defined benefit plan by reducing the risk of creating future unfunded liabilities.

The law would have affected rank-and-file state workers hired starting in 2020. Eligibility to receive a monthly pension check would have been pushed back from the current ages of 60 or 62. The introduction of a hybrid pension would have reduced their monthly checks, offering instead the uncertain ability to supplement income with an account similar to a 401(k) plan.

While advocates touted the portability of a hybrid plan, NPPC and its constituent organizations, argued that shrinking the financial value of retirement benefits to state workers would be costly in the long run. Louisiana public employees are not in the federal Social Security system. ◆

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2018 Conferences

May

NCPERS Accredited Fiduciary Program (All modules)
May 12 – 13
New York, NY

Trustee Educational Seminar
May 12 – 13
New York, NY

Annual Conference & Exhibition
May 13 – 16
New York, NY

June

CIO Summit
June 14-15
Chicago, IL

September

Public Pension Funding Forum
September 10 – 12
Cambridge, MA

October

NCPERS Accredited Fiduciary Program (All modules)
October 27 – 28
Las Vegas, NV

Public Safety Conference
October 27 – 31
Las Vegas, NV

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The Voice for Public Pensions

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THE NCPERS

MONITOR

The Latest in Legislative News

JUNE 2018

In This Issue

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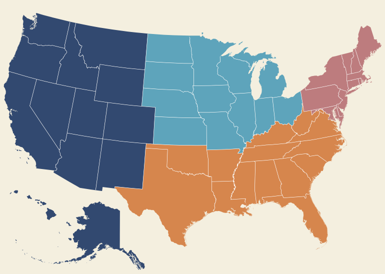
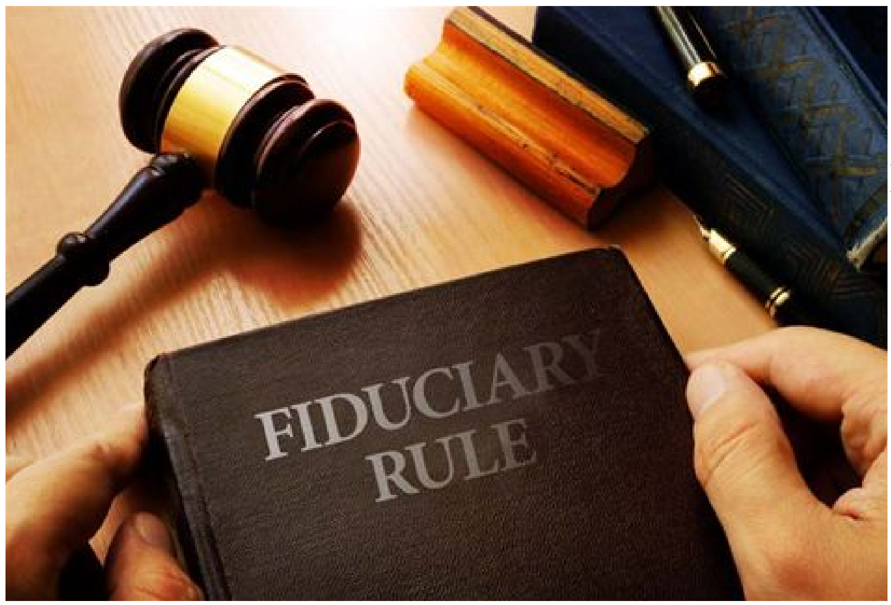
In the corporate world, there is a growing understanding of the dangers of short-termism. Investors increasingly recognize that companies can deliver superior results when executives are focused on managing in a way that creates long-term value. Resisting pressure for short-term results is seen as a virtue.



This month we will highlight issues in Illinois, Tennessee, New Jersey and Arizona.

NCPERS Code of Conduct Stands Strong as Fiduciary Rule Fades



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The Department of Labor's fiduciary rule is looking increasingly likely to die in court following a series of judicial setbacks this spring. Unveiled in 2015 and due to be implemented by 2019, the fiduciary rule was intended to foster ethical behavior by requiring retirement advisers to act in the best interests of their clients, steer clear of all conflicts of interest, and clearly disclose fees and commissions in dollar amounts.

In the likely event that the fiduciary rule is not implemented, NCPERS members are encouraged to redouble their commitment to the NPCERS Code of Conduct, which embodies the fiduciary rule's principles.

The Trump administration had targeted the fiduciary rule for review and possible elimination in March 2017, delaying its implementation first to June 2017 and then to July 2019. Before it could be implemented, however, the U.S. Court of Appeals for the Fifth Circuit on March 15, 2018, struck down the fiduciary rule on grounds that it was arbitrary, capricious and exceeded the agency's regulatory authority under ERISA.

On May 2, a panel of three judges of the Fifth Circuit ruled 2-1 to deny motions by the AARP and the state attorneys general for California, New York, and Oregon to rehear

CONTINUED ON PAGE 3

NCPERS Executive Directors Corner

Short-Term Thinking Leads to Unintended Consequences

In the corporate world, there is a growing understanding of the dangers of short-termism. Investors increasingly recognize that companies can deliver superior results when executives are focused on managing in a way that creates long-term value. Resisting pressure for short-term results is seen as a virtue.

Photo Illustration © 2018, depositphoto

At NCPERS, we are doing our level best to spread that same message about public sector pensions. We know that viewing the long-term funding of public pensions through the short-term lens of budget pressures creates distortions. Through steady research, we are providing tested, provable facts and data to help policy makers, academics, and members of the general public understand the value proposition of public pensions.

Our research has demonstrated again and again that over the long term, pensions produce positive results not only for their beneficiaries, but for the communities they inhabit and for the broader economy.

Our most recent study, [“Unintended Consequences; How Scaling Back Public Pensions Puts Government Revenues at Risk,”] takes a deep dive into two important and overlapping issues: How state economies and tax revenues are affected when pension funds invest their assets, and how taxpayer contributions compare to revenues.

We know that viewing the long-term funding of public pensions through the short-term lens of budget pressures creates distortions.

The findings are eye-opening. If public pensions did not exist, taxpayers not only wouldn’t save money. They would have to cover a significant annual revenue shortfall to make up the $137.3 billion that pension funds contributed to state and local government coffers during 2016 alone.

Our study, which drew on historical data from public sources including the U.S. Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics, found that pensions are net contributors to revenue in 38 states.

That’s not all. Our study found that the economy grows by $1,088 for each $1,000 of pension fund assets – a very substantial amount give that held $3.7 trillion in assets in 2016. We also saw that the while the economic and revenue impact of pension assets in high-population states like California, Florida, New York, and Texas are particularly significant, many small states also benefit significantly from investment of their pension fund assets.

The impact of investment of assets plus spending of pension checks by retirees in 2016 yielded a $1.3 trillion contribution to the economy and $277.6 billion to state and local revenues. Also during 2016, taxpayer contributions to state and local pension plans in the same year totaled $140.3 billion. Thus, pension funds generated $137.3 billion more in revenues than taxpayers contributed.

CONTINUED ON PAGE 6

CODE OF CONDUCT CONTINUED FROM PAGE 1

the case. And on May 22, a motion by the state AGs for a hearing en banc – before all 17 judges of the Fifth Circuit – was denied.

The three state AGs had argued that failure to implement the fiduciary rule would cost billions of dollars in lost retirement income to their residents and tens of millions of dollars in lost tax revenue.

The U.S. Department of Justice, which has standing to bring an appeal to the U.S. Supreme Court, did not file a motion to appeal the March 15 ruling striking down the fiduciary rule, making it highly unlikely that it would intervene now.

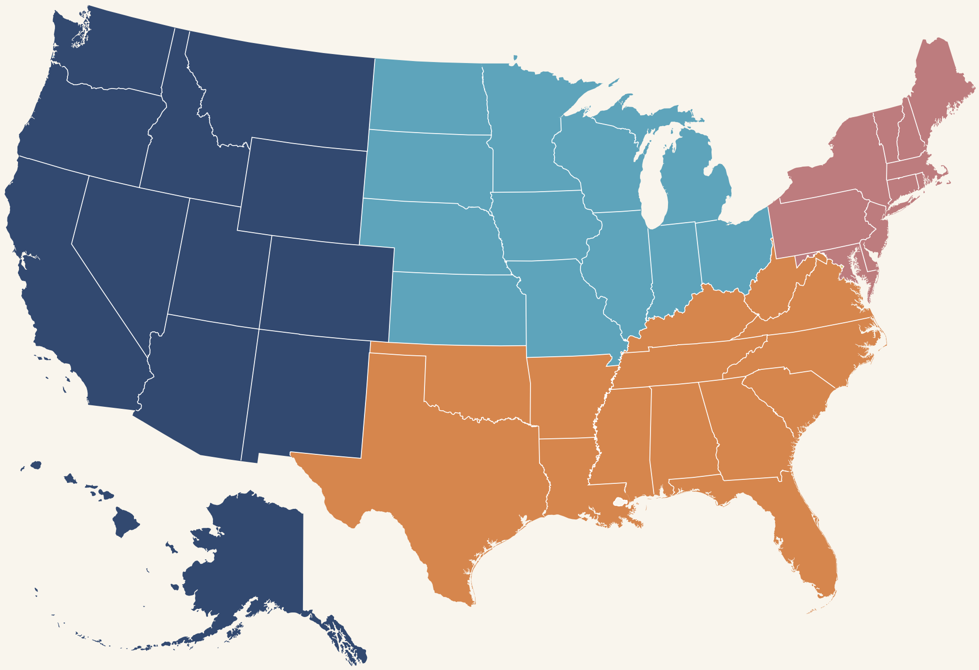
The NCPERS Code of Conduct was developed in parallel to the fiduciary rule, and has provided ethical guidance to public pension plans amid uncertainty over whether and how the fiduciary rule would be implemented.

"Our reputations and integrity rest on our ability to do the right thing in the right way," said Hank Kim, NCPERS executive director and counsel. "In the absence of proactive government guidance on conflicts of interest, the NCPERS Code of Conduct stands tall as a vital resource for fostering ethical behavior toward pension plan participants and beneficiaries."

For further information about the NCPERS Code of Conduct, visit www.ncpers.org/codeofconduct. ◆

NCPERS Around the Regions

This month we will highlight issues in New York, Wisconsin, Colorado and Louisiana.



MIDWEST: Illinois

Illinois Secure Choice kicked off a pilot program in May, recruiting a small group of employers to test the state-sponsored retirement savings program. The initial participants include a hair salon and spa, a home health care company, and a brewery, Illinois State Treasurer Michael W. Frerichs, chair of the Illinois Secure Choice Board, announced in an agency newsletter.

The Secure Choice pilot is designed to gather feedback from a small but diverse set of employers across Illinois. Once the pilot phase is over, the program is scheduled to unfold in three waves. Employers with 500 or more workers would be able to enroll in November 2018, followed by employers with 100 to 499 workers in July 2019, and finally those with 25 to 99 workers in November 2019.

In a radio interview on May 24 with WGLT in Normal, Ill., Frerichs estimated the Secure Choice program will be able to help about 1.2 million people invest their own money for retirement.

"We're making it easier for them to do something they know they already need to do," Frerichs said on WGLT's Sound Ideas program. "I think that working in a way to help people save their own money, to build up a bit of a nest egg, is in the best interest of everyone in the state." He noted that about half of the state's businesses do not offer retirement benefits to employees.

"We have signed up employers in different parts of the state in different industries and different sizes, trying to work through these issues now, so then when it rolls out, it will be flawless," Frerichs said.

Eventually, Illinois employers will be required to enroll their employees in Secure Choice if they have been in business for at least two years; do not offer a qualified retirement savings plan; and employ 25 or more workers.

Employees are enrolled automatically with a default 5 percent post-tax contribution into a Target Date Fund Roth IRA. However, the employee can choose a different contribution rate or an alternative fund option, or opt-out altogether. Employers facilitate payroll contributions but do not shoulder any managerial or financial responsibilities.

CONTINUED ON PAGE 5

AROUND THE REGIONS CONTINUED FROM PAGE 4

SOUTH: Tennessee

Police and firefighters in Memphis have teamed up on a ballot initiative to impose a one-half-cent sales tax increase to restore and maintain public safety employee benefits and other city funding priorities.

The Memphis Police Association and the Memphis Fire Fighters Association are collecting signatures to take the matter directly to voters in the November election. The sales tax, currently 2.25 percent, would rise to 2.75 percent if the initiative is successful.

Thomas Malone, president of the Memphis Fire Fighters Association, said the first step is the gather signatures from 10 percent of registered voters in the city of Memphis, or around 33,000 people. In order to include the initiative on the November ballot, the signatures must be submitted to the Election Commission by June 14.

If successful, the measure would generate an additional $50 million in revenue to city government. Funds would help finance public safety retiree health insurance before age 65 and move some active employees from the city's new 401(a) plan back into the defined benefit pension. It would also allow working spouses of active employees back into the city's health insurance plan. Remaining funds could be used for street paving and pre-kindergarten education, at the discretion of the city council.

Members of both organizations are working to collect signatures, with hired canvassers supplementing their efforts, Malone said.

Malone noted that since 2014, the city has implemented extensive changes to public employee benefits, including:

- People retiring before age 65 were moved from the city's self-funded health insurance program to a private exchange with an HRA of $5,000 for single coverage and $10,000 for family coverage. Prior to this, the city paid 70 percent of the premium, with retirees picking up the remaining 30 percent. Those who retired on a line of duty disability pension and spouses of those killed in the line of duty were allowed to stay on the city's health insurance plan until age 65, at which time they would transition to Medicare.
- Retirees over age 65 who were eligible for Medicare either through city employment or even employment outside the city were forced into Medicare and a Medicare supplement plan offered by third parties. The city provides a $1,000 HRA for post-65 Medicare retirees and an additional $500 for post-65 retirees with a spouse. Post-65 retirees who had no qualification for Medicare were allowed to stay on the city's health insurance plan at the 70/30 premium split.
- Spouses of active employees are only eligible for city insurance if they are not eligible for insurance elsewhere.
- In 2014, the council voted to change the retirement to include a new 401(a)/cash balance plan that started July 1, 2016. In addition to putting all new hires into this plan, they also moved employees hired between Jan 1, 2009, and June 30, 2016 into this plan as well.

NORTHEAST: New Jersey

Democratic Governor Phil Murphy on May 10 conditionally vetoed legislation that would have spun off management New Jersey's Police and Firemen's Retirement System to an independent board.

Murphy sent the bill back to the New Jersey Senate with 12 pages of proposed amendments to address his concern that transferring the $26 billion in pension assets to an independent PFRS board would destabilize the state's entire retirement system.

The state Senate and Assembly approved the legislation in March. They must now decide whether to revise the bill or to attempt to override the veto.

In his veto message, Murphy underscored his support for parts of the legislation.

"I certainly sympathize with the motivations underlying the bill, which comes in response to years of partial and deferred state pension payments and mounting unfunded liabilities," Murphy said in his veto message. "Despite my support for the core reforms and the sponsors' efforts to put in place various safeguards, however, there are several technical changes that must be made to ensure that the proposed reforms are implemented in an appropriate manner, as intended, and that taxpayers are protected in the process."

Murphy said he had been advised by the state Treasurer that the $26 billion transfer would risk destabilizing the value of all

CONTINUED ON PAGE 6

EXECUTIVE DIRECTORS CORNER CONTINUED FROM PAGE 2

Critics of public pensions frequently hang their arguments on distorted assumptions and apples-to-oranges comparisons – for example, advancing flawed logic that measures long-term funding requirements against a single year's state or local budget. The belief that pensions may fall short if benefits aren't funded up front has taken is demonstrably wrong, and yet we hear this argument over and over.

It's our job to remind all public pension stakeholders of the facts. Pension funds work by accumulating assets over a worker's lifetime. Employer and employee contributions plus investment returns contribute steadily to the funds' growth. Pensions are a long-term investment that must not be evaluated through the lens of short-term political expediency.

I hope you will take time to read through our study and also use the accompanying video to drive home the important message that public pensions are net contributors to our collective economic well-being. ◆

AROUND THE REGIONS CONTINUED FROM PAGE 5

the state's pension funds assets, including the PFRS. In addition, replicating investment management functions could add $12 million a year in expenses for the PFRS fund, he said.

The governor said in the veto message that his recommended changes would "address these and related technical concerns while preserving the board's control over the management and allocation of its investments."

WEST: Arizona

Arizona teachers ended a six-day walkout on May 3 after Republican Governor Doug Ducey signed a budget bill that met some of their demands.

Teachers will receive an average pay increase of 20 percent over three years, and the state will provide an additional $371 million in education funding over the next five years. The legislation did not include requested provisions for pay increases for other support staff such as librarians and counselors, nor did the increased funding reach the $1 billion that teachers had requested.

Approximately 150,000 teachers walked out of classrooms during the strike to protest deteriorating conditions, insisting they would stay out until lawmakers passed a budget.

Between 2008 and 2015, Arizona lawmakers cut funding per student by 36.6 percent, according to the Center on Budget and Policy Priorities. Arizona lawmakers budgeted 13.6 percent less on students this year than they did in 2008. Even as the economy has rebounded from last decade's Great Recession, Arizona lawmakers have opted for more tax cuts, instead of investing in public schools.

"When we started this movement, Arizona educators pledged to keep fighting for the schools their students deserve until the end, and we were true to our word," Arizona Education Association President Joe Thomas and National Education Association President Lily Eskelsen García said in a joint statement.

Arizona is one of six states that have experienced large-scale teacher rallies and walkouts this year. Colorado, Kentucky, North Carolina, Oklahoma, and West Virginia complete the list. ◆

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June

CIO Summit
June 14-15
Chicago, IL

September

Public Pension Funding Forum
September 10 – 12
Cambridge, MA

October

NCPERS Accredited Fiduciary Program (All modules)
October 27 – 28
Las Vegas, NV

Public Safety Conference
October 27 – 31
Las Vegas, NV

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