Dallas Police and Fire Pension System

Actuarial Valuation and Review as of January 1, 2016

Segal Consulting

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July 21, 2016

Board of Trustees
Dallas Police and Fire Pension System
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Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of January 1, 2016. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for 2016. This is Segal Consulting's first valuation for the Dallas Police and Fire Pension System.

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 current statutory contribution rates are not sufficient to avoid insolvency, and without changes the System is projected to become insolvent within the next 15 years. At a minimum, the funding policy should provide the System with sufficient assets to be able to pay all future benefit payments. However, we strongly recommend an actuarial funding policy that targets 100% funding where payments at least cover interest on the unfunded actuarial accrued liability and a portion of the principal balance.

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 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: ______________________________

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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, 2016. 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, 2015, provided by the System's IT Department;
- The unaudited assets of the System as of December 31, 2015, provided by the System's Finance Department;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

The assumptions and methods used to value the System were approved by the Board of Trustees based on a five-year experience study for the period ended December 31, 2014.

Significant Issues in Valuation Year

This is Segal Consulting's first actuarial valuation of the System. Presentation of results will differ from prior valuations. The Texas Pension Review Board (PRB) requires that municipal plans in the State develop a Funding Soundness Restoration Plan if their effective amortization period exceeds 40 years for three consecutive annual valuations. This valuation is the second consecutive year with an infinite period. Segal recommends that the System initially target a 40-year period. Once that has been achieved, shorter recommended periods will be considered. (In prior years, the recommended amortization period was 30 years.)

1. The total recommended contribution for 2016 is 72.72% of computation pay, based on the System's normal cost plus a 40-year amortization of the unfunded actuarial accrued liability. As a dollar amount, the recommended contribution is $265.6 million. This is an increase of $60.6 million from $205.0 million for 2015. The increase is primarily attributable to investment experience and a change in the actuarial value of assets used for funding purposes. A reconciliation of the recommended contribution is shown in Chart 14 on page 13 in Section 2 of this report.
2. Earlier this year, following the completion of a comprehensive five-year experience study by Segal Consulting, the Trustees approved modifications to the actuarial assumptions that included updating the mortality tables and reflecting generational projection for the future, introducing an explicit administrative expense assumption, adjusting the retirement,

turnover and disability rates, lowering the assumed inflation and salary scale, and other changes. See Exhibit IV in Section 4 of this report for a complete listing.

3. In the 2013, 2014 and 2015 valuations, the actuarial value of assets reflected ten-year smoothing of market gains and losses. Prior to 2013, the smoothing period was five years. Over the last 24 months, there have been significant write-downs of some of the System's asset holdings. Since these adjustments are expected to be one-time events, and are not directly related to changes in the investment markets, the Board has decided to recognize them immediately. Therefore, the actuarial value of assets has been reset to market value as of December 31, 2015. The assets for valuation purposes are about $1 billion less than last year. Future gains and losses will again be recognized over a five-year smoothing period. The Board and System staff continue to refine the asset allocation and anticipate completing the transition in three to five years. The modification is not expected to have a material impact on long-term funding, but will be reflected in short-term solvency projections.

4. The City of Dallas is expected to contribute 27.50% of pay to the System, including overtime and other non-computation pay. It is assumed that overtime and non-computation pay items add 11% to the computation pay, and therefore the effective City rate is 30.53% of computation pay. Member contributions are 8.50% of computation pay for participants who do not currently participate in the DROP, and 4.00% for DROP participants. The weighted average of the member rates is 7.08% as of the valuation date. The sum of City and member contributions is therefore 37.61% of computation pay. When compared to the recommended contribution of 72.72%, there is a shortfall of 35.11% of computation pay. Each year in which there is a contribution deficiency leads to an increased deficiency in all future years.

5. The current contribution rates are not sufficient to fund the System over a finite period. In fact, the System is projected to become insolvent within 15 years if no changes to plan provisions or contribution rates are made and all assumptions are met in the aggregate. A Long-Term Financial Stability Sub-Committee has been created to examine alternatives that will improve System funding over the long term while continuing to provide participants with retirement income. Although this valuation does not reflect any changes in provisions, it is assumed that the System will be viable and assumptions will be met. We will continue to work with the Board, the Sub-Committee and System staff to develop projections of funding status under various scenarios. To the extent that changes in plan provisions cause changes in behavior among the participants and/or lead Segal to believe that assumed investment returns cannot be achieved, actuarial assumptions will be adjusted in future valuations. Similarly, the assumptions for future interest on DROP accounts may be updated in a future valuation unless changes are made to improve the funded status of the System.

6. The total computation payroll has decreased by 4.6% from last year to this year. Data provided to the actuary in previous years included overtime and non-computation pay in the salary field for employees who were already participants in the DROP, whereas the salary field for non-DROP participants reflected computation pay only. This year the DROP participant salary reflects computation pay only, so that the data for all active employees is consistent. This change resulted

in a decrease of over 12% in the average salary reported for DROP participants. The benefit calculations and liabilities were not impacted, since the annuities for these participants were determined based on service and salary at DROP entry. However, items that are shown as a percentage of computation pay, including the recommended contribution rates and the unfunded liabilities as a percentage of covered payroll, have increased because of the lower denominator.

7. The market value of assets as of the valuation date is $2.680 billion, based on unaudited financial statements. It should be noted that DROP account balances as reported for valuation purposes account for $1.505 billion (56.1%). It is assumed that participants will draw down these balances over a ten-year period. The System's solvency will be significantly impacted if these funds are withdrawn more quickly.

8. The investment return rate on a market value basis for the year ended December 31, 2015 was -8.47%. This return reflects the asset write-downs mentioned above. Under the prior actuarial value basis, which smoothed market gains and losses over ten years, the return rate was -9.24%. Since the rate of return was less than last year's assumed rate of return of 7.25% per year, there was an actuarial investment loss amounting to $597.4 million.

9. The Schedule of Funding Progress, provided in Exhibit II of Section 4, shows that the funded ratio on an actuarial basis has decreased from 63.80% as of January 1, 2015 to 45.07% as of January 1, 2016. The ratio would have been 54.08% if the assets had not been reset to market value.

10. The Governmental Accounting Standards Board (GASB) has released two new statements, Statement No. 67, *Financial Reporting for Pension Plans*, and Statement No. 68, *Accounting and Financial Reporting for Pensions*. The GASB 67 disclosure information is provided in Section 5 of this report; the GASB 68 information will be provided under separate cover after the end of the City's fiscal year. A projection of cash flows indicates that the current funding policy for the Fund is not sufficient to avoid any projected insolvency, and therefore the liabilities for GASB purposes are valued at a blended discount rate of 3.95%. The Net Pension Liability (NPL) as of December 31, 2015 is $6.9 billion. (As of December 31, 2014, the NPL was $5.0 billion.)

Summary of Key Valuation Results

	2016	2015
Contributions for plan year beginning January 1:		
Recommended contribution (City and employee)	$265,579,195	$205,014,802[1]
Recommended contribution as a percentage of total computation pay	72.72%	53.53%
Actual contributions (City and employee)	--	$140,562,050
Amortization period for determination of recommended contribution	40 years	30 years
Funding elements for plan year beginning January 1:		
Normal cost, including administrative expenses, adjusted for timing	$92,446,291	$98,087,921[2]
Market value of assets	2,680,124,303	3,079,394,897
Actuarial value of assets	2,680,124,303	3,695,273,876
Actuarial accrued liability	5,947,173,998	5,792,216,025
Unfunded actuarial accrued liability (UAAL)	3,267,049,695	2,096,942,149
Funded ratio – Actuarial basis	45.07%	63.80%
Funded ratio – Market basis	45.07%	53.16%
Effective funding period to amortize UAAL	Infinite	Infinite
Demographic data for plan year beginning January 1:		
Number of retired members and beneficiaries	4,230	4,069
Number of vested former members[3]	200	157
Number of active members	5,415	5,487
Total computation pay	$365,210,426	$383,006,330
Average computation pay	67,444	69,803

[1] *The 2015 valuation did not include the recommended contribution as a dollar amount. This amount was determined by Segal Consulting based on the rate-of-pay information in the prior actuary's report.*

[2] *Prior valuations did not include an explicit administrative expense assumption.*

[3] *Excludes terminated participants 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 long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

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

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

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 System. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If the System 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 System's provisions, but they may be subject to alternative interpretations. The System should look to their other advisors for expertise in these areas.
- The actuarial valuation assumes the System 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 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 can be seen in this chart.

CHART 1

Member Population: 2006 – 2015

Year Ended December 31	Active Members	Vested Terminated Members*	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
2006	4,739	158	3,198	0.71
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

**Excludes terminated members due a refund of employee contributions.*

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 5,415 active members with an average age of 41.4, average years of service of 14.3 years and average computation pay of $67,444. The 5,487 active members in the prior valuation had an average age of 41.2, average service of 14.2 years and computation pay of $69,803.

The average reported computation payroll has decreased from last year to this year, because overtime and non-computation pay is excluded for participants in the DROP. In prior years these items were excluded from the data for non-DROP participants, but included for those in DROP.

The number of active Firefighters decreased from 1,935 to 1,932 as of December 31, 2015. The average age of this group is 41.8, the average years of service is 14.6, and the average computation pay is $68,309. Last year these averages were 41.8, 14.8, and $71,384, respectively.

The number of active Police Officers decreased from 3,552 to 3,483 as of December 31, 2015. The average age of this group increased from 40.9 to 41.2, the average service increased from 13.8 to 14.1, and the average computation pay decreased from $68,941 to $66,965.

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, 2015

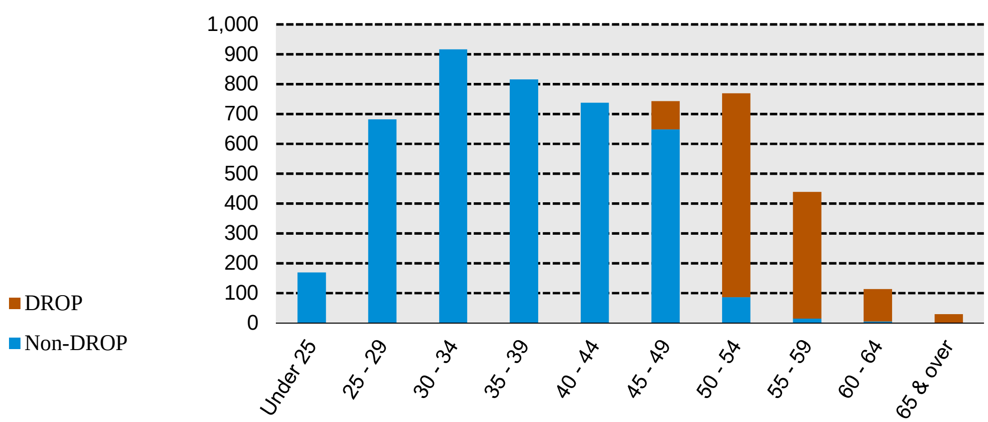
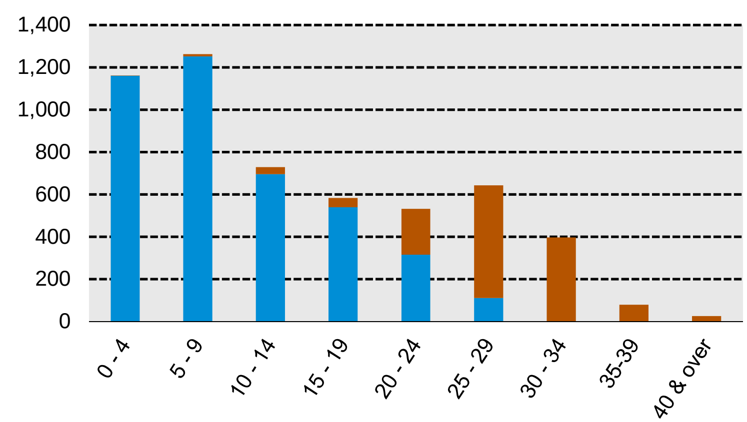


CHART 3

Distribution of Active Members by Years of Service as of December 31, 2015



Inactive Members

In this year's valuation, there were 200 members with a vested right to a deferred or immediate vested benefit. In addition, there were 126 members entitled to a return of their employee contributions.

Retired Members and Beneficiaries

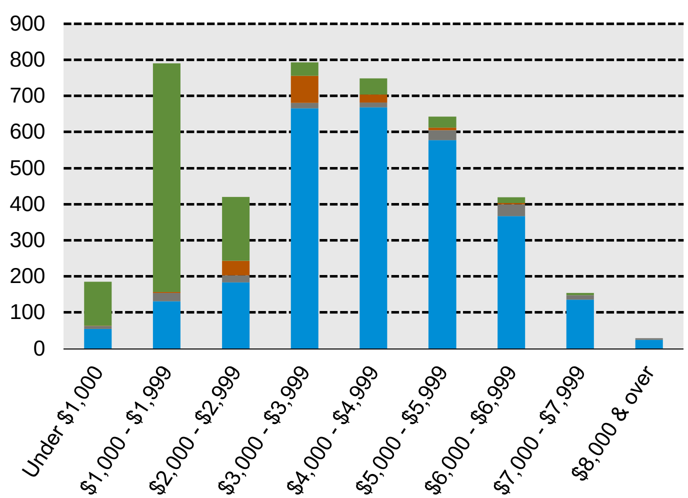
As of December 31, 2015, 3,115 retired members and 1,067 beneficiaries were receiving total monthly benefits of $16,438,266, including benefit supplements. For comparison, in the previous valuation, there were 3,033 retired members and 1,036 beneficiaries receiving total monthly benefits of $15,477,712, including benefit supplements.

There are also 48 beneficiaries with DROP balances only, and no monthly annuity. This number has decreased from 56 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

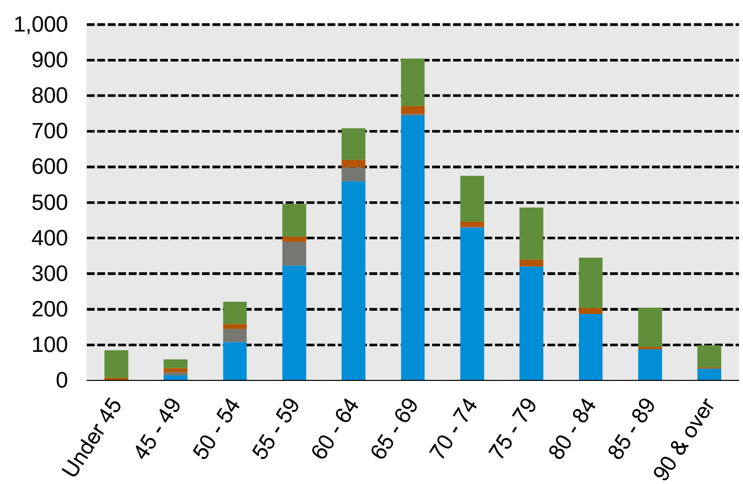
Distribution of Retired Members and Beneficiaries by Type and by Monthly Amount as of December 31, 2015



- Beneficiary
- Disability
- Early
- Normal

CHART 5

Distribution of Retired Members and Beneficiaries by Type and by Age as of December 31, 2015



B. FINANCIAL INFORMATION

Retirement plan funding anticipates that, over the long term, both contributions and net investment earnings (less investment fees and administrative expenses) 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.

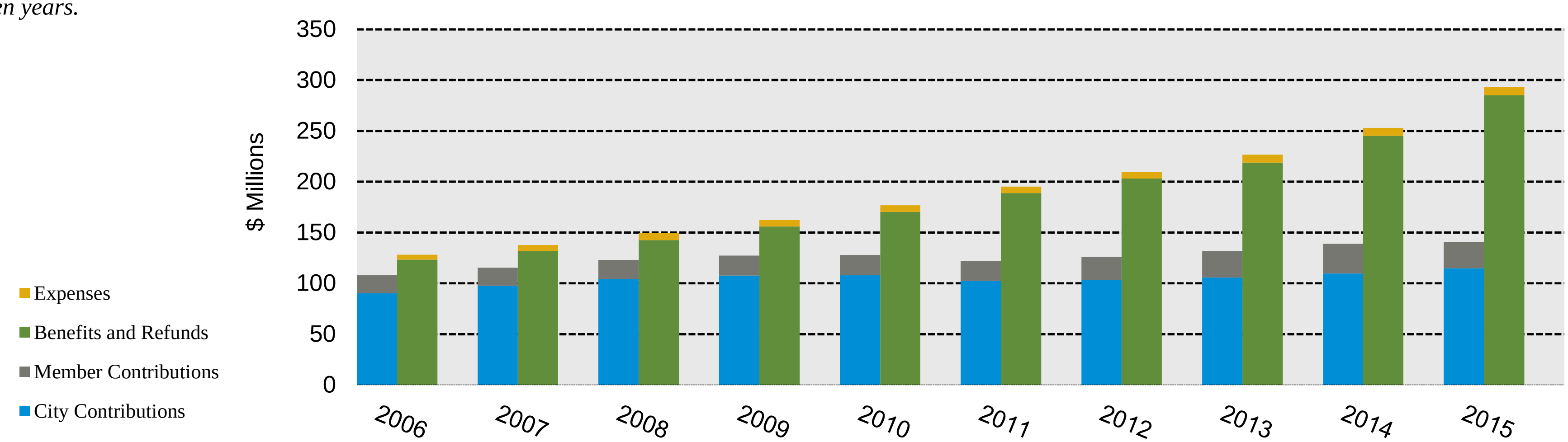
Total contributions were $140.5 million for the year ended December 31, 2015. Benefit payments and refunds totaled $285.0 million and are projected to increase in the coming years. To the extent that future contributions are less than benefit payments, investment earnings or fund assets will be needed to cover the shortfall.

It should be noted that DROP balances totaled $1.5 billion as of the valuation date, including $1.0 billion for participants who have already left employment with Dallas. These balances are payable upon demand.

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, 2006 – 2015



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. As shown below, the actuarial value of assets was adjusted by $566.2 million to bring it within the permissible corridor of 80% - 120% of market value of assets, and was then written down by another $536.0 million to reset to the market value of assets as of December 31, 2015.

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, 2015

	Original Amount*	Percent Deferred	Unrecognized Return	
1. Market value of assets, December 31, 2015				$2,680,124,303
2. Calculation of unrecognized return				
(a) Year ended December 31, 2015	-$472,849,609	90%	-$425,564,648	
(b) Year ended December 31, 2014	-458,251,438	80	-366,601,152	
(c) Year ended December 31, 2013	-25,324,051	70	-17,726,835	
(d) Year ended December 31, 2012	41,774,976	60	25,064,988	
(e) Year ended December 31, 2011	-316,579,427	50	-158,289,715	
(f) Year ended December 31, 2010	62,874,951	40	25,149,980	
(g) Year ended December 31, 2009	132,954,038	30	39,886,212	
(h) Year ended December 31, 2008	-1,125,904,567	20	-225,180,914	
(i) Year ended December 31, 2007	10,785,809	10	1,078,581	
(j) Year ended December 31, 2006	168,016,769	0	0	
(k) Total unrecognized return				-1,102,183,503
3. Preliminary actuarial value: (1) - (2k)				3,782,307,806
4. Write down to 120% of market value of assets				-566,158,643
5. Additional write down to market value of assets				-536,024,860
6. Final actuarial value of assets as of December 31, 2015: (3) + (4) + (5)				$2,680,124,303
7. Actuarial value as a percentage of market value: (6) ÷ (1)				100.0%

**Total return minus expected return on a market value basis*

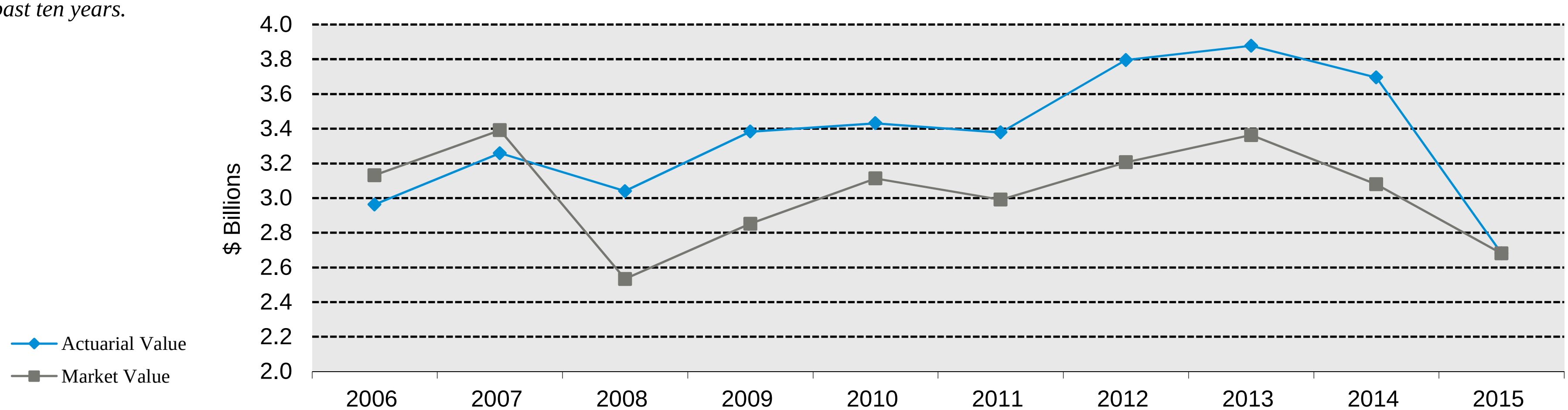
Both the actuarial value and market value of assets are representations of the System's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the System's liabilities 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.

Over the last 24 months, there have been significant write-downs of some of the System's asset holdings. Since these adjustments are expected to be one-time events, and are not truly annual market losses, the Board has decided to recognize them immediately. Therefore, the actuarial value of assets has been reset to market value as of December 31, 2015. Future gains and losses will again be recognized over a five-year smoothing period.

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, 2006 – 2015



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 $538,115,973, including a loss of $597,354,954 from investments that was partially offset by a gain of $59,238,981 from all other sources. The net experience variation from individual sources other than investments was 1.0% of the 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, 2015

1.	Net loss from investments*	-$597,354,954
2.	Net gain from other experience	59,238,981
3.	Net experience loss: (1) + (2)	-$538,115,973

** 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 System'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 2015 plan year was -9.24%.

As mentioned previously, there have been write-downs of some of the System's asset holdings. This resulted in a lower rate of return than would have otherwise been expected.

Since the actual return for the year was less than the assumed rate, the System experienced an actuarial loss during the year ended December 31, 2015 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, 2015

1.	Actual return	-$334,683,589
2.	Average value of assets	3,623,053,314
3.	Actual rate of return: (1) ÷ (2)	-9.24%
4.	Assumed rate of return	7.25%
5.	Expected return: (2) x (4)	$262,671,365
6.	Actuarial loss: (1) – (5)	-$597,354,954

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 System has maintained the assumed rate of return of 7.25%. Effective January 1, 2016, the assumed rate of return assumption is net of investment expenses only, rather than net of both investment and administrative expenses.

This chart shows a history of actuarial value and market value investment returns.

CHART 11

Investment Return – Actuarial Value vs. Market Value: 2006 - 2015

Year Ended December 31	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent
2006	$277,807,110	10.32%	$400,766,033	14.64%
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
Total	$584,463,624		$538,645,658	
	Five-year average return	-1.50%		0.32%
	Ten-year average return	1.76%		1.79%

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

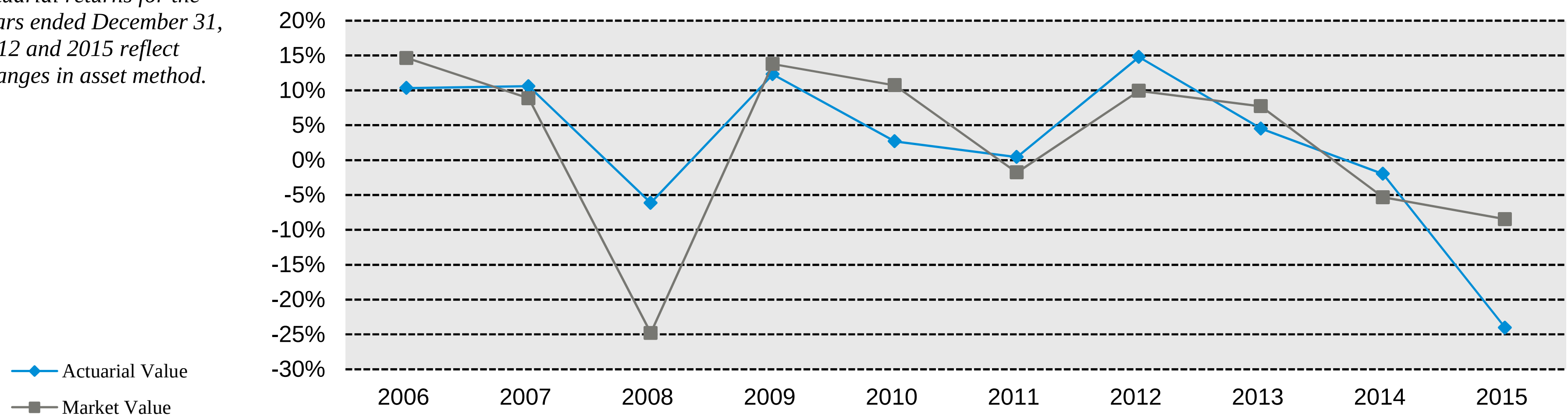
**Includes effects of changes in asset method. As of December 31, 2012, the smoothing was extended from five to ten years. In the current valuation, the actuarial value was reset to market value.*

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.

This chart illustrates how this leveling effect has actually worked over the years 2006 - 2015. 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, 2006 - 2015



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 participants,
- 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.

This year, the experience change also reflects the impact of a change in actuary.

The net gain from this other experience for the year ended December 31, 2015 amounted to $59,238,981, which is 1.0% of the actuarial accrued liability.

Assumption Changes

A comprehensive experience study was recently completed for the five-year period ending December 31, 2014. Based on observed and expected future experience, changes were made in the majority of assumptions, including payroll growth, salary scale, mortality, disability, turnover, retirement and other demographic assumptions. All changes are outlined in Exhibit IV of Section 4.

The assumptions anticipate that the funding issues will be addressed, and the System will be viable ongoing. To the extent that changes in plan provisions cause changes in behavior among the participants and/or lead Segal to believe that assumed investment returns cannot be achieved, actuarial assumptions will be adjusted in future valuations.

D. RECOMMENDED CONTRIBUTION

The amount of annual contribution required to fund the System is comprised of a 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 funding rate of 72.72% of covered compensation.

The recommended contribution is based on a 40-year amortization of the unfunded actuarial accrued liability as a level percentage of payroll, with payroll expected to increase 2.75% annually. The normal cost, for benefits accruing each year, accounts for about 35% of the recommended contribution; the remainder is an amortization payment on the unfunded liability.

The City of Dallas is expected to contribute 27.50% of pay to the System, including overtime and other non-computation pay. It is assumed that overtime and non-computation pay items add 11% to the computation pay, and therefore the effective City rate is 30.53% of computation pay. Member contributions are 8.50% of computation pay for participants who do not currently participate in the DROP, and 4.00% for DROP participants. The weighted average of the member rates is 7.08% as of the valuation date. The sum of City and member contributions is therefore 37.61% of computation pay. When compared to the recommended contribution of 72.72%, there is a shortfall of 35.11% of pay.

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

CHART 13

Recommended Contribution

	Year Beginning January 1			
	2016		2015[1]	
	Amount	% of Computation Pay	Amount	% of Computation Pay
1. Normal cost, adjusted for timing	$82,446,291	22.58%	$98,087,921	25.61%
2. Administrative expenses	10,000,000	2.74%	0	0.00%
3. Total normal cost: (1) + (2)	$92,446,291	25.31%	$98,087,921	25.61%
4. Actuarial accrued liability	5,947,173,998		5,792,216,025	
5. Actuarial value of assets	2,680,124,303		3,695,273,876	
6. Unfunded actuarial accrued liability: (4) - (5)	$3,267,049,695		$2,096,942,149	
7. Payment on unfunded actuarial accrued liability, adjusted for timing[2]	173,132,904	47.41%	106,926,881	27.92%
8. Total recommended contribution: (3) + (7)[3]	$265,579,195	72.72%	$205,014,802	53.53%
9. Total computation pay	$365,210,426		$383,006,330	

[1] The 2015 valuation did not include recommended contributions as a dollar amount. This amount was determined by Segal Consulting based on the rate-of-pay information in the prior actuary's report.

[2] The unfunded actuarial accrued liability is amortized over a 40-year period for 2016. In 2015, the amortization period was 30 years.

[3] Recommended contributions are assumed to be paid at the middle of every year. In prior valuations, a beginning-of-year payment was assumed.

The contribution requirements as of January 1, 2016 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 Recommended Contribution

The chart below details the changes in the recommended 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, 2015 to January 1, 2016

Recommended Contribution as of January 1, 2015	$205,014,802
Effect of investment loss	30,032,582
Effect of change in asset method	28,405,917
Effect of change in amortization period, from 30 to 40 years	-21,256,096
Effect of change in administrative expense assumption	10,000,000
Effect of other changes in actuarial assumptions	4,745,250
Effect of expected change in amortization payment due to payroll growth	4,277,075
Effect of contributions less than recommended contribution	3,240,423
Net effect of other changes, including other gains and losses on liability and a change in actuary	1,119,242
Total change	$60,564,393
Recommended Contribution as of January 1, 2016	$265,579,195

EXHIBIT A

Table of Plan Coverage

Category	Year Ended December 31 2015	Year Ended December 31 2014	Change From Prior Year
Total active members in valuation:			
Number	5,415	5,487	-1.3%
Average age	41.4	41.2	N/A
Average years of service	14.3	14.2	N/A
Total computation pay*	$365,210,426	$383,006,330	-4.6%
Average computation pay	67,444	69,803	-3.4%
DROP account balances	474,296,247	458,419,974	3.5%
Accumulated contribution balances	290,394,810	286,667,686	1.3%
Total active vested members	4,235	4,297	-1.4%
Active members (excluding DROP):			
Number	4,077	4,107	-0.7%
Average age	37.0	36.8	N/A
Average years of service	9.8	9.6	N/A
Total computation pay	$249,889,014	$246,544,077	1.4%
Average computation pay	61,292	60,030	2.1%
Active members (DROP only):			
Number	1,338	1,380	-3.0%
Average age	54.8	54.5	N/A
Average years of service	28.1	27.8	N/A
Total computation pay*	$115,321,412	$136,462,253	-15.5%
Average computation pay	86,189	98,886	-12.8%
DROP account balances	474,296,247	458,419,974	3.5%

* *The reported computation payroll has decreased from last year to this year, because overtime and non-computation pay is excluded for participants in the DROP. In prior years these items were excluded from the data for non-DROP participants, but included for those in DROP.*

EXHIBIT A (continued)
Table of Plan Coverage

Category	Year Ended December 31 2015	Year Ended December 31 2014	Change From Prior Year
Vested terminated members:			
Number	200	157	27.4%
Average age	38.9	40.3	N/A
Average monthly benefit	$1,004	$923	8.8%
Retired members:			
Number in pay status	2,964	2,877	3.0%
Average age	67.9	67.8	N/A
Average monthly benefit*	$4,515	$4,376	3.2%
DROP account balance	$986,486,520	$912,730,866	8.1%
Disabled members:			
Number in pay status	151	156	-3.2%
Average age	66.6	67.1	N/A
Average monthly benefit*	$3,407	$3,319	2.7%
Beneficiaries in pay status:			
Number in pay status	1,067	1,036	3.0%
Average age	72.2	72.0	N/A
Average monthly benefit*	$1,973	$1,878	5.1%
DROP account balance	$34,410,127	$32,084,765	7.2%
Beneficiaries with a DROP account only:			
Number	48	56	-14.3%
DROP account balance	$9,579,082	$11,013,417	-13.0%
Terminated members due a refund of contributions:			
Number	126	99	27.3%
Accumulated contribution balances	$496,391	$383,872	29.3%

** Excludes benefit supplement*

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

EXHIBIT B-1 (Total)

Members in Active Service as of December 31, 2015
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	169	169	- -	- -	- -	- -	- -	- -	- -	- -
	$47,701	$47,701	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	682	513	167	2	- -	- -	- -	- -	- -	- -
	50,824	49,804	$53,977	$49,085	- -	- -	- -	- -	- -	- -
30 - 34	917	297	551	69	- -	- -	- -	- -	- -	- -
	54,506	50,847	55,391	63,195	- -	- -	- -	- -	- -	- -
35 - 39	816	134	340	259	82	1	- -	- -	- -	- -
	60,050	50,517	55,826	66,478	$72,656	$75,192	- -	- -	- -	- -
40 - 44	738	30	133	229	286	60	- -	- -	- -	- -
	68,817	48,910	54,817	66,988	75,702	83,962	- -	- -	- -	- -
45 - 49	743	14	47	103	161	266	150	2	- -	- -
	77,861	54,142	54,498	66,344	75,753	83,383	$87,176	$122,617	- -	- -
50 - 54	769	4	13	55	42	150	334	171	- -	- -
	84,197	64,369	57,641	66,161	75,357	83,927	87,822	87,809	- -	- -
55 - 59	439	- -	3	10	12	47	126	200	41	- -
	85,933	- -	52,835	67,079	76,141	80,000	86,719	88,544	$87,467	- -
60 - 64	113	- -	9	1	1	6	29	20	33	14
	86,346	- -	64,439	94,509	79,121	81,569	85,856	88,013	89,640	$93,280
65 & over	29	1	- -	1	- -	2	4	4	6	11
	90,944	50,203	- -	91,543	- -	83,156	94,168	86,338	87,779	98,239
Total	5,415	1,162	1,263	729	584	532	643	397	80	25
	$67,444	$49,927	$55,309	$66,318	$75,278	$83,266	$87,406	$88,350	$88,386	$95,462

EXHIBIT B-2 (Police)

Members in Active Service as of December 31, 2015
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	127	127	- -	- -	- -	- -	- -	- -	- -	- -
	$47,821	$47,821	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	446	321	123	2	- -	- -	- -	- -	- -	- -
	50,641	49,468	$53,728	$49,085	- -	- -	- -	- -	- -	- -
30 - 34	582	128	395	59	- -	- -	- -	- -	- -	- -
	55,040	50,908	55,107	63,554	- -	- -	- -	- -	- -	- -
35 - 39	484	55	223	162	44	- -	- -	- -	- -	- -
	59,768	49,226	55,651	66,025	$70,774	- -	- -	- -	- -	- -
40 - 44	474	23	101	144	169	37	- -	- -	- -	- -
	67,205	47,865	54,871	66,598	74,405	$82,365	- -	- -	- -	- -
45 - 49	555	11	45	70	102	204	122	1	- -	- -
	77,361	53,852	54,469	66,332	74,293	83,322	$86,296	$144,783	- -	- -
50 - 54	499	1	12	35	29	97	239	86	- -	- -
	83,639	79,120	57,446	65,350	73,992	84,231	87,377	86,986	- -	- -
55 - 59	252	- -	2	8	11	29	83	99	20	- -
	85,675	- -	54,474	68,266	75,978	77,224	87,053	88,947	$91,425	- -
60 - 64	50	- -	7	1	1	2	21	5	7	6
	84,412	- -	65,983	94,509	79,121	81,307	84,999	84,589	90,827	$96,456
65 & over	14	- -	- -	1	- -	1	4	2	2	4
	91,553	- -	- -	91,543	- -	87,190	94,168	81,592	93,405	94,087
Total	3,483	666	908	482	356	370	469	193	29	10
	$66,965	$49,472	$55,109	$65,968	$73,953	$82,986	$86,990	$88,173	$91,417	$95,508

EXHIBIT B-3 (Fire)

Members in Active Service as of December 31, 2015
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	42	42	- -	- -	- -	- -	- -	- -	- -	- -
	$47,340	$47,340	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	236	192	44	- -	- -	- -	- -	- -	- -	- -
	51,168	50,365	$54,673	- -	- -	- -	- -	- -	- -	- -
30 - 34	335	169	156	10	- -	- -	- -	- -	- -	- -
	53,580	50,801	56,109	$61,075	- -	- -	- -	- -	- -	- -
35 - 39	332	79	117	97	38	1	- -	- -	- -	- -
	60,462	51,415	56,160	67,235	$74,835	$75,192	- -	- -	- -	- -
40 - 44	264	7	32	85	117	23	- -	- -	- -	- -
	71,711	52,343	54,647	67,650	77,574	86,531	- -	- -	- -	- -
45 - 49	188	3	2	33	59	62	28	1	- -	- -
	79,339	55,205	55,142	66,370	78,278	83,587	$91,011	$100,449	- -	- -
50 - 54	270	3	1	20	13	53	95	85	- -	- -
	85,228	59,451	59,978	67,579	78,401	83,369	88,940	88,642	- -	- -
55 - 59	187	- -	1	2	1	18	43	101	21	- -
	86,281	- -	49,557	62,330	77,934	84,472	86,073	88,149	$83,697	- -
60 - 64	63	- -	2	- -	- -	4	8	15	26	8
	87,881	- -	59,035	- -	- -	81,700	88,105	89,154	89,320	$90,898
65 & over	15	1	- -	- -	- -	1	- -	2	4	7
	90,377	50,203	- -	- -	- -	79,121	- -	91,084	84,966	100,613
Total	1,932	496	355	247	228	162	174	204	51	15
	$68,309	$50,537	$55,820	$67,001	$77,348	$83,906	$88,526	$88,518	$86,663	$95,431

EXHIBIT C
Reconciliation of Member Data

	Active Members	Vested Former Members*	Disableds	Retired Members	Beneficiaries	Total
Number as of January 1, 2015	5,487	157	156	2,877	1,036	9,713
New members	248	N/A	N/A	N/A	N/A	248
Terminations – with vested rights	-67	67	N/A	N/A	N/A	0
Terminations – without vested rights	-30	N/A	N/A	N/A	N/A	-30
Retirements	-150	-10	N/A	160	N/A	0
New disabilities	-3	0	3	N/A	N/A	0
Return to work	1	-1	0	0	N/A	0
Deceased	-9	-1	-10	-71	-38	-129
New beneficiaries	N/A	N/A	N/A	N/A	80	80
Lump sum payoffs	-62	-12	0	0	0	-74
Certain period expired	N/A	N/A	0	0	-11	-11
Data adjustments	0	0	2	-2	0	0
Number as of January 1, 2016	5,415	200	151	2,964	1,067	9,797

**Excludes terminated participants due a refund of contributions and beneficiaries with a DROP account balance only.*

EXHIBIT D

Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended December 31, 2015		Year Ended December 31, 2014	
Net assets at actuarial value at the beginning of the year		$3,695,273,876		$3,877,321,261
Contribution income:				
Employer contributions	$114,885,723		$109,791,512	
Employee contributions	25,676,327		28,969,429	
Net contribution income		140,562,050		138,760,941
Investment income:				
Interest, dividends and other income	$73,557,008		-$161,576,365[1]	
Recognition of capital appreciation	-383,825,484		101,308,221	
Less interest expense	-6,005,609		-7,360,955	
Less investment and administrative fees	-18,409,504		-8,002,976[2]	
Net investment income		-334,683,589		-75,632,075
Total income available for benefits		-$194,121,539		$63,128,866
Less benefit payments:				
Benefit payments	-$283,217,455		-$245,176,251[3]	
Refunds	-1,785,719		N/A	
Net benefit payments		-$285,003,174		-$245,176,251
Change in actuarial asset method		-$536,024,860		$0
Change in actuarial value of assets		-$1,015,149,573		-$182,047,385
Net assets at actuarial value at the end of the year		$2,680,124,303		$3,695,273,876

[1] *Includes asset depreciation*

[2] *Investment expenses not separately provided in the prior valuation*

[3] *Includes refunds; breakdown between benefit payments and refunds not provided in prior valuation*

EXHIBIT E

Summary Statement of Income and Expenses on a Market Value Basis

	Year Ended December 31, 2015		Year Ended December 31, 2014	
Net assets at market value at the beginning of the year		$3,079,394,897[4]		$3,362,750,503
Contribution income:				
Employer contributions	$114,885,723		$109,791,512	
Employee contributions	25,676,327		28,969,429	
Net contribution income		140,562,050		138,760,941
Investment income:				
Interest, dividends and net other income	$73,557,008		-$161,576,365[1]	
Asset appreciation	-303,971,365		N/A	
Less interest expense	-6,005,609		-7,360,955	
Less investment and administrative fees	-18,409,504		-8,002,976[2]	
Net investment income		-254,829,470		-176,940,296
Total income available for benefits		-$114,267,420		-$38,179,355
Less benefit payments:				
Benefit payments	-$283,217,455		-$245,176,251[3]	
Refunds	-1,785,719		N/A	
Net benefit payments		-$285,003,174		-$245,176,251
Change in market value of assets		-$399,270,594		-$283,355,606
Net assets at market value at the end of the year		$2,680,124,303		$3,079,394,897[4]

[1] *Includes asset depreciation*

[2] *Investment expenses not separately provided in the prior valuation*

[3] *Includes refunds; breakdown between benefit payments and refunds not provided in prior valuation*

[4] *The market value reflected in the prior valuation was based on preliminary unaudited assets.*

EXHIBIT F

Summary Statement of System Assets

		Year Ended December 31, 2015	Year Ended December 31, 2014
Cash equivalents and prepaid expenses		$76,716,720	A breakdown of assets was not provided in the 2015 valuation report.
Invested securities lending collateral		93,566,804	
Capital assets		12,103,670	
Receivables		58,151,552	
Investments:			
Real assets	$1,127,163,418		
Private equity	441,805,815		
Equity securities	436,644,700		
Alternative investments	392,177,664		
Fixed income securities	380,295,552		
Other	29,384,494		
Total investments at market value		2,807,471,643	
Total assets		$3,048,010,389	
Less liabilities:		-$367,886,086	
Net assets at market value		$2,680,124,303	$3,079,394,897
Net assets at actuarial value		$2,680,124,303	$3,695,273,876

Note: DROP Account Balances reported for valuation purposes total $1,504,771,976, or 56.1% of the total assets of the System. This number differs slightly from the final DROP balance stated in the System's year-end financial statements, due to subsequent adjustments. The difference is not material.

EXHIBIT G

Development of the Fund Through December 31, 2015

Year Ended December 31	Employer Contributions	Employee Contributions	Net Investment Return[1]	Benefit Payments	Refunds	Actuarial Value of Assets at End of Year
2006	$90,319,320	$17,701,615	277,807,110	$122,747,479	$728,338	$2,962,488,333
2007	97,440,007	17,860,267	312,669,979	130,995,067	836,301	3,258,627,218
2008	104,372,723	18,638,767	-199,538,242	142,075,673	357,628	3,039,667,165
2009	107,699,648	19,584,241	371,704,709	154,976,635	771,352	3,382,907,776
2010	108,060,956	19,790,189	90,332,398	169,458,531	813,965	3,430,818,823
2011	102,437,115	19,493,460	14,561,313	188,093,019	736,470	3,378,481,222
2012	103,310,264	22,490,884	493,841,725[2]	203,099,511[3]	N/A	3,795,024,584
2013	105,711,435	26,044,579	169,425,156	218,884,493[3]	N/A	3,877,321,261
2014	109,791,512	28,969,429	-75,632,075	245,176,251[3]	N/A	3,695,273,876
2015	114,885,723	25,676,327	-870,708,449[2]	283,217,455	1,785,719	2,680,124,303

[1] *Net of investment fees and administrative expenses; return for years ended 2006-2014 were calculated based on prior actuarial valuations*

[2] *Includes effects of changes in asset method*

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

EXHIBIT H

Development of Unfunded Actuarial Accrued Liability for Year Ended December 31, 2015

1.	Unfunded actuarial accrued liability at beginning of year		$2,096,942,149
2.	Changes due to:		
	(a) Expected increase/(amortization)	$44,868,001	
	(b) Actual contributions (greater)/less than expected	66,761,817	
	(c) Total		111,629,818
3.	Expected unfunded actuarial accrued liability		$2,208,571,967
4.	Net (gain)/loss		538,115,973
5.	Unfunded actuarial accrued liability before changes		$2,746,687,940
6.	Changes due to:		
	(a) Changes in assumptions	-$15,663,105	
	(b) Change in asset method	536,024,860	
	(c) Total		520,361,755
7.	Unfunded actuarial accrued liability at end of year		$3,267,049,695
8.	Actuarial accrued liability at beginning of year		$5,792,216,025
9.	(Gain)/Loss as a percentage of actuarial accrued liability at beginning of year		9.29%

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 participants 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 2016. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant'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 System is calculated including:

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

(b) Mortality rates — the death rates of employees 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 employees 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 System exceeds the assets of the System. 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.

Amortization of the Unfunded Actuarial Accrued Liability: Payments made over a period of years equal in value to the System's unfunded actuarial accrued liability.

Investment Return: The rate of earnings of the System 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 1,067 beneficiaries in pay status and 48 beneficiaries who have DROP account balances only)		4,230
2.	Members inactive during year ended December 31, 2015 with vested rights (excluding inactive members with a DROP account balance)		200
3.	Members active during the year ended December 31, 2015		5,415
	Fully vested	4,235	
	Not vested	1,180	
4.	Terminated members due a refund of contributions		126
The actuarial factors as of the valuation date are as follows:			
1.	Total normal cost, including administrative expenses, adjusted for timing		$92,446,291
2.	Actuarial accrued liability		5,947,173,998
	Retired members and beneficiaries	$3,353,737,911	
	Inactive members with vested rights*	31,292,940	
	Active members	2,561,646,756	
	Terminated members due a refund of contributions	496,391	
3.	Actuarial value of assets ($2,680,124,303 at market value)		2,680,124,303
4.	Unfunded actuarial accrued liability		$3,267,049,695
The determination of the recommended contribution is as follows:			
1.	Normal cost, adjusted for timing		$82,446,291
2.	Administrative expenses		10,000,000
3.	Total normal cost: (1) + (2)		$92,446,291
4.	Payment on unfunded actuarial accrued liability, adjusted for timing		173,132,904
5.	Total recommended contribution: (3) + (4)		$265,579,195
6.	Total computation pay		$365,210,426
7.	Total recommended contribution as a percentage of total computation pay: (5) ÷ (6)		72.72%

**Includes inactive members with DROP account balance*

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)
01/01/2011	$3,430,818,823	$4,316,349,282	$885,530,459	79.48%	$365,126,229	242.53%
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%

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.

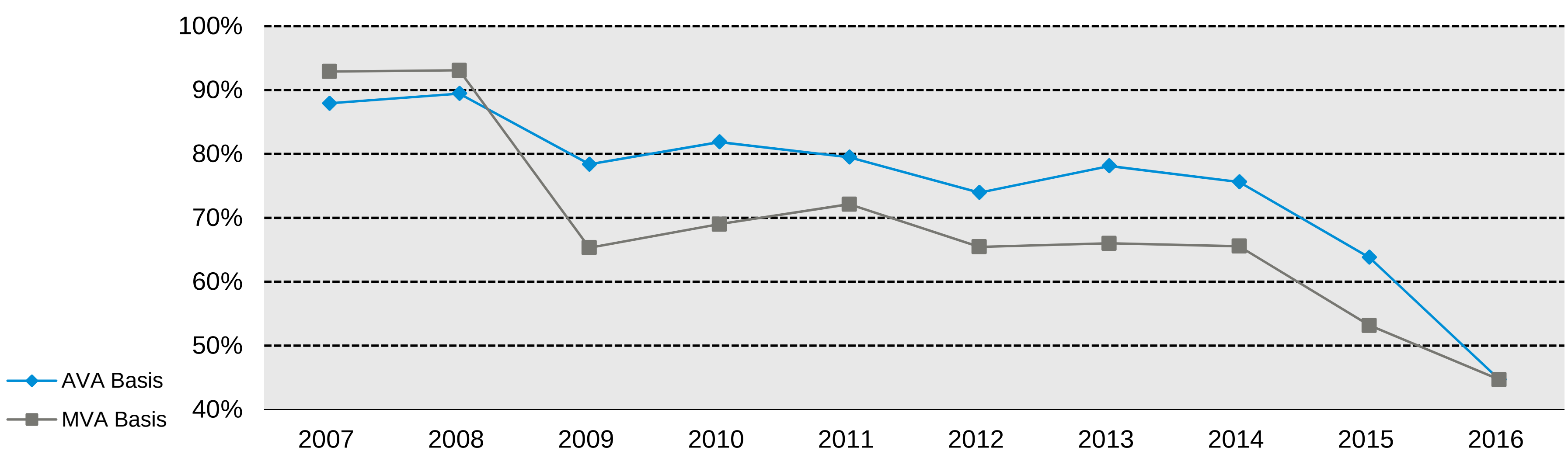


EXHIBIT IV

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. The new assumptions recommended in that study are implemented for the first time in this valuation. Changes from the prior year 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 reflect future mortality improvement.

Termination Rates before Retirement:

	Rate (%)			
	Mortality*		Disability**	
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	--	--

**Rates shown do not include generational projection.*

***Disability rates cut off at Normal Retirement Age. 100% of disabilities are assumed to be service-related.*

Termination Rates Before Retirement (continued):

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+	0.00	0.00

**Withdrawal rates cut off at Normal Retirement Age.*

Retirement Rates:

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		

Interest on DROP Accounts:

October 1, 2015: 7.0% per annum

October 1, 2016: 6.0% per annum

October 1, 2017 and later: 5.0% per annum

Utilization of DROP:

100% of retiring Police and Fire employees are assumed to elect to enter the DROP at first eligibility for unreduced benefits. Any active members who satisfy this criteria and have not entered DROP are assumed never to enter DROP.

Members who retired prior to January 1, 2015 are assumed to receive their DROP payments over a ten-year period from January 1, 2015. All future retirees who retire with a DROP account are assumed to receive their DROP account over a ten-year period from their retirement date.

Unknown Data for Participants:

Same as those exhibited by Participants with similar known characteristics. If not specified, Participants are assumed to be male.

Percent Married:	75%
Age of Spouse/Children:	Females are assumed to be three years younger than males. The age of the youngest child is assumed to be ten years.
Retiree Form of Payment:	100% of married members are assumed to elect a Joint and Survivor annuity.
Net Investment Return:	7.25%, net of investment fees 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.
Cost-of-Living Adjustments:	
Members hired on or before December 31, 2006:	4.00% of original pension
Members hired after December 31, 2006:	0.00%
Payroll Growth:	2.75%
Overtime:	Overtime and other non-computation pay are assumed to be 11% of the computation pay. The City contributes on this additional pay; it does not impact benefits or liabilities.

Salary Scale:

Years of Service	Rate % Police	Rate % 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.

Administrative Expenses: $10,000,000, payable monthly, equivalent to $9,656,091 at the beginning of the year.

Actuarial Value of Assets:	The actuarial value of assets was reset to market value as of January 1, 2016. Prospectively, the actuarial value of assets will be the 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 participant commenced employment, and Normal Cost and Actuarial Accrued Liability are calculated on an individual basis. Actuarial Liability is allocated by salary.
Change in Assumptions and Methods:	A comprehensive Actuarial Experience Review, covering the period January 1, 2010 through December 31, 2014, was completed in the Spring of 2016. As a result of that study, the following assumption changes were proposed by the actuary and subsequently were approved by the Board. These changes are reflected for the first time in this valuation. ➢ The payroll growth rate assumption (used for determining the amortization of the unfunded actuarial accrued liability) was lowered from 4.00% to 2.75%. ➢ The service-based salary scale assumption was maintained; however, group-specific rates were introduced to reflect actual plan experience. ➢ An explicit assumption for administrative expenses of $10 million per year was added. Previously, administrative expenses were assumed to be covered by the 7.25% investment return. ➢ The pre-retirement mortality assumption was changed from the RP-2000 Combined Healthy Mortality Table, projected ten years beyond the valuation date using Scale AA, to the RP-2014 Employee Mortality Table with rates set back two years for males. This table is projected generationally with Scale MP-2015. ➢ The post-retirement mortality assumption for healthy annuitants was changed from the RP-2000 Combined Healthy Mortality Table, projected ten years beyond the valuation date using Scale AA, to the RP-2014 Blue Collar Healthy Annuitant Mortality Table, set forward two years for females. This table is projected generationally with Scale MP-2015.

- The mortality assumption for disabled retirees was changed from the RP-2000 Combined Healthy Mortality Table, with rates set forward one year for males and females, to the RP-2014 Disabled Retiree Mortality Table, set back three years for males and females. This table is projected generationally with Scale MP-2015.
- While maintaining the existing rate structure based on age, separate tables of retirement rates were introduced for Police Officers and Firefighters to better reflect actual experience and expected future patterns.
- The group-specific disability rates were modified to better reflect actual experience and expected future patterns and combined into one assumption for both groups.
- The percent married assumption was lowered from 80% to 75%.
- The group-specific turnover assumption was changed from an age-based assumption to an assumption based on years of service.
- The age of the youngest child is now assumed to be ten years old. Previously, the age of the youngest child was assumed to be one year.
- Previously, the actuarial value of assets was based on a ten-year smoothing method. The actuarial value was set to market value as of December 31, 2015. A new five-year asset smoothing method will be implemented prospectively. 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.

EXHIBIT V

Summary of Plan Provisions

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 summary reflects the provisions for Group B only. All members in the Old Plan or Group A are either DROP participants or have ceased employment with the City.

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

Tier 1 and Tier 2 Participants: Members Whose Participation Began Before March 1, 2011

Tier 1:	Hired on or before December 31, 2006
Tier 2:	Hired on or after January 1, 2007

Normal Retirement:

Age Requirement	50
Service Requirement	5
Amount	The greater of 3.0% of Average Computation Pay times years of Pension Service (maximum 96.0%) and $2,200 per month. The $2,200 per month minimum benefit is prorated if the Member retires with less than 20 years of service. Average Computation Pay is determined based on the highest 36 consecutive months of computation pay.

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

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

Early Retirement:

Age Requirement	45
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.

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. Members participating in the DROP are not eligible for disability benefits.
Amount	3.0% of Average Computation Pay for each year of Pension Service to a maximum of 32 years.

Service-Connected Disability:	
Eligibility	Injury or illness (lasting more than 90 days) obtained while on duty in the performance of the member's job. Members participating in the DROP are not eligible for disability benefits.
Amount	60.0% of Average Computation Pay plus 3.0% for each year of Pension Service over 20 years; maximum benefit is 96.0% of Average Computation Pay
Benefit Supplement:	
Age Requirement	None
Service Requirement	20 years, waived if member is receiving a service-connected disability
Amount	3.0% of the total monthly benefit (including any applicable COLAs) payable to the Member when the Member attains age 55. The benefit supplement shall not be less than $75 per month.
Termination Benefits:	
With less than five years of pension service	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 System 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 on active service	The greater of 50.0% of the Member's accrued benefit or a benefit based on 20 years of service, but no less than 30.0% of Average Computation Pay. The benefit may not exceed a 32-year service benefit, or 48.0% of Average Computation Pay.
After leaving active service, with fewer than five years	A lump sum benefit equal to the return of employee contributions.
After leaving active service, with at least five years	50.0% of the Member's accrued benefit, with no reduction for age

Post-Retirement Death Benefit:	50.0% of the pension the Member was receiving at the time of their death
Qualified Surviving Children Benefit:	50.0% 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 Benefits:	$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. If the Qualified Surviving Spouse is not 55 years old at the time of the Member's death, they will receive 50.0% of the member's benefit until reaching age 55, at which point the Special Survivor Benefit qualifications will be met and the benefit will be adjusted.
Amount	Once all the eligibility conditions are met, the amount the Qualified Surviving Spouse will receive increases from 50.0% 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: 50.0% 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).
Amount	The DROP benefit provides a lump sum payment based on pay and service as of the DROP retirement date times the number of months elected in exchange for a reduced monthly benefit. The monthly benefit is based on pay and all service as of the DROP retirement date.
Interest	The benefit will be accumulated at a rate of 7.0% from October 1, 2015 to September 30, 2016, 6.0% from October 1, 2016 to September 30, 2017, and 5.0% from October 1, 2017 through September 30, 2018. For any period commencing on or after October 1, 2018, in which the DROP is in a Cumulative Loss Position, the interest rate shall equal 4.0% if the System's Funded Ratio is less than 65%, 3.0% if the System's Funded Ratio is less than 60%, or 0.0% if the System's Funded Ratio is less than 55%.
Cost-of-Living Adjustments:	Benefits are adjusted annually on the 1st day of October, by 4.0% of the base benefit for Tier 1 members. Tier 2 members are not eligible for an automatic cost-of-living increase; however, the Board may grant an ad hoc COLA to these members, not to exceed 4% of the base benefit.
City Contributions:	27.5% of total pay, including overtime and other non-computation pay
Member Contributions:	8.5% of computation pay if not participating in DROP 4.0% of computation pay if participating in DROP
Changes in Plan Provisions:	There have been no changes in the Tier 1 or Tier 2 plan provisions since the last valuation.

Tier 3 Participants: Members Whose Participation Began On or After March 1, 2011

Normal Retirement:

Age Requirement	55
Service Requirement	10
Amount:	2.0% of Average Computation Pay for each of the first 20 years of Pension Service, plus 2.5% of Average Computation Pay for each of the next 5 years of Pension Service, plus 3.0% of Average Computation Pay for each year of Pension Service thereafter, (maximum 90.0%) 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 is determined based on the highest 60 consecutive months of computation pay.

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. Members participating in the DROP are not eligible for disability benefits.
Amount	The Member's accrued benefit, but not less than a pro-rated minimum benefit.

Service-Connected Disability:

Eligibility	Injury or illness preventing the member from performing duties with their department for the first two years. After the initial two years, the disability must prevent the member from performing any gainful employment for which the member is qualified by reason of training, education or experience. Members participating in the DROP are not eligible for disability benefits.
Amount	The greater of 50.0% of Average Computation Pay and the Member's accrued benefit.

Benefit Supplement:	
Age Requirement	None
Service Requirement	20 years, waived if member is receiving a service-connected disability
Amount	3.0% of the monthly benefit payable to the Member when the Member attains age 55. The benefit supplement shall not be less than $75 per month.
Termination Benefits:	
With less than ten years of service	The participant's contributions will be returned without interest.
After ten years of service	The participant may either withdraw contributions or leave contributions in the fund and receive a monthly benefit to commence at normal retirement date equal to the accrued benefit as of the date of termination.
Pre-retirement Death Benefits:	
While on active service	The greater of 50.0% of the Member's accrued benefit or 25.0% of Average Computation Pay.
After leaving active service, with less than ten years	A lump sum benefit equal to the return of employee contributions.
After leaving active service, with at least ten years	50.0% of the Member's accrued benefit, with no reduction for age
Post-Retirement Death Benefit:	50.0% of the pension the Member was receiving at the time of their death
Qualified Surviving Children Benefit:	50.0% 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 Benefits:	$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 50.0% of the Member's pension benefit to a percentage of the Member's pension benefit based on 3.0% 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: 50.0% 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).
Amount	The DROP benefit provides a lump sum payment based on pay and service as of the DROP retirement date times the number of months elected in exchange for a reduced monthly benefit. The monthly benefit is based on pay and all service as of the DROP retirement date.
Interest	The benefit will be accumulated at a rate of 7.0% from October 1, 2015 to September 30, 2016, 6.0% from October 1, 2016 to September 30, 2017, and 5.0% from October 1, 2017 through September 30, 2018. For any period commencing on or after October 1, 2018, in which the DROP is in a Cumulative Loss Position, the interest rate shall equal 4.0% if the System's Funded Ratio is less than 65%, 3.0% if the System's Funded Ratio is less than 60%, or 0.0% if the System's Funded Ratio is less than 55%.
City Contributions:	27.5% of total pay, including overtime and other non-computation pay
Member Contributions:	8.5% of computation pay if not participating in DROP 4.0% of computation pay if participating in DROP
Changes in Plan Provisions:	There have been no changes in the Tier 3 plan provisions since the last valuation.

EXHIBIT 1

Net Pension Liability

The components of the net pension liability of the Pension System at December 31, 2015 were as follows:

Total pension liability	$9,536,840,198
System fiduciary net position	2,680,124,303
City's net pension liability	6,856,715,895
System fiduciary net position as a percentage of the total pension liability	28.10%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of January 1, 2016, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.75%
Investment rate of return	7.25%, net of pension plan investment expense, including inflation

The actuarial assumptions used in the January 1, 2016 valuation were based on the results of an experience study for the period January 1, 2010 to December 31, 2014. These assumptions are detailed in Exhibit IV 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.

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Global Equity	20%	7.10%
Emerging Market Equity	5%	9.85%
Private Equity	5%	11.50%
Short-Term Core Bonds	2%	1.75%
Global Bonds	3%	1.25%
High Yield and Bank Loans	11%	4.95%
Structured Credit and Absolute Return	6%	5.75%
Emerging Markets Debt	6%	5.15%
Private Debt	5%	4.55%
Natural Resources	5%	4.30%
Infrastructure	5%	6.45%
Real Estate	12%	4.55%
Liquid Real Assets	3%	7.88%
Asset Allocation	10%	5.34%
Cash	2%	1.15%
Total	100%	

*As provided by Segal Rogerscasey, a member of The Segal Group

Discount rate: The discount rate used to measure the total pension liability was 3.95%. 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 12.34% 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 3.57% municipal bond rate was applied for all periods thereafter. The 3.57% 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, 2015.)

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 3.95%, 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 (2.95%) or one-percentage-point higher (4.95%) than the current rate:

	1% Decrease (2.95%)	Current Discount (3.95%)	1% Increase (4.95%)
Dallas Police and Fire's net pension liability	$8,471,986,607	$6,856,715,895	$5,581,404,334

EXHIBIT 2
Schedules of Changes in Dallas Police and Fire's Net Pension Liability – Last Ten Fiscal Years

	2015	2014	2013	2012	2011
Total pension liability					
Service cost	$125,440,684	$131,312,431	(Historical information prior to implementation of GASB 67/68 is not required.)		
Interest	359,023,651	369,407,801			
Changes of benefit terms	0	-329,794,359			
Differences between expected and actual experience	379,460,954	-4,453,481			
Changes of assumptions	908,988,241	0			
Benefit payments, including refunds of employee contributions	-285,003,174	-245,931,629			
Net change in total pension liability	$1,487,910,356	$79,549,237			
Total pension liability – beginning	8,048,929,842	8,128,389,079			
Total pension liability – ending (a)	$9,536,840,198	$8,048,929,842			
Plan fiduciary net position					
Contributions – employer	$114,885,723	$109,791,512			
Contributions – employee	25,676,327	29,333,112			
Net investment and other income	-235,206,910	-138,893,031			
Benefit payments, including refunds of employee contributions	-285,003,174	-245,931,629			
Administrative expense	-8,417,520	-8,002,976			
Interest expense	-6,005,609	-7,360,955			
Net change in plan fiduciary net position	-$394,071,163	-$261,063,967			
Plan fiduciary net position – beginning	3,074,195,466	3,335,259,433			
Plan fiduciary net position – ending (b)	$2,680,124,303	$3,074,195,466			
System's net pension liability – ending (a) – (b)	$6,856,715,895	$4,974,734,376			
Plan fiduciary net position as a percentage of the total pension liability	28.10%	38.19%			
Covered employee payroll	$365,210,426	$383,006,330			
System's net pension liability as percentage of covered employee payroll	1,877.47%	1,298.86%			

Notes to Schedule:

Benefit changes: There have not been any changes in plan provisions reflected for the first time in this December 31, 2015 GASB 67 disclosure.

Change of Assumptions: The blended discount rate has changed from 4.54% to 3.95%, with a liability impact of $787,399,680. See Section 4, Exhibit IV for a summary of other assumption changes, which increased liability by $121,588,561.

EXHIBIT 3

Schedule of City Contributions – Last Ten 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

The Actuarially Determined Contribution required to be disclosed under GASB 67 was not determined since City and Member contribution rates are established by ordinance.