



Dallas Police and Fire Pension System Supplemental Plan

**Actuarial Valuation and Review as of
January 1, 2018**

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September 11, 2018

Board of Trustees
Dallas Police and Fire Pension System Supplemental Plan
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, 2018. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for fiscal 2018.

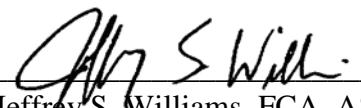
This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Supplemental Plan. The census information on which our calculations were based was prepared by the System's IT Department under the supervision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

The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the 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: 
Jeffrey S. Williams, FCA, ASA, MAAA, EA
Vice President and Consulting Actuary

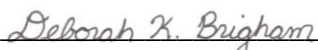

Deborah K. Brigham, FCA, ASA, MAAA, EA
Senior Vice President and Consulting Actuary

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Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal Consulting to present a valuation of the Dallas Police and Fire Pension System Supplemental Plan as of January 1, 2018. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and to provide information for required disclosures under Governmental Accounting Standards Board (GASB) Statement No. 67. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

Certain disclosure information required by GASB Statement No. 68 as of September 30, 2018 for the City will be provided in a separate report.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Pension Plan, as administered by the Board;
- The characteristics of covered active members, inactive vested members and inactive members due a refund of contributions, and retired members and beneficiaries as of December 31, 2017, provided by the System's IT Department;
- The unaudited assets of the Plan as of December 31, 2017, 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 majority of the assumptions and methods used to value the Plan were set by the Board based on recommendations made by Segal Consulting following a five-year experience study for the period ended December 31, 2014. Additional assumption changes were made as part of the plan changes effective September 1, 2017, as well as the Meet and Confer Agreement for salary scale purposes through 2019. Assumptions are reviewed and updated annually as needed.

Significant Issues

1. The City's actuarially determined contribution for the upcoming year is \$2,273,581, an increase of \$186,942 from last year. The contribution is based on a ten-year level percent-of-payroll amortization of the unfunded actuarial accrued liability.
2. Segal Consulting ("Segal") recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance. The funding policy for the Plan reflects an open, or rolling, ten-year amortization period. A ten-year period is relatively short compared to other systems, and as long as the City pays the contribution on this basis, the normal cost, interest, and a portion of the principal will be covered. Therefore the unfunded liability is expected to decrease if all assumptions are met. However, the unfunded liability will never be paid off in full because the remaining principal is reamortized annually. Thus, the funded ratio should approach 100% over time, but full funding will not occur unless there are experience gains from other sources.
3. The rate of return on the market value of assets was 4.24% for the 2017 plan year. This return was in line with short-term expectations, as the System works to rebalance its investment portfolio. The 4.24% return resulted in an actuarial loss of \$523,509, or 1.6% of actuarial accrued liability, when measured against the assumed rate of return of 7.25%. Based on the System's investment targets, Segal continues to support 7.25% as a reasonable long-term net investment return assumption. However, we will continue to monitor actual and anticipated returns.
4. The net experience loss from sources other than investment experience was also 1.6% of liability, prior to reflection of assumption and plan changes. This loss was primarily due to a 95% increase in average supplemental computation pay. The pay is subject to significant fluctuations from year to year, due to the excess pay nature of the Supplemental Plan.
5. Actual City contributions made during the plan year ending December 31, 2017 were \$2,077,059, 99.5% of the actuarially determined contribution. In the prior fiscal year, actual City contributions were \$3,063,584, 100.0% of the prior year actuarially determined contribution.
6. Although the City paid almost 100% of the required contribution during the plan year ending December 31, 2017, the experience losses incurred during the year mean that the total contributions made were insufficient to reduce the unfunded actuarial accrued liability. The unfunded actuarial accrued liability as of the valuation date is \$16,744,953, which is an increase of \$1,024,658 since the prior valuation.
7. The funded ratio (the ratio of assets to actuarial accrued liability) is 51.5%, compared to the prior year funded ratio of 52.9%. This ratio is one measure of funding status, and its history is a measure of funding progress. This measurement is not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.

8. The following actuarial assumptions were changed with this valuation:
- The administrative expense assumption was increased from \$60,000 to \$65,000.
 - The interest rate assumption payable upon retirement on DROP accounts as of September 1, 2017 was increased from 2.75% to 3.00%.
 - The ad-hoc COLA assumption was updated to begin October 1, 2053 based on the updated projection of the unfunded actuarial accrued liability of the main plan; last year's assumption was that the COLA would begin October 1, 2049.

As a result of these assumption changes, the total normal cost decreased by \$1,182 and the actuarial accrued liability decreased by \$17,284. The total impact was a decrease in the actuarially determined contribution of \$3,378.

9. Active members who elected DROP prior to June 1, 2017 were eligible to revoke the DROP election during the period from September 1, 2017 to February 28, 2018. This plan change is included for the first time in this valuation, and it resulted in a normal cost increase of \$12,032 and an increase in actuarial accrued liability of \$897,084. The total impact was an increase in the actuarially determined contribution of \$123,041.
10. This actuarial report as of January 1, 2018 is based on financial and demographic data as of December 31, 2017, plus the impact of DROP revocations that occurred between January 1, 2018 and February 28, 2018. Subsequent changes are not reflected and will affect future actuarial costs of the plan.
11. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined employer contribution under (ADEC) the Plan's funding policy and measuring the progress of that funding policy. The information contained in Section 5 provides the accounting information for Governmental Accounting Standards Board (GASB) Statement No. 67, for inclusion in the plan and employer's financial statements as of December 31, 2017. The Net Pension Liability (NPL) and Pension Expense under Governmental Accounting Standards Board (GASB) Statement No. 68, for inclusion in the plan and employer's financial statements as of September 30, 2018, will be provided separately.
12. The Net Pension Liability (NPL) is equal to the difference between the Total Pension Liability (TPL) and the Plan's fiduciary net position (equal to the market value of assets). The NPL as of December 31, 2017 is \$15.9 million, a decrease from \$23.0 million as of December 31, 2016.
13. Since the actuarial valuation results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience proves to be different from the assumptions.

Summary of Key Valuation Results

| | | 2018 | 2017 |
|--|--|--------------|--------------|
| Contributions for plan year beginning January 1, adjusted for timing: | • Total actuarially determined contribution (City and Member) | \$2,407,912 | \$2,132,808 |
| | • Expected member contributions | 134,331 | 46,169 |
| | • City's actuarially determined employer contribution (ADEC) | 2,273,581 | 2,086,639 |
| | • Actual City contributions | -- | \$2,077,059 |
| | • Amortization period for determination of ADEC | 10 years | 10 years |
| Actuarial accrued liability for plan year beginning January 1: | • Retired members and beneficiaries | \$30,668,245 | \$30,160,174 |
| | • Inactive vested participants | 11,861 | -- |
| | • Active participants | 3,870,000 | 3,223,660 |
| | • Total | 34,550,106 | 33,383,834 |
| | • Employer normal cost including administrative expenses | 179,963 | 122,779 |
| Assets for plan year beginning January 1: | • Actuarial (Market) value of assets | \$17,805,153 | \$17,663,539 |
| Funded status for plan year beginning January 1: | • Unfunded actuarial accrued liability | \$16,744,953 | \$15,720,295 |
| | • Funded percentage | 51.53% | 52.91% |
| Key assumptions: | • Net investment return | 7.25% | 7.25% |
| | • Inflation rate | 2.75% | 2.75% |
| | • Payroll increase | 2.75% | 2.75% |
| GASB information: | • Discount rate | 7.25% | 7.10% |
| | • Total pension liability | \$33,670,180 | \$40,647,671 |
| | • Plan fiduciary net position | 17,805,153 | 17,670,327 |
| | • Net pension liability | 15,865,027 | 22,977,344 |
| | • Plan fiduciary net position as a percentage of total pension liability | 52.88% | 43.47% |
| Demographic data for plan year beginning January 1: | • Number of retired members and beneficiaries | 140 | 128 |
| | • Number of inactive vested members | 1 | -- |
| | • Number of active members | 44 | 47 |
| | • Total supplemental computation pay | \$960,825 | \$525,048 |
| | • Average supplemental computation pay | 21,837 | 11,171 |

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

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

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

As Segal 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.

Section 2: Actuarial Valuation Results

Member Data

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

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

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

MEMBER POPULATION: 2008 – 2017

| Year Ended December 31 | Active Members | Inactive Vested Members | Retired Members and Beneficiaries | Total Non-Actives | Ratio of Non-Actives to Actives |
|------------------------|----------------|-------------------------|-----------------------------------|-------------------|---------------------------------|
| 2008 | 41 | -- | 112 | 112 | 2.73 |
| 2009 | 40 | -- | 112 | 112 | 2.80 |
| 2010 | 39 | -- | 113 | 113 | 2.90 |
| 2011 | 37 | -- | 113 | 113 | 3.05 |
| 2012 | 39 | -- | 120 | 120 | 3.08 |
| 2013 | 38 | -- | 120 | 120 | 3.16 |
| 2014 | 39 | -- | 122 | 122 | 3.13 |
| 2015 | 45 | -- | 124 | 124 | 2.76 |
| 2016 | 47 | -- | 128 | 128 | 2.72 |
| 2017 | 44 | 1 | 140 | 141 | 3.20 |

Active Members

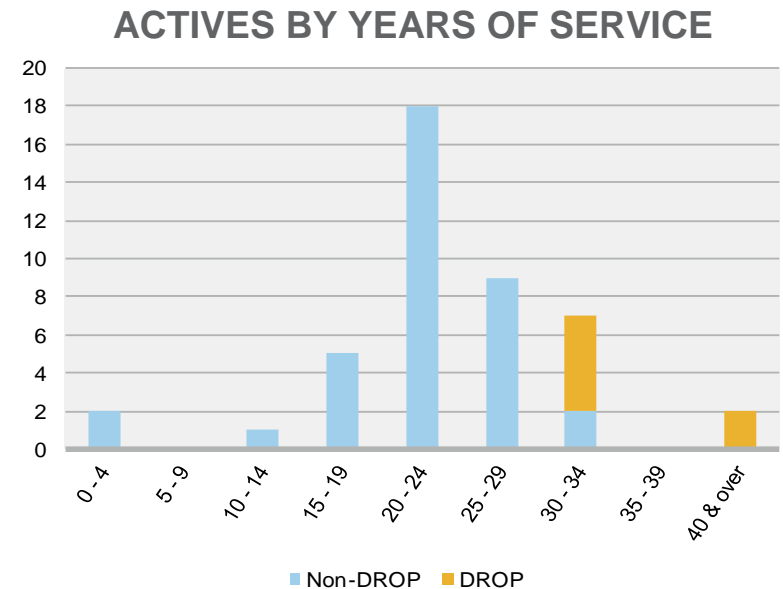
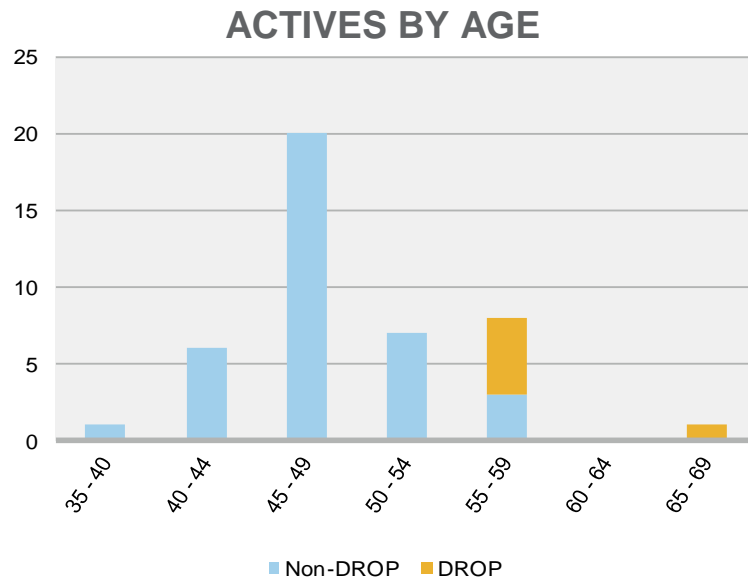
Plan costs are affected by the age, years of service and supplemental computation pay of active members. In this year's valuation, there were 44 active members with an average age of 49.8, average years of service of 24.3 years and average supplemental computation pay of \$21,837. The 47 active members in the prior valuation had an average age of 50.1, average service of 26.4 years and average supplemental computation pay of \$11,171.

The number of active Firefighters increased from 15 to 17 as of December 31, 2017. The average age of this group is 49.8, the average years of service is 22.8, and the average supplemental computation pay is \$24,106. Last year these averages were 50.8, 26.6 and \$7,330, respectively.

The number of active Police Officers decreased from 32 to 27 as of December 31, 2017. The average age of this group decreased from 49.8 to 49.7, and the average years of service decreased from 26.2 to 25.2. The average supplemental computation pay increased from \$12,972 to \$20,408.

The number of active participants participating in DROP decreased significantly, from 16 at the end of 2016 to 7 at the end of 2017.

Distribution of Active Participants as of December 31, 2017



Inactive Members

In this year's valuation, there was one member with a vested right to a deferred or immediate vested benefit, compared to none last year.

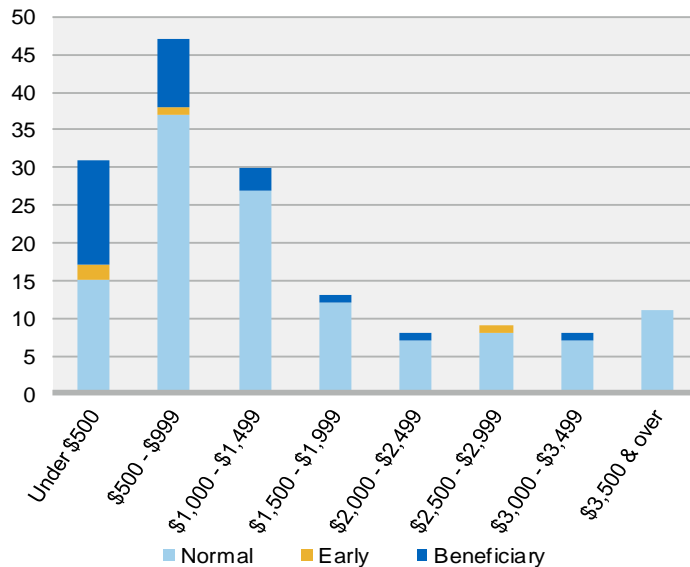
Retired Members and Beneficiaries

As of December 31, 2017, 110 retired members and 30 beneficiaries were receiving total monthly benefits of \$205,026. For comparison, in the previous valuation, there were 100 retired members and 28 beneficiaries receiving monthly benefits of \$198,156.

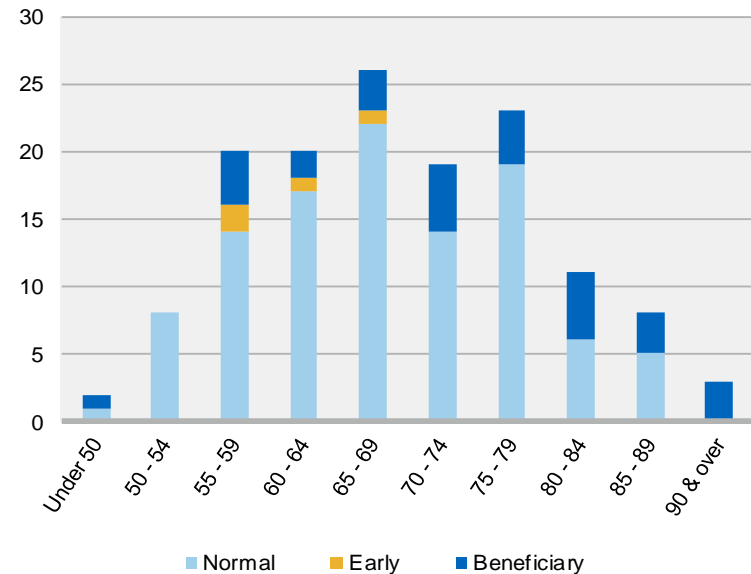
As of December 31, 2017, the average monthly benefit for retired members is \$1,464, compared to \$1,548 in the previous valuation. The average age for retired members is 69.5 in the current valuation, compared with 69.5 in the prior valuation.

Distribution of Pensioners as of December 31, 2017

PENSIONERS BY TYPE AND MONTHLY AMOUNT



PENSIONERS BY TYPE AND AGE



Historical Plan Population

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

MEMBER DATA STATISTICS: 2008 – 2017

| Year Ended December 31 | Active Participants | | | Retired Members and Beneficiaries | | |
|---------------------------|---------------------|----------------|--------------------|-----------------------------------|-----------------------------|------------------------------|
| | Count | Average Age | Average Service | Count | Average Age ¹ | Average Monthly Amount |
| 2008 | 41 | 51.5 | 25.9 | 112 | -- | \$1,228 |
| 2009 | 40 | 51.7 | 26.6 | 112 | -- | 1,264 |
| 2010 | 39 | 52.1 | 27.5 | 113 | -- | 1,331 |
| 2011 | 37 | 53.1 | 29.0 | 113 | -- | 1,384 |
| 2012 | 39 | 49.9 | 24.2 | 120 | -- | 1,381 |
| 2013 | 38 | 49.6 | 26.0 | 120 | -- | 1,402 |
| 2014 | 39 | 50.2 | 26.6 | 122 | -- | 1,406 |
| 2015 | 45 | 50.5 | 26.7 | 124 | 69.3 | 1,452 |
| 2016 | 47 | 50.1 | 26.4 | 128 | 69.5 | 1,548 |
| 2017 | 44 | 49.8 | 24.3 | 140 | 69.5 | 1,464 |

¹Information for December 31, 2014 and earlier is not available.

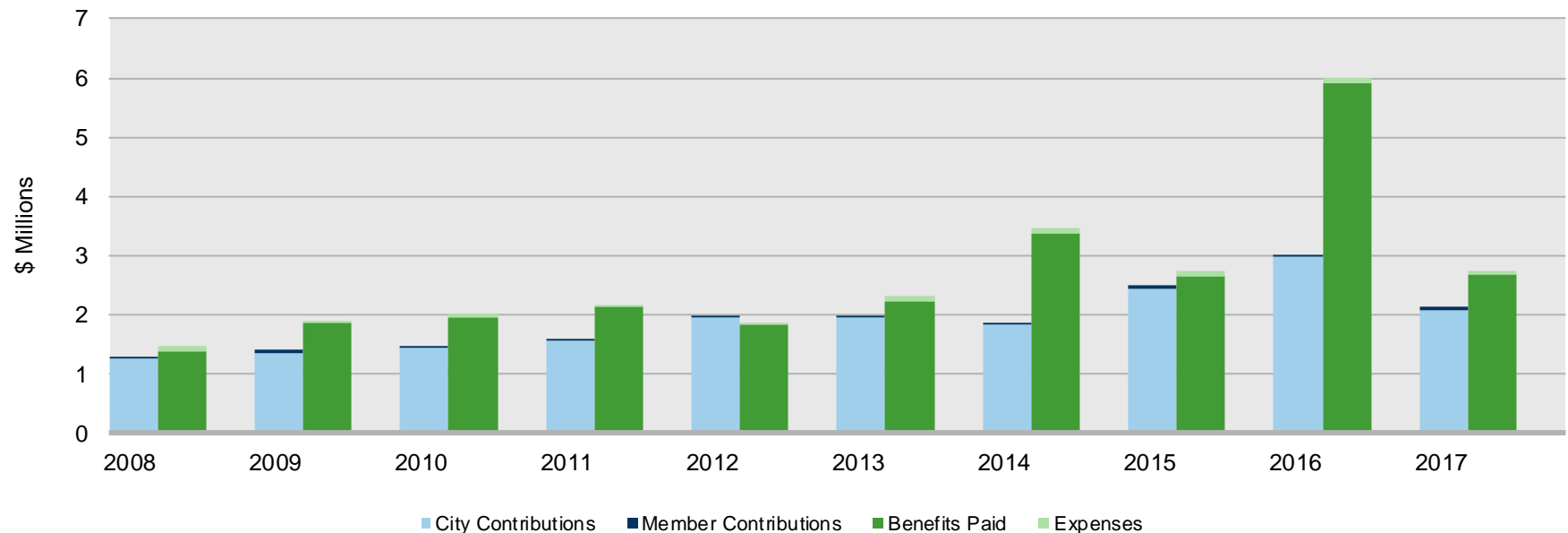
Financial Information

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

Benefit payments in 2016 totaled \$5.9 million, of which \$3.8 million were DROP lump sum payments. This was a one-time event, as members reacted to pending changes in the plan provisions. DROP balances have been annuitized, which should result in more predictable benefit payment levels in the future.

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

**COMPARISON OF CONTRIBUTIONS MADE WITH BENEFITS AND EXPENSES PAID
FOR YEARS ENDED DECEMBER 31, 2008 – 2017**



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 City contributions to this plan are less than 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.

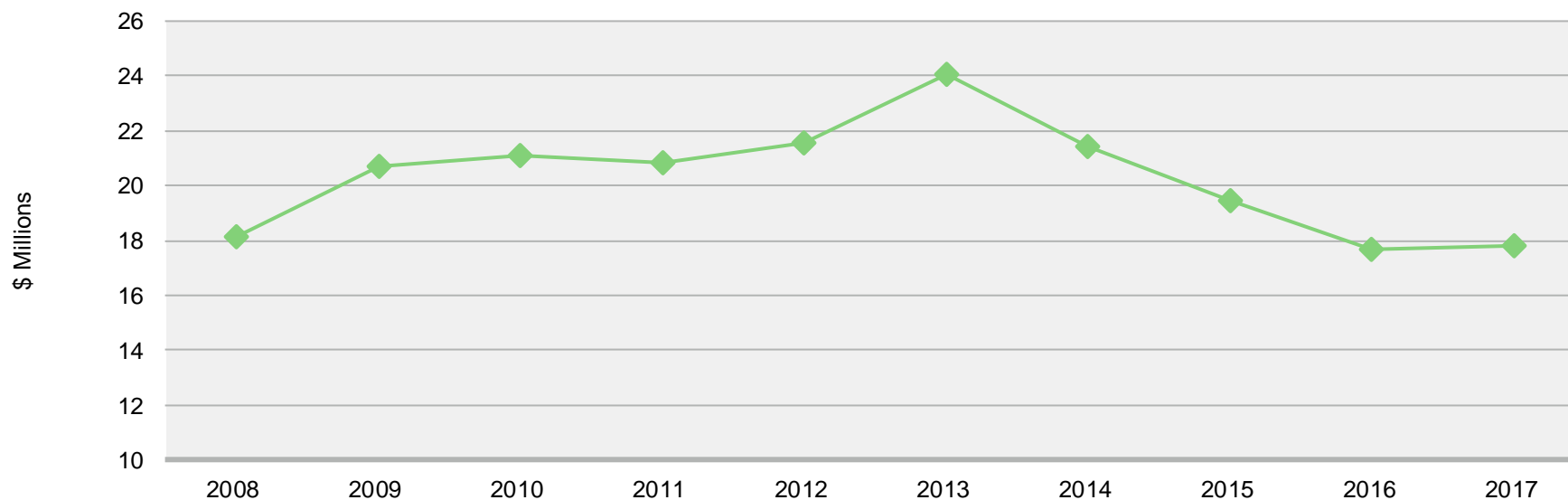
DETERMINATION OF ACTUARIAL VALUE OF ASSETS FOR YEAR ENDED DECEMBER 31, 2017

| | |
|---|---------------------|
| 1. Actuarial value of assets = Market value of assets | <u>\$17,805,153</u> |
|---|---------------------|

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

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

**ACTUARIAL VALUE OF ASSETS (EQUAL TO MARKET VALUE)
AS OF DECEMBER 31, 2008 – 2017**



Actuarial Experience

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

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

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

The total loss is \$1,045,579, which includes \$523,509 from investment losses and \$522,070 in losses from all other sources. The net experience variation from individual sources other than investments was 1.6% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

ACTUARIAL EXPERIENCE FOR YEAR ENDED DECEMBER 31, 2017

| | | |
|----------|--|--------------|
| 1 | Net loss from investments ¹ | -\$523,509 |
| 2 | Net loss from administrative expenses | -8,832 |
| 3 | Net loss from other experience | -513,238 |
| 4 | Net experience loss: 1 + 2 + 3 | -\$1,045,579 |

¹ Details on next page.

Investment Experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Plan's investment policy.

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 2017 plan year was 4.24%. 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, 2017 with regard to its investments.

INVESTMENT EXPERIENCE

| | Year Ended December 31, 2017 | Year Ended December 31, 2016 |
|---|---------------------------------|---------------------------------|
| | Actuarial (Market) Value | Actuarial (Market) Value |
| 1 Net investment income | \$735,567 | \$1,176,323 |
| 2 Average value of assets | 17,366,563 | 17,971,961 |
| 3 Rate of return: 1 ÷ 2 | 4.24% | 6.55% |
| 4 Assumed rate of return | 7.25% | 7.25% |
| 5 Expected investment income: 2 x 4 | 1,259,076 | 1,302,967 |
| 6 Actuarial gain/(loss): 1 – 5 | <u>-\$523,509</u> | <u>-\$126,644</u> |

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 averages over select time periods.

INVESTMENT RETURN – ACTUARIAL VALUE OF ASSETS (EQUAL TO MARKET VALUE): 2008 - 2017

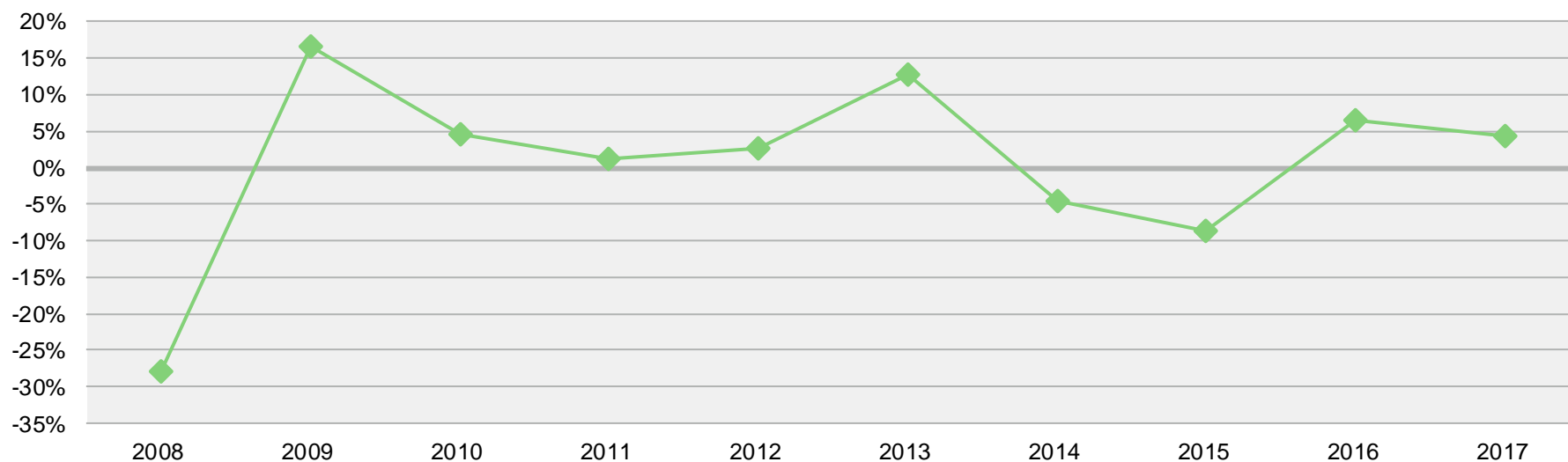
| Year Ended December 31 | Actuarial (Market) Value Investment Return ¹ | |
|--------------------------------------|--|---------|
| | Amount | Percent |
| 2008 | -\$7,039,494 | -27.92% |
| 2009 | 2,985,884 | 16.66 |
| 2010 | 924,634 | 4.52 |
| 2011 | 252,054 | 1.21 |
| 2012 | 578,432 | 2.77 |
| 2013 | 2,712,000 | 12.65 |
| 2014 | -1,091,374 | -4.69 |
| 2015 | -1,828,695 | -8.56 |
| 2016 | 1,176,323 | 6.55 |
| 2017 | 735,567 | 4.24 |
| Total | -\$594,669 | |
| Most recent five-year average return | | 1.68% |
| Most recent ten-year average return | | -0.29% |

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

¹Returns for years 2014 and 2015 include significant write-downs of the Plan's assets.

The actuarial value of assets has been equal to market value for the last ten years. This, combined with recent asset write-downs, has resulted in relatively volatile actuarial rates of return and pension plan cost.

ACTUARIAL RATES OF RETURN (EQUAL TO MARKET VALUE RATES OF RETURN) FOR YEARS ENDED DECEMBER 31, 2008 - 2017



Administrative Expenses

Administrative expenses for the year ended December 31, 2017 totaled \$68,528 compared to the assumption of \$60,000, payable monthly. This resulted in a loss of \$8,832 for the year, when adjusted for timing. We have increased the assumption from \$60,000 to \$65,000, payable monthly, for the current year.

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 participants,
- retirement experience (earlier or later than projected),
- mortality (more or fewer deaths than projected),
- the number of disability retirements (more or fewer than projected), and
- salary increases (greater or smaller than projected).

The net loss from this other experience for the year ended December 31, 2017 amounted to \$513,238, which is 1.6% of the actuarial accrued liability. This loss was primarily due to a 95% increase in average supplemental computation pay. The excess pay nature of the Supplemental Plan lends itself to potentially significant gains and losses in a single year.

Changes in the Actuarial Accrued Liability

The actuarial accrued liability as of January 1, 2018 is \$34,550,106, an increase of \$1,166,272, or 3.5%, from the actuarial accrued liability as of the prior valuation date. The liability is expected to grow each year with normal cost and interest, and to decline due to benefit payments made. Additional fluctuations can occur due to actual experience that differs from expected (as discussed in the previous subsection).

Actuarial Assumptions

The assumption changes reflected in this report are:

- The DROP account interest rate assumption for the annuitization of September 31, 2017 DROP balances was increased from 2.75% to 3.00%.
- The COLA is assumed to begin October 1, 2053 based on the year the System is projected to be 70% funded on a market value basis; last year's assumption was that the COLA would begin October 1, 2049.
- Administrative expenses increased from \$60,000 to \$65,000 for the year beginning January 1, 2018.
- These changes decreased the actuarial accrued liability by 0.05% and decreased the normal cost by 0.48%.
- Details on actuarial assumptions and methods are in *Section 4, Exhibit I*.

Plan Provisions

The plan change reflected in this report is:

- Members who entered DROP before June 1, 2017 were allowed to revoke the DROP election during the period from September 1, 2017 through February 28, 2018. The valuation reflects these DROP revocations.
- These changes increased the actuarial accrued liability by 2.66% and increased the normal cost by 5.10%.
- A summary of plan provisions is in Section 4, Exhibit II.

Development of Unfunded Actuarial Accrued Liability

DEVELOPMENT FOR YEAR ENDED DECEMBER 31, 2017

| | | | |
|----------|---|----------------|---------------------|
| 1 | Unfunded actuarial accrued liability at beginning of year | | \$15,720,295 |
| 2 | Normal cost at beginning of year | | 167,359 |
| 3 | Total contributions | | -2,143,154 |
| 4 | Interest | | |
| | • For whole year on 1 + 2 | \$1,151,855 | |
| | • For half year on 3 | <u>-76,781</u> | |
| | Total interest | | <u>1,075,074</u> |
| 5 | Expected unfunded actuarial accrued liability | | \$14,819,574 |
| 6 | Changes due to: | | |
| | • Net experience loss | \$1,045,579 | |
| | • Plan provisions | 897,084 | |
| | • Assumptions | <u>-17,284</u> | |
| | Total changes | | <u>\$1,925,379</u> |
| 7 | Unfunded actuarial accrued liability at end of year | | <u>\$16,744,953</u> |

Actuarially Determined Contribution

The actuarially determined contribution is equal to the employer normal cost payment and a payment on the unfunded actuarial accrued liability. As of January 1, 2018, the actuarially determined contribution is \$2,273,581.

The funding policy used to calculate the actuarially determined contribution is based on an open amortization period of ten years. The payment on the unfunded actuarial accrued liability accounts for nearly 92% of the City's recommended contribution.

The contribution requirement as of January 1, 2018 are based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

ACTUARIALY DETERMINED CONTRIBUTION FOR YEAR BEGINNING JANUARY 1

| | 2018 | 2017 |
|---|--------------------|--------------------|
| 1. Total normal cost | \$246,909 | \$109,422 |
| 2. Assumed administrative expenses | 62,765 | 57,937 |
| 3. Expected member contributions | <u>-129,711</u> | <u>-44,580</u> |
| 4. Employer normal cost: (1) + (2) - (3) | \$179,963 | \$122,779 |
| 5. Actuarial accrued liability | \$34,550,106 | \$33,383,834 |
| 6. Actuarial value of assets | <u>17,805,153</u> | <u>17,663,539</u> |
| 7. Unfunded actuarial accrued liability: (5) - (6) | \$16,744,953 | \$15,720,295 |
| 8. Payment on unfunded actuarial accrued liability | 2,015,427 | 1,892,099 |
| 9. Adjustment for timing ¹ | <u>78,190</u> | <u>71,761</u> |
| 10. Actuarially determined employer contribution: (4) + (8) + (9) | <u>\$2,273,581</u> | <u>\$2,086,639</u> |
| 11. Total supplemental computation pay | \$960,825 | \$525,048 |

¹Actuarially determined contributions are assumed to be paid at the middle of every year.

Reconciliation of Actuarially Determined Contribution

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

RECONCILIATION OF ACTUARIALY DETERMINED CONTRIBUTION FROM JANUARY 1, 2017 TO JANUARY 1, 2018

| | Amount |
|---|---------------|
| Actuarially Determined Contribution as of January 1, 2017 | \$2,086,639 |
| • Effect of maintaining ten-year amortization period | -176,258 |
| • Effect of DROP revocations | 118,041 |
| • Effect of investment loss | 71,070 |
| • Effect of expected change in amortization payment due to payroll growth | 53,886 |
| • Effect of change in administrative expense assumption | 5,000 |
| • Effect of other changes in actuarial assumptions | -3,378 |
| • Effect of contributions more than actuarially determined contribution | -1,516 |
| • Effect of other gains and losses on accrued liability | 70,875 |
| • Net effect of other changes, including composition and number of participants | <u>49,222</u> |
| Total change | \$186,942 |
| Actuarially Determined Contribution as of January 1, 2018 | \$2,273,581 |

History of Employer Contributions

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

HISTORY OF EMPLOYER CONTRIBUTIONS: 2011 – 2018

| Fiscal Year Ended December 31 | Actuarially Determined Employer Contribution (ADEC) ¹ | Actual Employer Contribution | Percent Contributed |
|-------------------------------|--|------------------------------|---------------------|
| 2011 | \$1,543,717 | \$1,543,717 | 100.00% |
| 2012 | 1,954,022 | 1,954,022 | 100.00% |
| 2013 | 1,935,588 | 1,935,588 | 100.00% |
| 2014 | 1,817,136 | 1,817,136 | 100.00% |
| 2015 | 2,442,790 | 2,442,790 | 100.00% |
| 2016 | 3,063,584 | 3,063,584 | 100.00% |
| 2017 | 2,086,639 | 2,077,059 | 99.54% |
| 2018 | 2,273,581 | N/A | N/A |

¹Prior to 2015, this amount was the Annual Required Contribution (ARC).

Risk

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

The contributions of this Plan can fluctuate significantly from year to year, due to its nature as an excess pay plan and the fact that the covered population is small, The assets are likely to fluctuate considerably from year to year as well, since there is no smoothing method in place. As mentioned previously, City contributions to this Plan are less than 2% of the total amount that the City contributes to the System, and therefore some volatility can be withstood.

This report does not contain a detailed analysis of the potential range of future measurements; the Combined Plan valuation report includes a discussion of risk factors that may impact the System, and as a result, this Plan. Upon request, a more detailed assessment can be provided to enable a better understanding of the specific risks.

GFOA Solvency Test

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

The Government Finance Officers Association (GFOA) recommends that the funding policy aim to achieve a funded ratio of 100 percent. As noted previously, the use of a rolling ten-year amortization period means the unfunded actuarial accrued liability is projected to decline each year, but will never fully be paid off.

GFOA SOLVENCY TEST AS OF DECEMBER 31

| | 2018 | 2017 |
|---|--------------|--------------|
| Actuarial accrued liability (AAL) | | |
| • Active member contributions | \$170,398 | \$106,211 |
| • Retirees and beneficiaries | 30,668,245 | 30,160,174 |
| • Active and inactive members (employer-financed) | 3,711,463 | 3,117,449 |
| Total | \$34,550,106 | \$33,383,834 |
| Actuarial value of assets | \$17,805,153 | \$17,663,539 |
| Cumulative portion of AAL covered | | |
| • Active member contributions | 100.00% | 100.00% |
| • Retirees and beneficiaries | 57.50% | 58.21% |
| • Active and inactive members (employer-financed) | 0.00% | 0.00% |

Actuarial Balance Sheet

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

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

ACTUARIAL BALANCE SHEET

| | Year Ended | |
|--|----------------------------|----------------------------|
| | December 31, 2017 | December 31, 2016 |
| Liabilities | | |
| • Present value of benefits for retired members and beneficiaries (non-DROP) | \$23,148,147 | \$22,900,929 |
| • Present value of benefits for retired members and beneficiaries (DROP) | 7,520,098 | 7,259,245 |
| • Present value of benefits for inactive vested members | 11,861 | 0 |
| • Present value of benefits for active members | <u>4,925,368</u> | <u>3,591,198</u> |
| Total liabilities | \$35,605,474 | \$33,751,372 |
| Assets | | |
| • Total valuation value of assets | \$17,805,153 | \$17,663,539 |
| • Present value of future contributions by members | 547,393 | 181,906 |
| • Present value of future employer contributions for: | | |
| » Entry age cost | 507,975 | 185,632 |
| » Unfunded actuarial accrued liability | <u>16,744,953</u> | <u>15,720,295</u> |
| Total of current and future assets | <u>\$35,605,474</u> | <u>\$33,751,372</u> |

Section 3: Supplemental Information

EXHIBIT A – TABLE OF PLAN COVERAGE

| Category | Year Ended December 31 | | Change From Prior Year |
|---|------------------------|-----------|------------------------|
| | 2017 | 2016 | |
| Total active members in valuation: | | | |
| • Number | 44 | 47 | -6.4% |
| • Average age | 49.8 | 50.1 | -0.3 |
| • Average years of service | 24.3 | 26.4 | -2.1 |
| • Total supplemental computation pay | \$960,825 | \$525,048 | 83.0% |
| • Average supplemental computation pay | 21,837 | 11,171 | 95.5% |
| • Accumulated contribution balances | 170,398 | 106,211 | 60.4% |
| • Total active vested members | 42 | 47 | -10.6% |
| Active members (excluding DROP): | | | |
| • Number | 37 | 31 | 19.4% |
| • Average age | 47.8 | 46.5 | 1.3% |
| • Average years of service | 21.8 | 22.2 | -0.4% |
| • Total supplemental computation pay | \$856,055 | \$231,730 | 269.4% |
| • Average supplemental computation pay | 23,137 | 7,475 | 209.5% |
| Active members (DROP only): | | | |
| • Number | 7 | 16 | -56.3% |
| • Average age | 60.3 | 57.2 | 3.1 |
| • Average years of service | 37.1 | 34.3 | 2.8 |
| • Total supplemental computation pay | \$104,770 | \$293,318 | -64.3% |
| • Average supplemental computation pay | 14,967 | 18,332 | -18.4% |
| • DROP account balances | 589,633 | 757,045 | -22.1% |
| Inactive vested members: | | | |
| • Number | 1 | 0 | N/A |
| • Average age | 47.0 | N/A | N/A |
| • Average monthly benefit | \$95 | N/A | N/A |

| Category | Year Ended December 31 | | Change From Prior Year |
|---------------------------|------------------------|---------|------------------------|
| | 2017 | 2016 | |
| Retired members: | | | |
| • Number in pay status | 110 | 100 | 10.0% |
| • Average age | 67.9 | 68.9 | -1.0 |
| • Average monthly benefit | \$1,633 | \$1,752 | -6.8% |
| Beneficiaries: | | | |
| • Number in pay status | 30 | 28 | 7.1% |
| • Average age | 75.3 | 74.3 | 1.0 |
| • Average monthly benefit | \$846 | \$822 | 2.9% |

**EXHIBIT B-1 – TOTAL PARTICIPANTS IN ACTIVE SERVICE AS OF DECEMBER 31, 2017
BY AGE, YEARS OF SERVICE, AND AVERAGE SUPPLEMENTAL COMPUTATION PAY**

| Age | Years of Service | | | | | | | | | |
|--------------|------------------|-----------|-----------|----------|----------|-----------|----------|----------|-----------|-----------|
| | Total | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25 - 29 | 30 - 34 | 35 - 39 | 40 & over |
| 35 - 39 | 1 | -- | -- | 1 | -- | -- | -- | -- | -- | -- |
| | \$2,737 | -- | -- | \$2,737 | -- | -- | -- | -- | -- | -- |
| 40 - 44 | 6 | -- | -- | -- | 3 | 3 | -- | -- | -- | -- |
| | 7,459 | -- | -- | -- | \$10,975 | \$3,942 | -- | -- | -- | -- |
| 45 - 49 | 20 | 1 | -- | -- | 1 | 14 | 4 | -- | -- | -- |
| | 20,021 | \$216,120 | -- | -- | 10,100 | 9,228 | \$11,251 | -- | -- | -- |
| 50 - 54 | 7 | -- | -- | -- | -- | 3 | 3 | 1 | -- | -- |
| | 24,208 | -- | -- | -- | -- | 13,702 | 28,018 | \$44,299 | -- | -- |
| 55 - 59 | 8 | 1 | -- | -- | 1 | 1 | -- | 5 | -- | -- |
| | 42,211 | 198,411 | -- | -- | 32,656 | 7,625 | -- | 19,799 | -- | -- |
| 60 - 64 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 65 - 69 | 1 | -- | -- | -- | -- | -- | -- | -- | -- | 1 |
| | 5,777 | -- | -- | -- | -- | -- | -- | -- | -- | \$5,777 |
| 70 & over | 1 | -- | -- | -- | -- | -- | -- | -- | -- | 1 |
| | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total | 44 | 2 | -- | 1 | 5 | 21 | 7 | 6 | -- | 2 |
| | \$21,837 | \$207,266 | -- | \$2,737 | \$15,137 | \$9,036 | \$18,437 | \$23,882 | -- | \$2,889 |

Note: Chart includes members eligible for supplemental benefits based on prior supplemental computation pay but with zero excess supplemental computation pay in 2017.

**EXHIBIT B-2 – POLICE PARTICIPANTS IN ACTIVE SERVICE AS OF DECEMBER 31, 2017
BY AGE, YEARS OF SERVICE, AND AVERAGE SUPPLEMENTAL COMPUTATION PAY**

| Age | Years of Service | | | | | | | | | |
|--------------|------------------|-----------|-----------|----------|-----------|-----------|----------|----------|-----------|-----------|
| | Total | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25 - 29 | 30 - 34 | 35 - 39 | 40 & over |
| 35 - 39 | 1 | -- | -- | 1 | -- | -- | -- | -- | -- | -- |
| | \$2,737 | -- | -- | \$2,737 | -- | -- | -- | -- | -- | -- |
| 40 - 44 | 3 | -- | -- | -- | -- | 3 | -- | -- | -- | -- |
| | 3,942 | -- | -- | -- | -- | \$3,942 | -- | -- | -- | -- |
| 45 - 49 | 12 | 1 | -- | -- | -- | 7 | 4 | -- | -- | -- |
| | 25,948 | \$216,120 | -- | -- | -- | 7,179 | \$11,251 | -- | -- | -- |
| 50 - 54 | 6 | -- | -- | -- | -- | 2 | 3 | 1 | -- | -- |
| | 26,530 | -- | -- | -- | -- | 15,414 | 28,018 | \$44,299 | -- | -- |
| 55 - 59 | 4 | -- | -- | -- | -- | 1 | -- | 3 | -- | -- |
| | 16,477 | -- | -- | -- | -- | 7,625 | -- | 19,428 | -- | -- |
| 60 - 64 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 65 - 69 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 70 & over | 1 | -- | -- | -- | -- | -- | -- | -- | -- | 1 |
| | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total | 27 | 1 | -- | 1 | -- | 13 | 7 | 4 | -- | 1 |
| | \$20,408 | \$216,120 | -- | \$2,737 | -- | \$7,733 | \$18,437 | \$25,645 | -- | -- |

Note: Chart includes members eligible for supplemental benefits based on prior supplemental computation pay but with zero excess supplemental computation pay in 2017.

**EXHIBIT B-3 – FIRE PARTICIPANTS IN ACTIVE SERVICE AS OF DECEMBER 31, 2017
BY AGE, YEARS OF SERVICE, AND AVERAGE SUPPLEMENTAL COMPUTATION PAY**

| Age | Years of Service | | | | | | | | | |
|--------------|------------------|------------------|-----------|-----------|-----------------|-----------------|-----------|-----------------|-----------|----------------|
| | Total | 1 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25 - 29 | 30 - 34 | 35 - 39 | 40 & over |
| 40 - 44 | 3 | -- | -- | -- | 3 | | -- | -- | -- | -- |
| | \$10,975 | -- | -- | -- | \$10,975 | | -- | -- | -- | -- |
| 45 - 49 | 8 | | -- | -- | 1 | 7 | -- | -- | -- | -- |
| | 11,130 | | -- | -- | 10,100 | \$11,277 | -- | -- | -- | -- |
| 50 - 54 | 1 | -- | -- | -- | -- | 1 | -- | -- | -- | -- |
| | 10,276 | -- | -- | -- | -- | 10,276 | -- | -- | -- | -- |
| 55 - 59 | 4 | 1 | -- | -- | 1 | -- | -- | 2 | -- | -- |
| | 67,944 | \$198,411 | -- | -- | 32,656 | -- | -- | \$20,355 | -- | -- |
| 60 - 64 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 65 - 69 | 1 | -- | -- | -- | -- | -- | -- | -- | -- | 1 |
| | 5,777 | -- | -- | -- | -- | -- | -- | -- | -- | \$5,777 |
| 70 & over | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total | 17 | 1 | -- | -- | 5 | 8 | -- | 2 | -- | 1 |
| | \$24,106 | \$198,411 | -- | -- | \$15,137 | \$11,152 | -- | \$20,355 | -- | \$5,777 |

Note: Chart includes members eligible for supplemental benefits based on prior supplemental computation pay but with zero excess supplemental computation pay in 2017.

EXHIBIT C – RECONCILIATION OF MEMBER DATA

| | Active Members | Inactive Vested Members | Retired Members | Beneficiaries | Total |
|--|-------------------|-------------------------------|--------------------|---------------|------------|
| Number as of January 1, 2017 | 47 | 0 | 100 | 28 | 175 |
| • New members | 9 | N/A | N/A | N/A | 9 |
| • Terminations – with vested rights | -1 | 1 | 0 | 0 | 0 |
| • Terminations – without vested rights | 0 | N/A | N/A | N/A | 0 |
| • Retirements | -11 | 0 | 11 | N/A | 0 |
| • Return to work | 0 | 0 | 0 | N/A | 0 |
| • Deceased | 0 | 0 | -2 | -1 | -3 |
| • New beneficiaries | 0 | 0 | 0 | 3 | 3 |
| • Certain period expired | N/A | N/A | 0 | 0 | 0 |
| • Data adjustments | 0 | 0 | 1 | 0 | 1 |
| Number as of January 1, 2018 | 44 | 1 | 110 | 30 | 185 |

EXHIBIT D – SUMMARY STATEMENT OF INCOME AND EXPENSES ON A MARKET VALUE BASIS

| | Year Ended December 31, 2017 | Year Ended December 31, 2016 |
|--|---------------------------------|---------------------------------|
| Net assets at market value at the beginning of the year^{1,3} | \$17,663,539 | \$19,456,706 |
| Contribution income: | | |
| • Employer contributions | \$2,077,059 | \$2,985,478 |
| • Member contributions | 66,095 | 34,612 |
| • Less administrative expenses | <u>-68,528</u> | <u>-78,047</u> |
| <i>Net contribution income</i> | \$2,074,626 | \$2,942,043 |
| Investment income: | | |
| • Interest, dividends and other income | \$280,393 | \$451,851 |
| • Asset appreciation | 535,462 | 857,796 |
| • Less interest expense | -10,839 | -37,264 |
| • Adjustment to beginning of year value ² | 6,788 | 0 |
| • Less investment fees | <u>-76,449</u> | <u>-96,060</u> |
| <i>Net investment income</i> | <u>\$735,567</u> | <u>\$1,176,323</u> |
| Total income available for benefits | \$2,810,193 | \$4,118,366 |
| Less benefit payments | -\$2,668,579 | -\$5,911,533 |
| Change in market value of assets | \$141,614 | -\$1,793,167 |
| Net assets at market value at the end of the year^{1,3} | \$17,805,153 | \$17,663,539 |

¹Based on preliminary unaudited assets

²Adjustment from draft financial statement used in the prior valuation to the final audited statements

³Unaudited assets were used for the January 1, 2017 actuarial valuation. When the audited financial statements were completed, there were updates to the employer contribution and investment return amounts, resulting in a revision to the market value of assets. Thus, the amounts shown above as of December 31, 2016 differ from the System's and City's Comprehensive Annual Financial Reports. The differences are immaterial to the System's actuarial results.

EXHIBIT E – SUMMARY STATEMENT OF PLAN ASSETS

| | December 31, 2017 | December 31, 2016 |
|---|---------------------|---------------------|
| Cash equivalents and prepaid expenses | \$999,789 | \$2,668,669 |
| Invested securities lending collateral | \$102,083 | \$176,730 |
| Capital assets | \$106,808 | \$98,198 |
| Total accounts receivable | \$269,604 | \$227,216 |
| Investments: | | |
| • Real assets | \$6,730,133 | \$9,202,606 |
| • Equity securities | 3,948,680 | 1,261,240 |
| • Fixed income securities | 2,755,315 | 2,200,932 |
| • Private equity | 1,865,692 | 2,156,553 |
| • Alternative investments | 1,217,387 | 1,100,092 |
| • Other | <u>203,850</u> | <u>56,000</u> |
| Total investments at market value | \$16,721,057 | \$15,977,423 |
| Total assets | \$18,199,341 | \$19,148,236 |
| Total accounts payable | -394,188 | -1,484,697 |
| Net assets at market value¹ | \$17,805,153 | \$17,663,539 |
| Net assets at actuarial value | \$17,805,153 | \$17,663,539 |

¹Unaudited assets were used for the January 1, 2017 actuarial valuation. When the audited financial statements were completed, there were updates to the employer contribution and investment return amounts, resulting in a revision to the market value of assets. Thus, the amounts shown above as of December 31, 2016 differ from the System's and City's Comprehensive Annual Financial Reports. The differences are immaterial to the System's actuarial results.

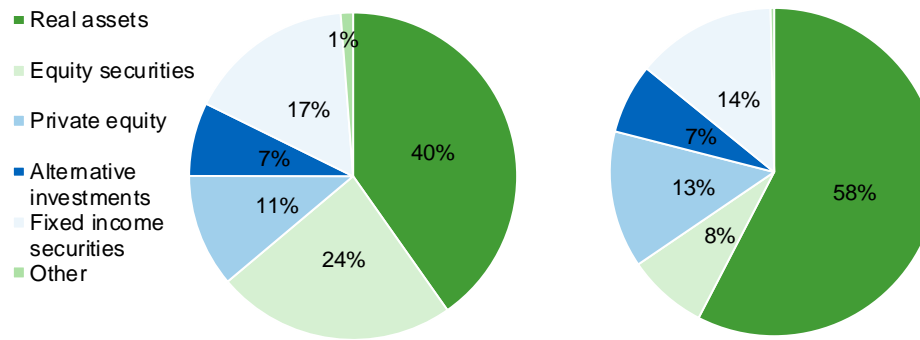


EXHIBIT F – DEVELOPMENT OF THE FUND THROUGH DECEMBER 31, 2017

| Year Ended December 31 | Employer Contributions | Member Contributions | Net Investment Return ¹ | Administrative Expenses ² | Benefit Payments | Actuarial (Market) Value of Assets at Year-End |
|---------------------------|---------------------------|-------------------------|--|---|---------------------|--|
| 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 ³ | 34,612 | 1,176,323 | 78,047 | 5,911,533 | 17,663,539 ³ |
| 2017 | 2,077,059 | 66,095 | 735,567 | 68,528 | 2,668,579 | 17,805,153 |

¹Net of investment fees and administrative expenses prior to 2016; net of investment fees only beginning in 2016. Returns for years ended 2008-2014 were estimated based on prior actuarial valuations.

²Administrative expenses were subtracted from net investment return prior to the 2016 valuation.

³Unaudited assets were used for the January 1, 2017 actuarial valuation. When the audited financial statements were completed, there were updates to the employer contribution and investment return amounts, resulting in a revision to the market value of assets. Thus, the amounts shown above as of December 31, 2016 differ from the System's and City's Comprehensive Annual Financial Reports. The differences are immaterial to the System's actuarial results.

EXHIBIT G – DEFINITION OF PENSION TERMS

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

| | |
|--|---|
| Actuarial Accrued Liability for Actives: | The equivalent of the accumulated normal costs allocated to the years before the valuation date. |
| Actuarial Accrued Liability for Pensioners and Beneficiaries: | The single-sum value of lifetime benefits to existing pensioners and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants and the interest that the sum is expected to earn before it is entirely paid out in benefits. |
| Actuarial Cost Method: | A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the actuarially determined contribution. |
| Actuarial Gain or Loss: | A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period. |
| Actuarially Equivalent: | Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions. |
| Actuarial Present Value (APV): | <p>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:</p> <ul style="list-style-type: none"> Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.) Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and Discounted according to an assumed rate (or rates) of return to reflect the time value of money. |

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

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| Assumptions or Actuarial Assumptions: | The estimates upon which the cost of the Fund is calculated, including: <u>Investment return</u> - the rate of investment yield that the Fund will earn over the long-term future; <u>Mortality rates</u> - the death rates of employees and pensioners; life expectancy is based on these rates; <u>Retirement rates</u> - the rate or probability of retirement at a given age or service; <u>Disability rates</u> - the probability of disability retirement at a given age; <u>Withdrawal rates</u> - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; <u>Salary increase rates</u> - the rates of salary increase due to inflation and productivity growth. |
| Closed Amortization Period: | A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Open Amortization Period. |
| Decrements: | Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal. |
| Defined Benefit Plan: | A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service. |
| Defined Contribution Plan: | A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance. |
| Employer Normal Cost: | The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions. |
| Experience Study: | A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary. |
| Funded Ratio: | The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA. |

| | |
|--|--|
| GASB 67 and GASB 68: | Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves. |
| Investment Return: | The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next. |
| Net Pension Liability (NPL): | The Net Pension Liability is equal to the Total Pension Liability minus the Plan Fiduciary Net Position. |
| Normal Cost: | That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. |
| Open Amortization Period: | An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the actuarial assumptions are realized. |
| Plan Fiduciary Net Position: | Market value of assets. |
| Total Pension Liability (TPL): | The actuarial accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 68. |
| Unfunded Actuarial Accrued Liability: | The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus. |
| Valuation Date or Actuarial Valuation Date: | The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date. |

Section 4: Actuarial Valuation Basis

EXHIBIT I – 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, with subsequent changes related to the plan changes and modifications based on the Meet and Confer Agreement. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|---|------|------------------|----------|--|--------|------|---|------|------|---|------|------|---|------|------|---|------|------|---|------|------|---|------|------|---|------|------|---|------|------|---|--|------------------|----------|--|--------|------|---|------|------|----|------|------|----|------|------|----|------|------|----|------|------|----|------|------|----|------|------|-----------|------|------|--|--|
| 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. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Salary Scale: | 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>For 2018-2019</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>For 2020 and After</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th rowspan="2">Years of Service</th> <th colspan="2">Rate (%)</th> </tr> <tr> <th>Police</th> <th>Fire</th> </tr> </thead> <tbody> <tr><td>1</td><td>5.20</td><td>5.20</td></tr> <tr><td>2</td><td>5.00</td><td>5.05</td></tr> <tr><td>3</td><td>4.80</td><td>4.90</td></tr> <tr><td>4</td><td>4.60</td><td>4.75</td></tr> <tr><td>5</td><td>4.40</td><td>4.60</td></tr> <tr><td>6</td><td>4.20</td><td>4.45</td></tr> <tr><td>7</td><td>4.00</td><td>4.30</td></tr> <tr><td>8</td><td>3.80</td><td>4.15</td></tr> </tbody> </table> | | Years of Service | Rate (%) | | 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 | <table border="1"> <thead> <tr> <th rowspan="2">Years of Service</th> <th colspan="2">Rate (%)</th> </tr> <tr> <th>Police</th> <th>Fire</th> </tr> </thead> <tbody> <tr><td>9</td><td>3.60</td><td>4.00</td></tr> <tr><td>10</td><td>3.40</td><td>3.85</td></tr> <tr><td>11</td><td>3.20</td><td>3.70</td></tr> <tr><td>12</td><td>3.00</td><td>3.55</td></tr> <tr><td>13</td><td>3.00</td><td>3.40</td></tr> <tr><td>14</td><td>3.00</td><td>3.25</td></tr> <tr><td>15</td><td>3.00</td><td>3.10</td></tr> <tr><td>16 & over</td><td>3.00</td><td>3.00</td></tr> </tbody> </table> | | Years of Service | Rate (%) | | Police | Fire | 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 | | |
| Years of Service | Rate (%) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Years of Service | Rate (%) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Police | Fire | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <i>Rates above include allowance for inflation of 2.75% per year.</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 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 2018-2019 is based on the Meet and Confer Agreement. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Payroll Growth: | 2.75%, used to amortize the unfunded actuarial accrued liability as a level percentage of payroll. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Cost-of-Living Adjustments:
Prior to October 1, 2053 0.00%
Beginning October 1, 2053 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.

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:

| Age | Rate (%) | | | |
|-----|------------------------|--------|-------------------------|--------|
| | Mortality ¹ | | Disability ² | |
| | Male | Female | Male | Female |
| 20 | 0.03 | 0.02 | 0.010 | 0.010 |
| 25 | 0.05 | 0.02 | 0.015 | 0.015 |
| 30 | 0.04 | 0.02 | 0.020 | 0.020 |
| 35 | 0.05 | 0.03 | 0.025 | 0.025 |
| 40 | 0.06 | 0.04 | 0.030 | 0.030 |
| 45 | 0.08 | 0.07 | 0.035 | 0.035 |
| 50 | 0.14 | 0.11 | 0.040 | 0.040 |
| 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 | -- | -- |

¹Rates shown do not include generational projection; rates beginning at age 65 are for healthy annuitants
²100% of disabilities are assumed to be service-related

Withdrawal Rates Before Retirement:

| Years of Service | Rate (%) | |
|------------------|----------|------|
| | 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:

DROP Active Members

| 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 | | |

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

Retirement Rates (continued):
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

Weighted Average Retirement Age:

Age 55, determined as follows: The weighted average retirement age for each participant is calculated as the sum of the product of each potential current or future retirement age times the probability of surviving from current age to that age and then retiring at that age, assuming no other decrements. The overall weighted retirement age is the average of the individual retirement ages based on all the active participants included in the January 1, 2018 actuarial valuation.

Retirement Rates for Inactive Vested Participants:

Current terminated vested members are assumed to retire at age 50
 Future terminated vested members are assumed to retire at age 58

| | |
|---|---|
| Interest on DROP Accounts: | 3.00% on account balances as of September 1, 2017, payable upon retirement 0.0% on account balances accrued after September 1, 2017 |
| DROP Utilization: | 0% of Police and Fire members are assumed to elect to enter the DROP |
| 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. |
| DROP Annuitization Interest: | 3.00%. Based on United States Department of Commerce Daily Treasury Yield Curve Rates for durations between 5 and 30 years. |
| Unknown Data for Participants: | Same age and service as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male. |
| Family Composition: | 75% of participants are assumed to be married. Females are assumed to be three years younger than males. The youngest child is assumed to be ten years old. |
| Benefit Election: | Married participants are assumed to elect the Joint and Survivor annuity form of payment and non-married participants are assumed to elect a Life Only annuity. |
| Administrative Expenses: | \$65,000 per year, payable monthly (equivalent to \$62,765 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. |
| Justification for Change in Actuarial Assumptions: | The following assumptions were updated with this valuation: <ul style="list-style-type: none"> ➤ The administrative expense assumption was changed from \$60,000 per year to \$65,000 per year. ➤ Interest payable upon retirement on DROP account balances as of September 1, 2017 increased from 2.75% to 3.00%. ➤ Annual 2.00% COLAs are assumed to be payable beginning October 1, 2053, based on an updated projection of unfunded actuarial accrued liability. In the prior valuation these COLAs were assumed to begin October 1, 2049. |

EXHIBIT II – SUMMARY OF PLAN PROVISIONS

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

MEMBERS WHOSE PARTICIPATION BEGAN BEFORE MARCH 1, 2011

| | |
|--|--|
| Plan Year: | January 1 through December 31 |
| Plan Status: | Ongoing |
| Normal Retirement: | |
| <i>Benefit Earned Prior to September 1, 2017</i> | |
| <i>Age Requirement</i> | 50 |
| <i>Service Requirement</i> | 5 |
| <i>Amount</i> | The greater of 3% of Average Supplemental Computation Pay times years of Pension Service (maximum 96.0%). |
| <i>Average Supplemental Computation Pay</i> | 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. |
| <i>Benefit Earned Beginning September 1, 2017</i> | |
| <i>Age Requirement</i> | 58 |
| <i>Service Requirement</i> | 5 |
| <i>Amount</i> | The greater of 2.5% of Average Supplemental Computation Pay times years of Pension Service (maximum 90.0%). |
| <i>Average Supplemental Computation Pay</i> | 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. |

20 and Out Reduced Retirement:

If Eligible as of September 1, 2017

Age Requirement

None

Service Requirement

20 years

Amount

20 & Out Multiplier times 36-month (Table 1 Benefit) or 60-month (Table 2 Benefit) Average Supplemental Computation Pay times years of Pension Service

| Benefit Accrued by September 1, 2017 20 & Out Table 1 | | Benefit Accrued by September 1, 2017 20 & Out Table 2 | |
|--|---------------------|--|---------------------|
| Age | 20 & Out Multiplier | Age | 20 & Out Multiplier |
| 45 & under | 2.00% | 53 & under | 2.00% |
| 46 | 2.25% | 54 | 2.10% |
| 47 | 2.50% | 55 | 2.20% |
| 48 | 2.75% | 56 | 2.30% |
| 49 | 2.75% | 57 | 2.40% |
| 50 & above | 3.00% | 58 & above | 2.50% |

If Not Eligible as of September 1, 2017

Age Requirement

None

Service Requirement

20 years

Amount

20 & Out Multiplier times 60-month Average 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% |

| | |
|--|---|
| Early Retirement: | |
| <i>If at least age 45 as of September 1, 2017 and less than age 50</i> | |
| <i>Age Requirement</i> | 45 |
| <i>Service Requirement</i> | 5 |
| <i>Amount</i> | Normal pension accrued prior to September 1, 2017 plus the benefit accrued based on the 20 & Out Table 2 for service beginning September 1, 2017, reduced by 2/3 of 1% for each whole month by which the benefit commencement date precedes age 50. |
| Non-Service Connected Disability: | |
| <i>Eligibility</i> | 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. |
| <i>Amount</i> | 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: | |
| <i>Eligibility</i> | Injury or illness (lasting more than 90 days) obtained while on duty in the performance of the member's job. |
| <i>Amount</i> | 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: | |
| <i>Age Requirement</i> | 55 |
| <i>Service Requirement</i> | 20 years, waived if member is receiving a service-connected disability |
| <i>Amount</i> | 3% 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. Beginning September 1, 2017, only those annuitants already receiving the supplement will be eligible to maintain their current supplement, which will not change ongoing; no additional retirees will be eligible for the supplement. |
| Termination Benefit: | |
| <i>With less than five years of pension service</i> | Upon request, the member's contributions will be returned without interest. |
| <i>With at least five years of pension service</i> | 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. |

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| Pre-Retirement Death Benefit: | 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. |
| <i>While in active service</i> | A lump sum benefit equal to the return of member contributions with interest. |
| <i>After leaving active service, with fewer than five years</i> | 50% of the Member's accrued benefit, with no early retirement reduction, or a refund of member contributions |
| <i>After leaving active service, with at least five years</i> | |
| 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: | 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. |
| <i>Eligibility</i> | |
| <i>Amount</i> | 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. |

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| DROP: | |
| <i>Eligibility</i> | Members in active service who are retirement eligible may elect to enter the Deferred Retirement Option Plan (DROP). |
| <i>Distribution</i> | The DROP account balance will be paid over the expected future lifetime of annuitants. |
| <i>Interest</i> | Based on United States Department of Commerce Daily Treasury Yield Curve Rates for durations between 5 and 30 years; interest rate is based on the expected lifetime of the members at the time they retire. |
| Cost of Living: | The Board may grant an ad hoc COLA based on the actual market return over the prior five years less 5%, not to exceed 4% of the base benefit, if, after granting a COLA, the funded ratio on a market value of assets basis is no less than 70%. |
| Member Contributions: | 13.5% of supplemental computation pay for all members |
| City Contributions: | The City will contribute the Actuarially Determined Employer Contribution based on a 10-year rolling amortization period. |
| Optional Forms of Benefits: | Life Annuity with 36 months guaranteed; 50% or 75% Husband-and-Wife Pension with Pop-Up; 66-2/3% or 100% Joint and Survivor Pension. |
| Changes in Plan Provisions: | Active members who elected to enter DROP prior to June 1, 2017 were eligible to revoke the DROP election during the period September 1, 2017 through February 28, 2018. |

MEMBERS WHOSE PARTICIPATION BEGAN ON OR AFTER MARCH 1, 2011

| Normal Retirement: | | | | | | | | | | | | | | | | | |
|---|---|------------------|--|-----|---------------------|------------|-------|----|-------|----|-------|----|-------|----|-------|------------|-------|
| <i>Age Requirement</i> | 58 | | | | | | | | | | | | | | | | |
| <i>Service Requirement</i> | 5 | | | | | | | | | | | | | | | | |
| <i>Amount</i> | 2.5% of Average Supplemental Computation Pay for each year of Pension Service, maximum 90% | | | | | | | | | | | | | | | | |
| <i>Average Supplemental Computation Pay</i> | 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: | | | | | | | | | | | | | | | | | |
| <i>Age Requirement</i> | 53 | | | | | | | | | | | | | | | | |
| <i>Service Requirement</i> | 5 | | | | | | | | | | | | | | | | |
| <i>Amount</i> | 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: | | | | | | | | | | | | | | | | | |
| <i>Requirement</i> | None | | | | | | | | | | | | | | | | |
| <i>Service Requirement</i> | 20 years | | | | | | | | | | | | | | | | |
| <i>Amount</i> | 20 & Out Multiplier times Average Supplemental Computation Pay times years of Pension Service | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th colspan="2">20 & Out Table 2</th> </tr> <tr> <th>Age</th> <th>20 & Out Multiplier</th> </tr> </thead> <tbody> <tr> <td>53 & under</td> <td>2.00%</td> </tr> <tr> <td>54</td> <td>2.10%</td> </tr> <tr> <td>55</td> <td>2.20%</td> </tr> <tr> <td>56</td> <td>2.30%</td> </tr> <tr> <td>57</td> <td>2.40%</td> </tr> <tr> <td>58 & above</td> <td>2.50%</td> </tr> </tbody> </table> | 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 & 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% | | | | | | | | | | | | | | | | |

| | |
|--|--|
| <p>Non-Service Connected Disability:</p> <p><i>Eligibility</i></p> <p><i>Amount</i></p> | <p>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.</p> <p>The Member's accrued benefit, but not less than a pro-rated minimum benefit.</p> |
| <p>Service-Connected Disability:</p> <p><i>Eligibility</i></p> <p><i>Amount</i></p> | <p>Injury or illness (lasting more than 90 days) obtained while on duty in the performance of the member's job.</p> <p>The greater of 50% of Average Supplemental Computation Pay and the Member's accrued benefit.</p> |
| <p>Termination Benefit:</p> <p><i>With less than five years of service</i></p> <p><i>With at least five years of service</i></p> | <p>Upon request, the member's contributions will be returned without interest.</p> <p>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.</p> |
| <p>Pre-Retirement Death Benefit:</p> <p><i>While in active service</i></p> <p><i>After leaving active service, with less than five years</i></p> <p><i>After leaving active service, with at least five years</i></p> | <p>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.</p> <p>A lump sum benefit equal to the return of member contributions with interest.</p> <p>50% of the Member's accrued benefit, with no early retirement reduction, or a refund of member contributions</p> |
| <p>Post-Retirement Death Benefit:</p> | <p>50% of the pension the Member was receiving at the time of their death.</p> |
| <p>Qualified Surviving Children Benefit:</p> | <p>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</p> |
| <p>Special Survivor Benefit:</p> <p><i>Eligibility</i></p> <p><i>Amount</i></p> | <p>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</p> <p>Has no Qualified Surviving Children or handicapped children currently eligible for survivor benefits; and</p> <p>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.</p> <p>Once all the eligibility conditions are met, the amount the Qualified Surviving Spouse will receive increases from 50% of the Member's pension benefit to a percentage of the Member's pension benefit based on the Member's applicable benefit multiplier times the number of years of Pension Service the Member worked.</p> |

| | |
|---|--|
| 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: | |
| <i>Eligibility</i> | Members in active service who are retirement eligible may elect to enter the Deferred Retirement Option Plan (DROP). |
| <i>Distribution</i> | The DROP account balance will be paid over the expected future lifetime of annuitants. |
| <i>Interest</i> | Based on United States Department of Commerce Daily Treasury Yield Curve Rates for durations between 5 and 30 years; interest rate is based on the expected lifetime of the members at the time they retire. |
| Cost of Living: | The Board may grant an ad hoc COLA based on the actual market return over the prior five years less 5%, not to exceed 4% of the base benefit, if, after granting a COLA, the funded ratio on a market value of assets basis is no less than 70%. |
| Member Contributions: | 13.5% of supplemental computation pay for all members |
| City Contributions: | The City will contribute the Actuarially Determined Employer Contribution based on a 10-year rolling amortization period. |
| Optional Forms of Benefits: | Life Annuity with 36 months guaranteed; 50% or 75% Husband-and-Wife Pension with Pop-Up; 66-2/3% or 100% Joint and Survivor Pension. |
| Changes in Plan Provisions: | Active DROP members who entered the DROP prior to June 1, 2017 were eligible to revoke the DROP election during the period from September 1, 2017 through February 28, 2018. |

Section 5: GASB Information

EXHIBIT 1 – NET PENSION LIABILITY

The components of the net pension liability at December 31, 2017 were as follows:

| | |
|--|--------------|
| Total pension liability | \$33,670,180 |
| Plan fiduciary net position | 17,805,153 |
| Net pension liability | 15,865,027 |
| Plan fiduciary net position as a percentage of the total pension liability | 52.88% |

The December 31, 2017 Total Pension Liability does not include the plan provision allowing members who entered DROP before June 1, 2017 to revoke the DROP election during the period from September 1, 2017 through February 28, 2018, since the election window closed after the measurement date.

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of January 1, 2018, 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 pension plan investment expense, including inflation |

The actuarial assumptions used in the January 1, 2018 valuation were based on the results of an experience study for the period January 1, 2010 to December 31, 2014, plus assumption changes included in the January 1, 2017 and January 1, 2018 valuations. Assumptions are detailed in Section 4, Exhibit I of this 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 and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2017 are summarized in the table on the following page.

| Asset Class | Target Allocation | Long-Term Expected Real Rate of Return ¹ |
|---------------------------------------|-------------------|---|
| Global Equity | 20% | 6.54% |
| Emerging Market Equity | 5% | 9.41% |
| Private Equity | 5% | 10.28% |
| Short-Term Core Bonds | 2% | 1.25% |
| Global Bonds | 3% | 1.63% |
| High Yield | 5% | 4.13% |
| Bank Loans | 6% | 3.46% |
| Structured Credit and Absolute Return | 6% | 5.38% |
| Emerging Markets Debt | 6% | 4.42% |
| Private Debt | 5% | 7.30% |
| Natural Resources | 5% | 7.62% |
| Infrastructure | 5% | 6.25% |
| Real Estate | 12% | 4.90% |
| Liquid Real Assets | 3% | 4.71% |
| Asset Allocation | 10% | 4.90% |
| Cash | 2% | 1.06% |
| Total | 100% | |

¹As provided by Segal Marco Advisors, a member of The Segal Group. The real rates of return are net of inflation.

Discount rate: The discount rate used to measure the total pension liability was 7.25%. The projection of cash flows used to determine the discount rate assume that City contributions will equal the employer's normal cost plus a ten-year amortization payment on the unfunded actuarial accrued liability and member contributions will equal 13.50% of supplemental computation pay. Based on those assumptions, the System's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

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

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability, calculated using the discount rate of 7.25%, as well as what the net pension liability would be if it were calculated using a discount rate that is one percentage-point lower (6.25%) or one percentage-point higher (8.25%) than the current rate:

| | 1% Decrease (6.25%) | Current Discount (7.25%) | 1% Increase (8.25%) |
|-----------------------|------------------------|--------------------------------|------------------------|
| Net pension liability | \$18,826,159 | \$15,865,027 | \$13,316,450 |

EXHIBIT 2 – SCHEDULE OF CHANGES IN NET PENSION LIABILITY

| | 2017 | 2016 |
|---|----------------------------|----------------------------|
| Total pension liability | | |
| • Service cost | \$111,485 | \$70,220 |
| • Interest | 2,799,166 | 2,910,845 |
| • Change of benefit terms | -5,305,618 | 0 |
| • Differences between expected and actual experience | -1,434,786 | 1,105,788 |
| • Changes of assumptions | -479,159 | -916,752 |
| • Benefit payments, including refunds of employee contributions | <u>-2,668,579</u> | <u>-5,911,533</u> |
| Net change in total pension liability | <u>-6,977,491</u> | <u>-2,741,432</u> |
| Total pension liability – beginning | <u>40,647,671</u> | <u>43,389,103</u> |
| Total pension liability – ending (a) | <u>\$33,670,180</u> | <u>\$40,647,671</u> |
| Plan fiduciary net position | | |
| • Contributions – employer | \$2,077,059 | \$3,063,584 |
| • Contributions – employee | 66,095 | 34,612 |
| • Net investment income | 739,618 | 1,142,269 |
| • Benefit payments, including refunds of employee contributions | -2,668,579 | -5,911,533 |
| • Administrative expense | -68,528 | -78,047 |
| • Interest expense | <u>-10,839</u> | <u>-37,264</u> |
| Net change in plan fiduciary net position | <u>\$134,826</u> | <u>-\$1,786,379</u> |
| Plan fiduciary net position – beginning | <u>17,670,327</u> | <u>19,456,706</u> |
| Plan fiduciary net position – ending (b) | <u>\$17,805,153</u> | <u>\$17,670,327</u> |
| Net pension liability – ending (a) – (b) | <u>\$15,865,027</u> | <u>\$22,977,344</u> |
| Plan fiduciary net position as a percentage of the total pension liability | 52.88% | 43.47% |
| Covered employee payroll | \$916,199 | \$525,048 |
| Net pension liability as percentage of covered employee payroll | 1,731.61% | 4,376.24% |

Notes to Schedule:

Benefit changes: Plan changes effective September 1, 2017 that were signed into law May 31, 2017 as HB 3158 are reflected for the first time in the December 31, 2017 total pension liability, along with assumption changes that were implemented as part of the plan changes. These changes are summarized in Section 1 of the January 1, 2017 actuarial valuation, except that the COLA start date has been updated from October 1, 2049 to October 1, 2053 and the interest rate for the annuitization of DROP balances upon retirement has been updated from 2.75% to 3.00%.

Change of Assumptions: The blended discount rate increased from 7.19% to 7.10% as of December 31, 2016, and from 7.10% to 7.25% as of December 31, 2017. The assumption changes in 2016 also included updates to the salary scale to reflect the Meet and Confer Agreement, and a change to the expected DROP interest payable.

EXHIBIT 3 – SCHEDULE OF EMPLOYER CONTRIBUTIONS

| 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% |
| 2017 | 2,086,639 | 2,077,059 | 9,580 | 525,048 | 395.59% |

The contribution deficiency for calendar year 2017 represents contributions directed to the Excess Benefit Plan and Trust.

Notes to Schedule:

Methods and assumptions used to determine contribution rates for the year ended December 31, 2017:

| | |
|--------------------------------------|---|
| Valuation date | Actuarially determined contribution is calculated as of January 1, 2017, the beginning of the fiscal year in which contributions are reported |
| Actuarial cost method | Entry age |
| Amortization method | 10-year level percent of payroll, using 2.75% annual increases |
| Remaining amortization period | 10 years, open |
| Asset valuation method | Market value |
| Investment rate of return | 7.25%, including inflation, net of pension plan investment expenses |
| Inflation rate | 2.75% |
| Projected salary increases | Inflation plus merit increases, varying by group and service |
| Retirement rates | Group specific rates based on age |
| Cost of living adjustments: | 2.00% simple increases starting October 1, 2049 |

| | |
|----------------------------------|---|
| Mortality: | |
| <i>Pre-retirement</i> | Sex-distinct RP-2014 Employee Mortality Table, set back two years for males, projected generationally using Scale MP-2015 |
| <i>Healthy annuitant</i> | Sex-distinct RP-2014 Healthy Annuitant Mortality Table, set forward two years for females, projected generationally using Scale MP-2015 |
| <i>Disabled</i> | Sex-distinct RP-2014 Disabled Retiree Mortality Table, set back three years for males and females, projected generationally using Scale MP-2015 |
| Other information | See Section 4 of the January 1, 2017 actuarial valuation for a full outline of assumptions. See Exhibit 2 of this Section for the history of changes to plan provisions and assumptions. |
| <i>DROP utilization</i> | 0% of Police and Fire members are assumed to elect to enter DROP |
| <i>Interest on DROP Accounts</i> | 6.00% per annum, until September 1, 2017 Beginning September 1, 2017: <ul style="list-style-type: none"> – 2.75% on annuitant account balances – 2.75% payable upon retirement on active account balances as of September 1, 2017 0.00% on active account balances accrued after September 1, 2017 |

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