

City of Fresno Employees Retirement System

Actuarial Valuation and Review
as of June 30, 2017



This report has been prepared at the request of the Board of Retirement to assist in administering the Fund. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Board of Retirement and may only be provided to other parties in its entirety. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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100 MONTGOMERY STREET, SUITE 500 SAN FRANCISCO, CA 94104
T 415.263.8200 www.segalco.com

November 20, 2017

*Board of Retirement
City of Fresno Employees Retirement System
2828 Fresno Street, Suite 201
Fresno, California 93721-1327*

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2017. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2018-2019 and analyzes the preceding year's experience.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the City of Fresno Employees Retirement System. The census information and financial information on which our calculations were based was prepared by the Retirement System. That assistance is gratefully acknowledged. The actuarial calculations were completed under the supervision of Andy Yeung, ASA, MAAA, FCA, Enrolled Actuary.


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

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

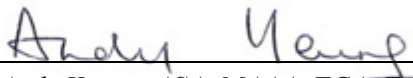
We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

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

By: 

*Paul Angelo, FSA, MAAA, FCA, EA
Senior Vice President and Actuary*



*Andy Yeung, ASA, MAAA, FCA, EA
Vice President and Actuary*

JB/hy

SECTION 1

VALUATION SUMMARY

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SECTION 1: Valuation Summary for the City of Fresno Employees Retirement System

Purpose

This report has been prepared by Segal Consulting to present a valuation of the City of Fresno Employees Retirement System as of June 30, 2017. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of the Retirement System, as administered by the Board of Retirement;
- The characteristics of covered active members, DROP participants, inactive vested members, and retired members and beneficiaries as of June 30, 2017, provided by the Retirement System;
- The assets of the System as of June 30, 2017, provided by the Retirement System;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

One of the general goals of an actuarial valuation is to establish contributions which fully fund the Retirement System's liabilities, and which, as a percentage of payroll, remain as level as possible for each generation of active members. Annual actuarial valuations measure the progress toward this goal, as well as test the adequacy of the contribution rates.

In preparing this valuation, we have employed generally accepted actuarial methods and assumptions to evaluate the Retirement System's assets, liabilities and future contribution requirements. Our calculations are based upon member data and financial information provided to us by the Retirement System's staff. This information has not been audited by us, but it has been reviewed and found to be consistent, both internally and with prior year's information.

The contribution requirements are determined as a percentage of payroll. The System's employer rates provide for both normal cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. Any change in the unfunded actuarial accrued liability (UAAL) that arises due to actuarial gains or losses or due to plan amendments at each valuation is amortized over its own declining 15-year period (with the exception of any change due to temporary retirement incentives which is amortized over its own declining period of up to 5 years). Any change in UAAL that arises from changes in actuarial assumptions or methods will be amortized over its own declining 25-year period. When there is any "actuarial surplus" (the funded ratio is over 110%), the portion of surplus in excess of 110% will be amortized over a non-declining 25-year period.

Please note that the Actuarial Standards Board has adopted Actuarial Standard of Practice (ASOP) No. 4 that provides guidance for actuaries to follow when valuing pension liabilities. For a plan such as that offered by the Retirement System that utilizes the actuarial surplus to provide contribution rate offsets and a Post Retirement Supplemental Benefit (PRSB) benefit, we are required to indicate in the valuation report that the impact of the application of any future actuarial surplus on the future financial condition of the plan has not been explicitly measured in the valuation. Furthermore, under the revised ASOP No. 4

SECTION 1: Valuation Summary for the City of Fresno Employees Retirement System

we have to consider using alternative procedures (such as stochastic modeling) for “gain sharing provisions that trigger benefit increases when investment returns are favorable but do not trigger benefit decreases when investment returns are unfavorable.” Based on our analysis, we do not believe the System’s actuarial surplus distribution provisions would necessarily fall under the guidelines of ASOP No. 4 so as to require quantification. This is based on the observation that only a portion of the surplus is available for distribution (on an amortized basis over 25 years) when the funded status of the System is over 110% in a particular valuation but surplus distribution will be suspended immediately in the following valuation if the funded status falls below 110% in the following valuation. Nonetheless, it should be understood that there is still a financial impact associated with the surplus distribution provision. The Board may wish to consider authorizing a supplemental study so that the potential impact can be quantified.

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2018 through June 30, 2019.

Significant Issues in Valuation Year

The following key findings were the result of this actuarial valuation:

- Reference:* Pg. 19
- In the June 30, 2016 valuation, the ratio of the valuation value of assets to actuarial accrued liabilities was 111.3%. In this June 30, 2017 valuation, the funding ratio has increased to 113.0%. The funding ratios as of June 30, 2016 and 2017 if measured using the market value of assets instead of the valuation value of assets are 106.3% and 114.3%, respectively.
- Reference:* Pg. 28
- The Retirement System’s prefunded actuarial accrued liability (PAAL) as of June 30, 2016 was \$110.2 million on a valuation value of assets basis. In this year’s valuation, the PAAL has increased to \$131.4 million on a valuation value of assets basis. The Plan had a net actuarial experience gain of about \$12.0 million. A reconciliation of the System’s PAAL is provided in Section 3, Exhibit H.
 - As of June 30, 2017, there is an actuarial surplus as the System has valuation value of assets that are in excess of 110% of the actuarial accrued liability. However, the actuarial surplus in the Retirement System is only sufficient to partially reduce the City’s and the members’ COLA contributions. There is no surplus left after the above COLA contribution offset to provide a PRSB. The determination and allocation of actuarial surplus as of June 30, 2017 as well as for the last valuation as of June 30, 2016 is provided in Appendix B of this report.
- Reference:* Pg. 15
- The aggregate employer rate calculated in this valuation has decreased from 11.39% of payroll as of June 30, 2016 to 10.58% of payroll as of June 30, 2017. This is a net result of: (i) the difference between the actual and the estimated 2017/2018 fiscal year contributions, (ii) an increase in the surplus available to pay employer COLA contributions, and (iii) changes in membership demographics among all active (DROP and non-DROP) members. A reconciliation of the Retirement System’s aggregate employer rate is provided in Section 2, Subsection D (see Chart 14).

SECTION 1: Valuation Summary for the City of Fresno Employees Retirement System

Reference: Pg. 16

- The aggregate member rate calculated in this valuation has decreased from 8.24% of payroll as of June 30, 2016 to 7.80% of payroll as of June 30, 2017. The change in the aggregate member rate is almost entirely due to (i) an increase in the surplus available to pay employee COLA contributions, offset slightly by (ii) changes in member demographics among active non-DROP members. A reconciliation of the Retirement System's aggregate member rate is provided in Section 2, Subsection D (see Chart 15).

After around February 2011, active members who signed up for the DROP are required to continue their employee contributions; however, those contributions are deposited into the members' DROP accounts and therefore not available to fund the value of the retirement benefit earned up to the date of the DROP. Therefore, those contributions that will be deposited into the DROP accounts are disregarded in this valuation.

Reference: Pg. 6

- As indicated in Section 2, Subsection B (see Chart 7) of this report, the total unrecognized investment **gain** as of June 30, 2017 is \$13.8 million (as compared to an unrecognized **loss** of \$48.6 million in the June 30, 2016 valuation). This deferred investment gain will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years.
- The unrecognized investment gains of \$13.8 million represent 1.1% of the market value of assets. Unless offset by future investment losses or other unfavorable experience, the recognition of the \$13.8 million market gains is expected to have an impact on the System's future funded ratio and the aggregate employer and employee contributions. To illustrate this potential impact, if the deferred investment gains were recognized immediately in the valuation value of assets:
 - the funded percentage would increase from 113.0% to 114.3%,
 - the aggregate employer contribution rate for 2018/2019 would decrease from 10.58% of payroll to 10.26% of payroll, and
 - the aggregate employee contribution rate for 2018/2019 would decrease from 7.80% of payroll to 7.40% of payroll.

For comparison purposes, if all the deferred losses in the June 30, 2016 valuation had been recognized immediately in the June 30, 2016 valuation, the funded percentage would have decreased from 111.3% to 106.3%, the aggregate employer rate would have increased from 11.39% to 11.72% of payroll, and the aggregate employee rate would have increased from 8.24% to 8.65% of payroll.

- The actuarial valuation report as of June 30, 2017 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected. Declines in asset values will increase the actuarial cost of the Plan, while increases will decrease the actuarial cost of the Plan.

SECTION 1: Valuation Summary for the City of Fresno Employees Retirement System

Impact of Future Experience on Contribution Rates

Future contribution requirements may differ from those determined in the valuation because of:

- 1) difference between actual experience and anticipated experience;
- 2) changes in actuarial assumptions or methods;
- 3) changes in statutory provisions; and
- 4) difference between the contribution rates determined by the valuation and those adopted by the Board.

SECTION 1: Valuation Summary for the City of Fresno Employees Retirement System

Summary of Key Valuation Results (Dollar amounts in thousands)

| | June 30, 2017 | | June 30, 2016 | |
|---|---------------|--|---------------|--|
| Employer Contribution Rates: | | | | |
| | Total Rate | Estimated Annual Amount ⁽¹⁾ | Total Rate | Estimated Annual Amount ⁽¹⁾ |
| Normal Cost Rate | 11.66% | \$15,196 | 11.69% | \$15,235 |
| Surplus Offset | -0.71% | -925 | -0.33% | -430 |
| Contribution (Excess)/Shortfall from Prior Fiscal Year | <u>-0.37%</u> | <u>-481</u> | <u>0.03%</u> | <u>39</u> |
| Required Contributions | 10.58% | \$13,790 | 11.39% | \$14,844 |
| Average Member Contribution Rates: | | | | |
| | Total Rate | Estimated Annual Amount ⁽²⁾ | Total Rate | Estimated Annual Amount ⁽²⁾ |
| All Members ⁽³⁾ | 7.80% | \$8,260 | 8.24% | \$8,729 |
| Funded Status: | | | | |
| Actuarial Accrued Liability | \$1,013,684 | | \$976,909 | |
| Valuation Value of Assets (VVA) | 1,145,061 | | 1,087,125 | |
| Market Value of Assets (MVA) ⁽⁴⁾ | 1,158,863 | | 1,038,478 | |
| Funded Percentage on VVA basis | 113.0% | | 111.3% | |
| Prefunded/(Unfunded) Actuarial Accrued Liability on VVA basis | \$131,377 | | \$110,216 | |
| Funded Percentage on MVA basis | 114.3% | | 106.3% | |
| Prefunded/(Unfunded) Actuarial Accrued Liability on MVA basis | \$145,179 | | \$61,569 | |
| Key Economic Assumptions: | | | | |
| Interest Rate | 7.25% | | 7.25% | |
| Inflation Rate | 3.00% | | 3.00% | |
| Across-the-Board Salary Increase | 0.50% | | 0.50% | |

⁽¹⁾Based on projected fiscal year 2018-2019 annual payroll for active non-DROP and DROP members of \$130,323.

⁽²⁾Based on projected fiscal year 2018-2019 annual payroll for members not in the DROP of \$105,937.

⁽³⁾These are the average rates after applying the surplus (if any) to offset the COLA rates. See Section 4, Appendix A for the basic and COLA rates before the surplus offset.

⁽⁴⁾Excludes non-valuation reserves.

SECTION 1: Valuation Summary for the City of Fresno Employees Retirement System

Summary of Key Valuation Demographic and Financial Data

| | June 30, 2017 | June 30, 2016 | Change From Prior Year |
|---|---------------|---------------|---------------------------|
| Active Members: | | | |
| Non-DROP | | | |
| Number of members | 1,715 | 1,592 | 7.7% |
| Average age | 45.3 | 46.3 | -1.0 |
| Average service | 8.9 | 9.9 | -1.0 |
| Projected total compensation ⁽¹⁾ | \$102,354,521 | \$91,007,785 | 12.5% |
| Average projected compensation | \$59,682 | \$57,166 | 4.4% |
| DROP | | | |
| Number of members | 370 | 366 | 1.1% |
| Average age | 60.7 | 60.6 | 0.1 |
| Average service | 22.2 | 22.5 | -0.3 |
| Projected total compensation ⁽¹⁾ | \$23,560,592 | \$22,428,051 | 5.0% |
| Average projected compensation | \$63,677 | \$61,279 | 3.9% |
| Retired Member and Beneficiaries: | | | |
| Number of members: | | | |
| Service retired | 1,376 | 1,327 | 3.7% |
| Disability retired | 154 | 151 | 2.0% |
| Beneficiaries | 389 | 380 | 2.4% |
| Total | 1,919 | 1,858 | 3.3% |
| Average age | 70.7 | 71.0 | -0.3 |
| Average monthly benefit ⁽²⁾ | \$1,997 | \$1,961 | 1.8% |
| Vested Terminated Members: | | | |
| Number of vested terminated members ⁽³⁾ | 304 | 282 | 7.8% |
| Average age | 45.1 | 45.4 | -0.3 |
| Summary of Financial Data (dollar amounts in thousands): | | | |
| Market value of assets ⁽⁴⁾ | \$1,274,122 | \$1,143,299 | 11.4% |
| Return on market value of assets | 14.40% | 0.44% | N/A |
| Actuarial value of assets | \$1,260,320 | \$1,191,946 | 5.7% |
| Return on actuarial value of assets | 8.50% | 7.26% | N/A |
| Valuation value of assets | \$1,145,061 | \$1,087,125 | 5.3% |
| Return on valuation value of assets | 7.55% | 5.93% | N/A |

⁽¹⁾ June 30, 2016 payroll was projected payroll for fiscal year 2016/2017. June 30, 2017 payroll was projected payroll for fiscal year 2017/2018.

⁽²⁾ Excludes supplemental benefits (if any) paid from PRSB and benefits derived from DROP account balances.

⁽³⁾ Includes terminated members due a refund of member contributions.

⁽⁴⁾ Includes non-valuation reserves.

SECTION 1: Valuation Summary for the City of Fresno Employees Retirement System

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 an actuarial valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

- **Plan benefits** Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan description in this 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 Retirement 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** This valuation is based on the market value of assets as of the valuation date, as provided by the Retirement System.
- **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 valuation is prepared at the request of the Retirement System. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan’s assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term

SECTION 1: Valuation Summary for the City of Fresno Employees Retirement System

cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

- If the Retirement System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Retirement System 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 Retirement System, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Retirement System.

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

A. MEMBER DATA

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

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

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

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

CHART 1
Member Population: 2008 – 2017

| Year Ended June 30 | Active Members ⁽¹⁾ | Vested Terminated Members ⁽²⁾ | Retired Members and Beneficiaries | Ratio of Non-Actives to Actives |
|-------------------------------|--|---|--|--|
| 2008 | 2,509 | 195 | 1,358 | 0.62 |
| 2009 | 2,490 | 188 | 1,400 | 0.64 |
| 2010 | 2,283 | 184 | 1,503 | 0.74 |
| 2011 | 1,993 | 212 | 1,622 | 0.92 |
| 2012 | 1,900 | 221 | 1,672 | 1.00 |
| 2013 | 1,839 | 233 | 1,710 | 1.06 |
| 2014 | 1,859 | 243 | 1,749 | 1.07 |
| 2015 | 1,888 | 263 | 1,790 | 1.09 |
| 2016 | 1,958 | 282 | 1,858 | 1.09 |
| 2017 | 2,085 | 304 | 1,919 | 1.07 |

⁽¹⁾ Includes DROP members.

⁽²⁾ Includes terminated members due a refund of member contributions.

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

Non-DROP Active Members

Plan costs are affected by the age, years of service and salaries of active members. In this year's valuation, there were 1,715 non-DROP active members with an average age of 45.3, average years of service of 8.9 years and average salary of \$59,682. The 1,592 non-DROP active members in the prior valuation had an average age of 46.3, average service of 9.9 years and average salary of \$57,166.

Inactive Members

In this year's valuation, there were 304 members with a vested right to a deferred or immediate vested benefit versus 282 members in the prior valuation.

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

CHART 2
Distribution of Non-DROP Active Members by Age as of June 30, 2017

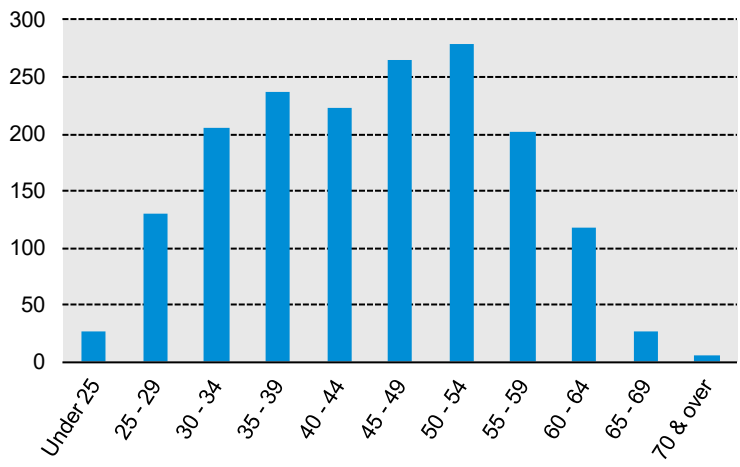
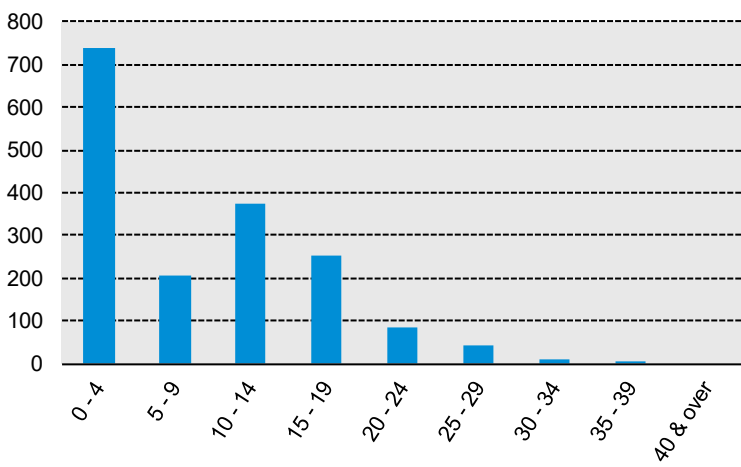


CHART 3
Distribution of Non-DROP Active Members by Years of Service as of June 30, 2017



SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

DROP Active Members

In this year's valuation, there were 370 DROP active members with an average age of 60.7 years, average years of service of 22.2 and average compensation of \$63,677. The 366 DROP active members in the prior valuation had an average age of 60.6 years, average years of service of 22.5 and average compensation of \$61,279.

Retired Members and Beneficiaries

As of June 30, 2017, 1,530 retired members and 389 beneficiaries were receiving total monthly benefits of \$3,832,136. For comparison, in the previous valuation, there were 1,478 retired members and 380 beneficiaries receiving monthly benefits of \$3,642,992.

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

CHART 4
Distribution of Retired Members (Excl. Beneficiaries) by Type and by Monthly Amount as of June 30, 2017

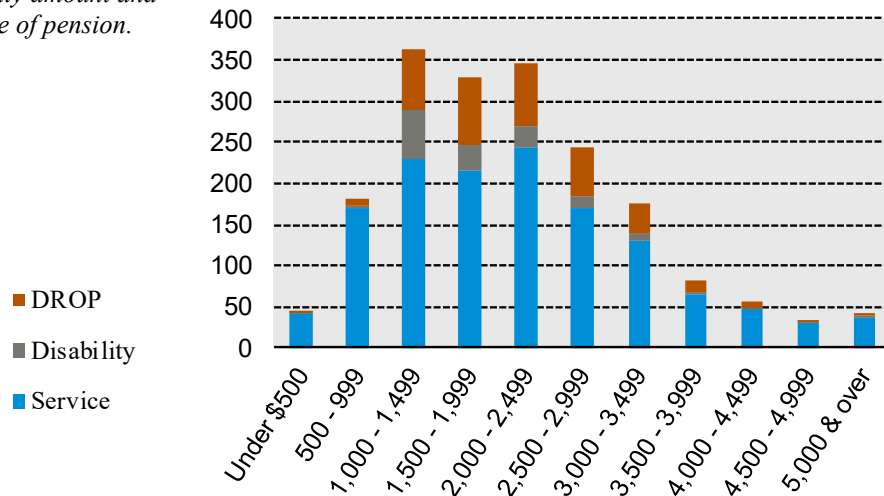
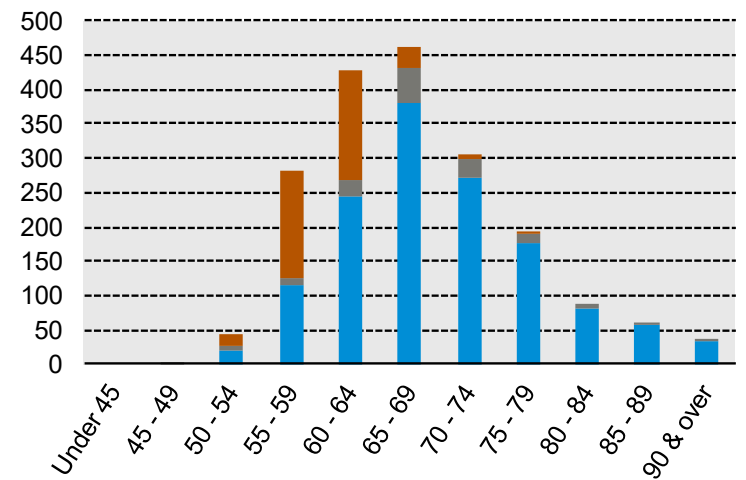


CHART 5
Distribution of Retired Members (Excl. Beneficiaries) by Type and by Age as of June 30, 2017



SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

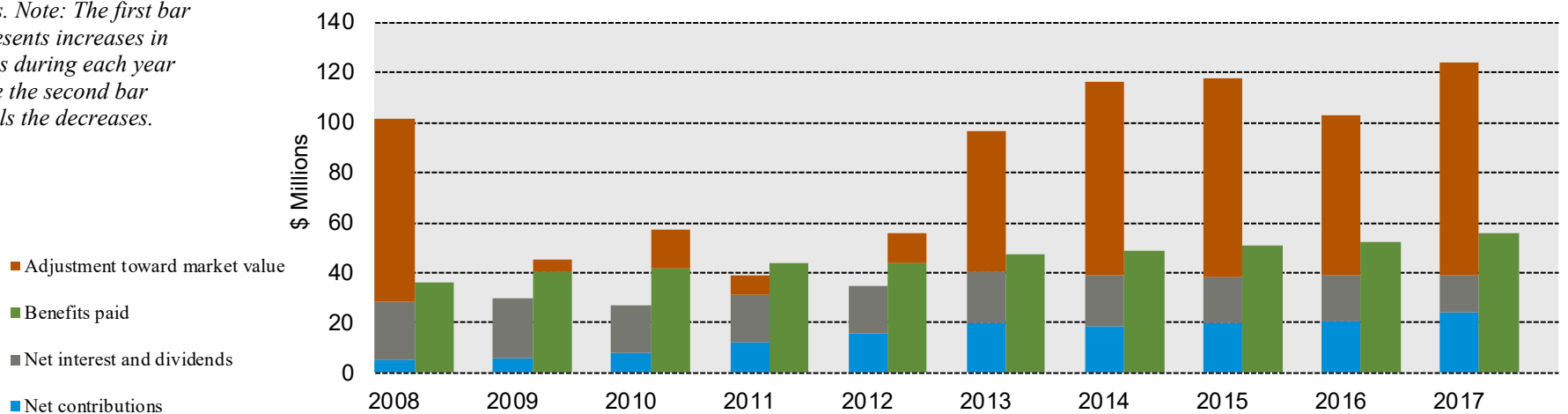
B. FINANCIAL INFORMATION

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

Retirement plan assets change as a result of the net impact of these income and expense components. The adjustment toward market value shown in the chart is the “non-cash” earnings on investments implicitly included in the actuarial value of assets. Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits D and E.

The chart depicts the components of changes in the actuarial value of assets over the last ten years. Note: The first bar represents increases in assets during each year while the second bar details the decreases.

CHART 6
Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended June 30, 2008-2017



SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board of Retirement has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable.

The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value of assets.

The determination of the Actuarial and Valuation Value of Assets are provided on the following page.

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

CHART 7

Determination of Actuarial and Valuation Value of Assets for Year Ended June 30, 2017

| Plan Year Ending June 30 | Total Actual Market Return | Expected Return | Investment Gain/(Loss) ⁽¹⁾ | Deferred Factor | Deferred Return |
|---|-------------------------------|--------------------|--|--------------------|--------------------|
| 2014 | \$172,772,730 | \$75,714,372 | \$97,058,358 | 0.2 | \$19,411,672 |
| 2015 | 33,309,388 | 86,391,535 | (53,082,147) | 0.4 | (21,232,859) |
| 2016 | 5,089,099 | 86,555,118 | (81,466,019) | 0.6 | (48,879,611) |
| 2017 | 162,373,451 | 81,745,465 | 80,627,986 | 0.8 | 64,502,389 |
| 1. Total Deferred Return | | | | | \$13,801,591 |
| 2. Net Market Value | | | | | 1,274,121,736 |
| 3. Actuarial Value of Assets (Item 2 – Item 1) | | | | | \$1,260,320,145 |
| 4. Ratio of Actuarial Value to Market Value | | | | | 98.9% |
| 5. Non-Valuation Reserves and Other Adjustments | | | | | |
| a. DROP Reserve | | | | | \$114,835,000 |
| b. PRSB Reserve | | | | | 0 |
| c. City Surplus Reserve ⁽²⁾ | | | | | 424,000 |
| d. Total | | | | | 115,259,000 |
| 6. Valuation Value of Assets (Item 3 – Item 5d) | | | | | \$1,145,061,145 |

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

⁽¹⁾ Administrative expenses are treated as benefit payments and are excluded from the calculation of actual versus expected income.

⁽²⁾ The City Surplus Reserve is treated as a liability; it represents the City's prior excess contributions due to the difference between the actual versus the estimated contributions for 2016/2017. This difference is taken into account in developing the contribution rate requirement for 2018/2019. See Steps (4) and (12) in Table 4 of Appendix B for calculations.

Deferred return as of June 30, 2017 recognized in each of the next four years:

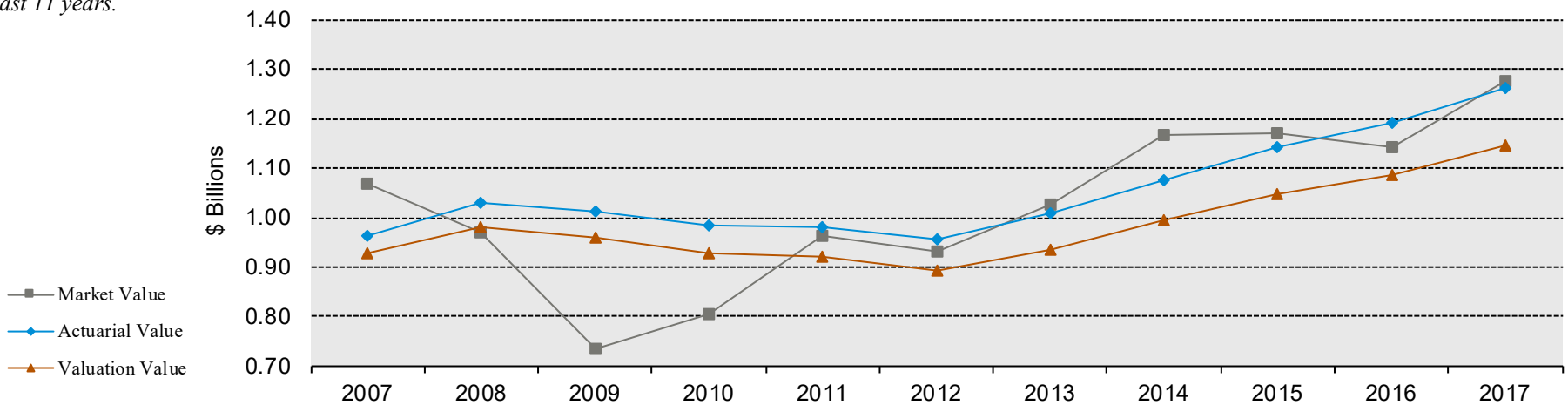
| | |
|-----------|---------------------|
| 6/30/2018 | \$8,627,637 |
| 6/30/2019 | (10,784,036) |
| 6/30/2020 | (167,607) |
| 6/30/2021 | 16,125,597 |
| | <u>\$13,801,591</u> |

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

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

This chart shows the change in market value, actuarial value and valuation value over the past 11 years.

CHART 8
Market Value, Actuarial Value and Valuation Value of Assets as of June 30, 2007–2017



SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

C. ACTUARIAL EXPERIENCE

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

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will

return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

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

The total experience gain was \$12.0 million, including a gain of \$13.6 million from investments (after smoothing) and a loss of \$1.6 million from all other sources. The net experience variation from individual sources other than investments was 0.2% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

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

CHART 9 Actuarial Experience for Year Ended June 30, 2017

| | |
|---|--------------------|
| 1. Net gain/(loss) from investments ⁽¹⁾ | \$13,638,000 |
| 2. Net gain/(loss) from other experience ⁽²⁾ | <u>(1,654,000)</u> |
| 3. Net experience gain/(loss): (1) + (2) | \$11,984,000 |

⁽¹⁾ Details in Chart 10.

⁽²⁾ See Items (6a), (6c) through (6e) in Section 3, Exhibit H.

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Retirement System’s investment policy. For valuation purposes, the assumed rate of return on the valuation value of assets was 7.25% (based on the June 30, 2016 valuation). The actual rate of return on a valuation basis for the 2016/2017 fiscal year was 8.52%.

Since the actual return for the year was more than the assumed return, the Retirement System experienced an actuarial gain during the year ended June 30, 2017 with regard to its investments.

This chart shows the gain/(loss) due to investment experience.

CHART 10
Investment Experience for Year Ended June 30, 2017 – Market Value, Actuarial Value and Valuation Value of Assets

| | Market Value | Actuarial Value | Valuation Value |
|-------------------------------------|---------------------|------------------------|------------------------|
| 1. Actual return | \$162,373,451 | \$99,924,798 | \$91,246,639 |
| 2. Average value of assets | \$1,127,523,652 | \$1,176,170,714 | \$1,070,469,794 |
| 3. Actual rate of return: (1) ÷ (2) | 14.40% | 8.50% | 8.52% |
| 4. Assumed rate of return | 7.25% | 7.25% | 7.25% |
| 5. Expected return: (2) x (4) | \$81,745,465 | \$85,272,377 | \$77,609,060 |
| 6. Actuarial gain/(loss): (1) – (5) | <u>\$80,627,986</u> | <u>\$14,652,421</u> | <u>\$13,637,579</u> |

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

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

CHART 11

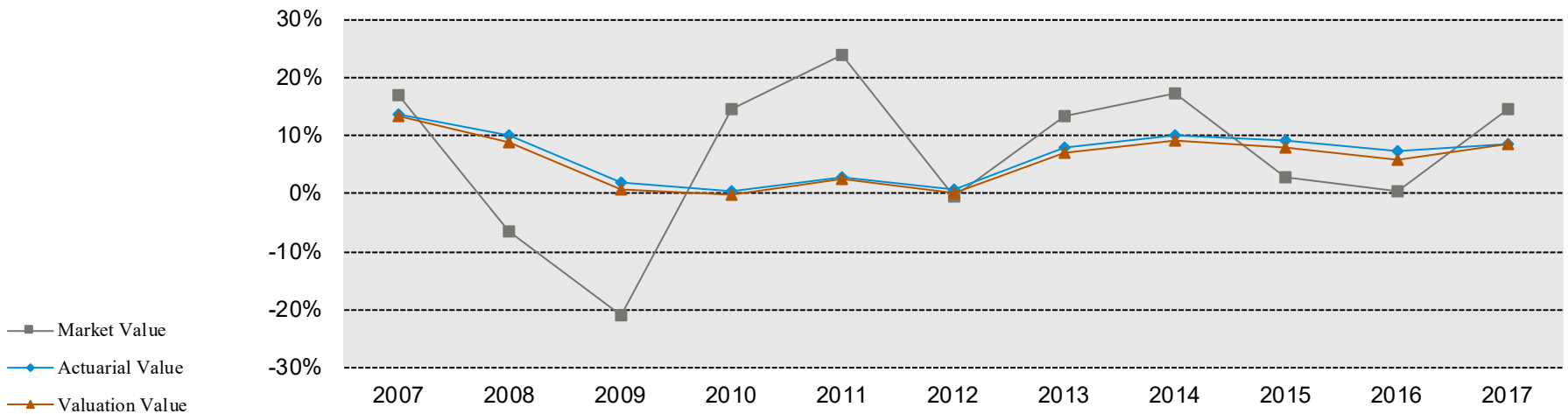
Investment Return – Market Value, Actuarial Value and Valuation Value: 2008 – 2017

| Year Ended June 30 | Market Value Investment Return | | Actuarial Value Investment Return | | Valuation Value Investment Return | |
|--|--------------------------------|----------|-----------------------------------|---------|-----------------------------------|---------|
| | Amount | Percent | Amount | Percent | Amount | Percent |
| 2008 | \$(68,481,857) | (6.50%) | \$96,073,943 | 10.13% | \$81,711,433 | 8.95% |
| 2009 | (199,694,398) | (20.97%) | 18,308,120 | 1.81% | 5,743,642 | 0.59% |
| 2010 | 104,511,346 | 14.54% | 3,460,859 | 0.35% | (2,390,978) | (0.25%) |
| 2011 | 188,925,406 | 23.88% | 26,707,381 | 2.76% | 23,379,931 | 2.56% |
| 2012 | (5,620,568) | (0.59%) | 7,136,014 | 0.74% | (635,732) | (0.07%) |
| 2013 | 121,116,558 | 13.21% | 76,037,664 | 8.05% | 61,830,441 | 7.01% |
| 2014 | 172,772,730 | 17.11% | 97,805,639 | 9.86% | 82,881,705 | 8.99% |
| 2015 | 33,309,388 | 2.89% | 97,866,370 | 9.24% | 78,386,652 | 7.98% |
| 2016 | 5,089,099 | 0.44% | 81,736,752 | 7.26% | 61,469,599 | 5.93% |
| 2017 | 162,373,451 | 14.40% | 99,924,798 | 8.50% | 91,246,639 | 8.52% |
| Five-Year Annualized Average Return | | 9.40% | 8.58% | | 7.68% | |
| Ten-Year Annualized Average Return | | 5.03% | 5.80% | | 4.96% | |

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

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

CHART 12
Market, Actuarial and Valuation Rates of Return for Years Ended June 30, 2007 - 2017



SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

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:

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

The net loss from this other experience for the year ended June 30, 2017 amounted to \$1.6 million which is 0.2% of the actuarial accrued liability. See Section 3, Exhibit H for a detailed development of the unfunded actuarial accrued liability.

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

D. EMPLOYER AND MEMBER CONTRIBUTIONS

Employer contributions consist of two components:

Normal Cost

The annual contribution rate that, if paid annually from a member's first year of membership through the year of retirement, would accumulate to the amount necessary to fully fund the member's retirement-related benefits. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution rate is expressed as a level percentage of the member's compensation.

Contribution to the Unfunded

Actuarial Accrued Liability (UAAL)

The annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution (or rate credit in the case of a prefunded actuarial accrued liability) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the Retirement System) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the annual rate of 3.50% (i.e., 3.00% inflation plus 0.50% real across-the-board salary increase). Effective with the June 30, 2013 valuation, any new UAAL established on each subsequent valuation as a result of actuarial gains or losses or plan amendments are amortized over separate 15-year declining periods (with the exception of temporary retirement incentives which are amortized over its own declining period of up to 5 years). Any new UAAL established as a result of changes in actuarial assumptions or methods at each valuation is amortized over separate 25-year declining periods. Any actuarial surplus (when the funded ratio is over 110%) will be amortized over a non-declining 25-year period.

The recommended employer contributions are provided on Chart 13.

Member Contributions

Normal – Provide for an average annuity at age 55 equal to 1/150 of FAS for each of the first 25 years of service and 1/300 for each year in excess of 25 (§3-523).

Cost of Living – One-half of the total normal cost necessary to fund cost-of-living benefits, graded in proportion to the member's normal contributions (§3-553).

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

CHART 13

Recommended Employer Contribution Rates (Dollar Amounts in Thousands)

| | <u>June 30, 2017</u> | | <u>June 30, 2016</u> | |
|--|----------------------|--|----------------------|--|
| All Categories Combined | <u>Rate</u> | <u>Estimated Annual Amount⁽¹⁾</u> | <u>Rate</u> | <u>Estimated Annual Amount⁽¹⁾</u> |
| Normal Cost | 11.66% | \$15,196 | 11.69% | \$15,235 |
| Surplus Offset | -0.71% | -925 | -0.33% | -430 |
| Contribution (Excess)/Shortfall from Prior Fiscal Year | <u>-0.37%</u> | <u>-481</u> | <u>0.03%</u> | <u>39</u> |
| Total Contribution | 10.58% | \$13,790 | 11.39% | \$14,844 |

⁽¹⁾ Amounts are in thousands and are based on projected fiscal year 2018 – 2019 annual payroll for active non-DROP and DROP members (also in thousands):

Payroll \$130,323

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

The employer contribution rates as of June 30, 2017 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

Reconciliation of Recommended Employer Contribution

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

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

CHART 14

Reconciliation of Recommended Employer Contribution from June 30, 2016 to June 30, 2017 (Dollars in Thousands)

| | Contribution Rate | Estimated Amount ⁽¹⁾ |
|---|-------------------|---------------------------------|
| 1. Recommended Contribution Rate as of June 30, 2016 (for 2017/2018 fiscal year) | 11.39% | \$14,844 |
| a. Reverse effect of 2016/2017 fiscal year contribution shortfall included in the above rate (payable 2017/2018) | -0.03% | \$39 |
| b. Reverse effect of surplus allocated to the City in the 6/30/2016 valuation for the 2017/2018 fiscal year | <u>0.33%</u> | <u>-\$430</u> |
| c. Normal Cost Rate as of June 30, 2016 | 11.69% | \$15,235 |
| 2. Effect of actuarial experience during 2016/2017 on Normal Cost Rate | | |
| a. Effect of changes in membership demographics among all active (DROP and non-DROP) members | <u>-0.03%</u> | <u>-\$39</u> |
| b. Normal Cost Rate as of June 30, 2017 | 11.66% | \$15,196 |
| 3. Credit for the difference between the actual and the estimated 2017/2018 fiscal year contribution | -0.37% | -\$481 |
| 4. Credit for surplus allocated to the City in the 6/30/2017 valuation to reduce the employer's COLA rate for the 2018/2019 fiscal year | <u>-0.71%</u> | <u>-\$925</u> |
| 5. Recommended Contribution Rate as of June 30, 2017 (for 2018/2019 fiscal year) | 10.58% | \$13,790 |

⁽¹⁾ Based on projected fiscal year 2018 – 2019 annual payroll of \$130,323 for active non-DROP and DROP members.

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

The member contribution rates as of June 30, 2017 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

Reconciliation of Recommended Member Contribution
 The chart below details the changes in the recommended member contribution rate from the prior valuation to the current year’s valuation.

CHART 15
Reconciliation of Recommended Member Contribution from June 30, 2016 to June 30, 2017 (Dollar Amounts in Thousands)

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

| | Contribution Rate | Estimated Amount ⁽¹⁾ |
|---|----------------------|---------------------------------|
| Average Contribution Rate as of June 30, 2016 | 8.24% ⁽²⁾ | \$8,729 |
| Effect of changes in membership demographics among active non-DROP members | 0.02% | \$22 |
| Effect of an increase in the surplus available to pay employee COLA contributions | <u>-0.46%</u> | <u>-\$491</u> |
| Average Contribution Rate as of June 30, 2017 | 7.80% ⁽³⁾ | \$8,260 |

⁽¹⁾ Based on projected fiscal year 2018 – 2019 annual payroll for members NOT in the DROP of \$105,937.

⁽²⁾ Includes a COLA offset from allocated surplus of 0.41%.

⁽³⁾ Includes a COLA offset from allocated surplus of 0.87%.

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

CHART 16
Breakdown of Normal Cost Rate

As requested by the Retirement System, we have provided a breakdown of the Normal Cost to fund each type of benefit.

| | <u>June 30, 2017</u> |
|--|----------------------|
| Service Retirement | 14.69% |
| Vested Deferred Retirement and Contribution Refunds | 2.33% |
| Death-In-Service | 0.18% |
| Disability | <u>0.80%</u> |
| Total Normal Cost | 18.00% |
| Less | |
| Employee Contributions ⁽¹⁾ | <u>6.34%</u> |
| Equals | |
| Net Employer Normal Cost | 11.66% |

⁽¹⁾ The offset for employee contributions is less than the aggregate employee rate because it expresses the employee contribution dollar amount as a percent of projected fiscal year 2018-2019 annual payroll for all active members (non-DROP and DROP) of \$130,323 instead of annual payroll for only active non-DROP members of \$105,937.

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

E. FUNDED RATIO

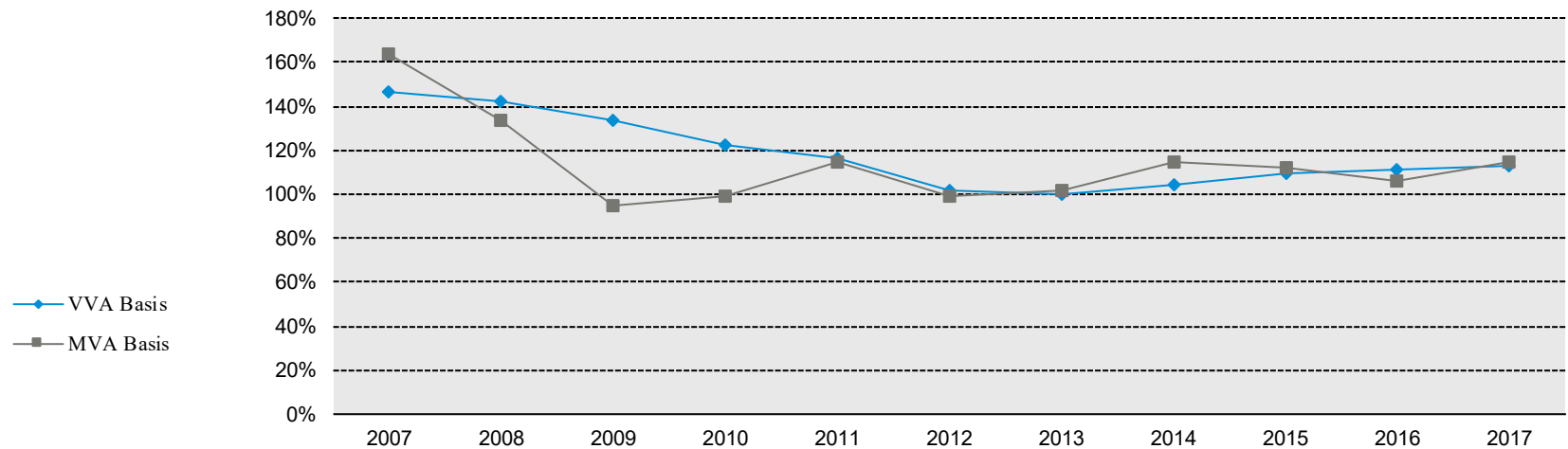
A critical piece of information regarding the Plan's financial status is the funded ratio. This ratio compares the valuation value of assets and market value of assets to the actuarial accrued liabilities of the plan. High ratios indicate a well-funded plan with assets sufficient to pay most benefits.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

The funded status measures shown in this valuation are appropriate for assessing the need for or amount of future contributions. However, they are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. As the chart below shows, the measures are different depending on whether the valuation or market value of assets is used.

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

CHART 17

Funded Ratio for Plan Years ending June 30, 2007 - 2017



SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

CHART 18

Schedule of Funding Progress (Dollar Amounts in Thousands)

| Actuarial Valuation Date | Valuation Value of Assets (a) | Actuarial Accrued Liability (AAL) (b) | Prefunded/ (Unfunded) AAL/(UAAL) (a) – (b) | Funded Ratio (%) (a) / (b) | Covered Payroll (c) | Prefunded AAL/ (UAAL) as a Percentage of Covered Payroll (%) [(a) – (b)] / (c) |
|---------------------------------|--------------------------------------|--|---|-----------------------------------|----------------------------|---|
| 6/30/2008 | \$980,961 | \$689,833 | \$291,128 | 142.2 | \$133,110 | 218.7 |
| 6/30/2009 | 958,032 | 715,250 | 242,782 | 133.9 | 139,274 | 174.3 |
| 6/30/2010 | 926,370 | 756,258 | 170,112 | 122.5 | 131,224 | 129.6 |
| 6/30/2011 | 920,217 | 791,105 | 129,112 | 116.3 | 117,577 | 109.8 |
| 6/30/2012 | 891,366 | 871,958 | 19,408 | 102.2 | 112,307 | 17.3 |
| 6/30/2013 | 933,722 | 934,947 | (1,225) | 99.9 | 111,854 | (1.1) |
| 6/30/2014 | 993,641 | 950,274 | 43,367 | 104.6 | 108,942 | 39.8 |
| 6/30/2015 | 1,049,093 | 960,364 | 88,729 | 109.2 | 110,107 | 80.6 |
| 6/30/2016 | 1,087,125 | 976,909 | 110,216 | 111.3 | 113,436 | 97.2 |
| 6/30/2017 | 1,145,061 | 1,013,684 | 131,377 | 113.0 | 125,915 | 104.3 |

SECTION 2: Valuation Results for the City of Fresno Employees Retirement System

F. VOLATILITY RATIOS

Retirement plans are subject to volatility in the level of required contributions. This volatility tends to increase as retirement plans become more mature.

The Asset Volatility Ratio (AVR), which is equal to the market value of assets divided by total payroll, provides an indication of the potential contribution volatility for any given level of investment volatility. A higher AVR indicates that the plan is subject to a greater level of contribution volatility. This is a current measure since it is based on the current level of assets.

For the Retirement System, the current AVR is about 10.1.⁽¹⁾ This means that a 1% asset gain/(loss) (relative to the assumed investment return) translates to about 10.1% of one-year’s payroll. Since the Retirement System amortizes actuarial gains and losses over a period of 15 years, there would be a 0.9% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss) if the Retirement System has an unfunded actuarial accrued liability.

The Liability Volatility Ratio (LVR), which is equal to the Actuarial Accrued Liability divided by payroll, provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. This is because, over an extended period of time, the plan’s assets should track the plan’s liabilities. For example, if a plan is 50% funded on a market value basis, the liability volatility ratio would be double the asset volatility ratio and the plan sponsor should expect contribution volatility to increase over time as the plan becomes better funded.

The LVR also indicates how volatile contributions will be in response to changes in the Actuarial Accrued Liability due to actual experience or to changes in actuarial assumptions.

For the Retirement System, the current LVR is about 8.1. This is about 20% lower than the AVR. Therefore, we would expect that contribution volatility will decrease over the long term.

CHART 19
Volatility Ratios for Years Ended June 30, 2009 – 2017

| Year Ended June 30 | Asset Volatility Ratio | Liability Volatility Ratio |
|--------------------|------------------------|----------------------------|
| 2009 | 5.3 | 5.1 |
| 2010 | 6.1 | 5.8 |
| 2011 | 8.2 | 6.7 |
| 2012 | 8.3 | 7.8 |
| 2013 | 9.2 | 8.4 |
| 2014 | 10.7 | 8.7 |
| 2015 | 10.6 | 8.7 |
| 2016 | 10.1 | 8.6 |
| 2017 | 10.1 | 8.1 |

⁽¹⁾ The AVR has been calculated without any adjustment for the non-valuation reserves.

SECTION 3: Supplemental Information for the City of Fresno Employees Retirement System

EXHIBIT A

Table of Plan Coverage

| Category | Year Ended June 30 | | Change From Prior Year |
|--|---------------------------|--------------|-------------------------------|
| | 2017 | 2016 | |
| Active members in valuation | | | |
| Non-DROP | | | |
| Number | 1,715 | 1,592 | 7.7% |
| Average age | 45.3 | 46.3 | -1.0 |
| Average service | 8.9 | 9.9 | -1.0 |
| Projected total compensation | \$102,354,521 | \$91,007,785 | 12.5% |
| Projected average compensation | \$59,682 | \$57,166 | 4.4% |
| Member account balances | \$84,475,913 | \$84,141,916 | 0.4% |
| Total active vested members | 977 | 1,057 | -7.6% |
| DROP | | | |
| Number | 370 | 366 | 1.1% |
| Average age | 60.7 | 60.6 | 0.1 |
| Average service | 22.2 | 22.5 | -0.3 |
| Projected total compensation | \$23,560,592 | \$22,428,051 | 5.0% |
| Projected average compensation | \$63,677 | \$61,279 | 3.9% |
| Vested terminated members | | | |
| Number | 304 | 282 | 7.8% |
| Average age | 45.1 | 45.4 | -0.3 |
| Retired members | | | |
| Number in pay status | 1,376 | 1,327 | 3.7% |
| Average age | 70.2 | 69.9 | 0.3 |
| Average monthly benefit ⁽¹⁾ | \$2,212 | \$2,167 | 2.1% |
| Disabled members | | | |
| Number in pay status | 154 | 151 | 2.0% |
| Average age | 68.1 | 68.3 | -0.2 |
| Average monthly benefit ⁽¹⁾ | \$1,920 | \$1,905 | 0.8% |
| Beneficiaries | | | |
| Number in pay status | 389 | 380 | 2.4% |
| Average age | 73.5 | 73.6 | -0.1 |
| Average monthly benefit ⁽¹⁾ | \$1,266 | \$1,264 | 0.2% |

⁽¹⁾ Excludes supplemental benefits (if any) paid from PRSB and benefits derived from DROP account balances.

SECTION 3: Supplemental Information for the City of Fresno Employees Retirement System

EXHIBIT B

Members in Active Service and Projected Average Compensation

By Age, Years of Service as of June 30, 2017 – Non-DROP Active Members Only

| Age | Total | Years of Service | | | | | | | | | |
|--------------|----------|------------------|----------|----------|----------|----------|----------|----------|----------|-----------|----|
| | | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40 & over | |
| Under 25 | 27 | 27 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | \$42,909 | \$42,909 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 25 - 29 | 130 | 126 | 3 | 1 | -- | -- | -- | -- | -- | -- | -- |
| | 47,782 | 47,617 | \$53,475 | \$51,543 | -- | -- | -- | -- | -- | -- | -- |
| 30 - 34 | 205 | 166 | 23 | 16 | -- | -- | -- | -- | -- | -- | -- |
| | 54,880 | 52,330 | 69,813 | 59,869 | -- | -- | -- | -- | -- | -- | -- |
| 35 - 39 | 237 | 129 | 39 | 56 | 13 | -- | -- | -- | -- | -- | -- |
| | 59,952 | 57,233 | 63,185 | 62,686 | \$65,459 | -- | -- | -- | -- | -- | -- |
| 40 - 44 | 222 | 82 | 29 | 62 | 39 | 10 | -- | -- | -- | -- | -- |
| | 58,697 | 50,707 | 68,152 | 61,853 | 62,355 | \$62,958 | -- | -- | -- | -- | -- |
| 45 - 49 | 265 | 74 | 28 | 72 | 65 | 22 | 3 | 1 | -- | -- | -- |
| | 60,358 | 56,260 | 56,512 | 61,522 | 63,614 | 65,328 | \$68,908 | \$40,964 | -- | -- | -- |
| 50 - 54 | 279 | 52 | 32 | 68 | 64 | 33 | 26 | 4 | -- | -- | -- |
| | 65,568 | 64,495 | 57,578 | 69,891 | 60,797 | 73,773 | 66,375 | 73,342 | -- | -- | -- |
| 55 - 59 | 201 | 52 | 30 | 60 | 35 | 10 | 11 | 2 | 1 | -- | -- |
| | 62,647 | 66,148 | 59,869 | 64,255 | 56,644 | 66,053 | 55,361 | 98,438 | \$52,118 | -- | -- |
| 60 - 64 | 117 | 29 | 15 | 31 | 29 | 5 | 2 | 4 | 2 | -- | -- |
| | 64,797 | 68,123 | 63,139 | 66,458 | 61,785 | 55,394 | 56,880 | 62,235 | 83,498 | -- | -- |
| 65 - 69 | 27 | 1 | 6 | 7 | 8 | 3 | 1 | 1 | -- | -- | -- |
| | 63,945 | 119,386 | 63,126 | 57,766 | 62,692 | 57,150 | 58,199 | 92,833 | -- | -- | -- |
| 70 & over | 5 | -- | 1 | 1 | 1 | 2 | -- | -- | -- | -- | -- |
| | 61,245 | -- | 74,057 | 98,401 | 53,687 | 40,040 | -- | -- | -- | -- | -- |
| Total | 1,715 | 738 | 206 | 374 | 254 | 85 | 43 | 12 | 3 | -- | -- |
| | \$59,682 | \$54,794 | \$62,270 | \$64,051 | \$61,568 | \$66,945 | \$63,103 | \$72,748 | \$73,038 | -- | -- |

Note: Excludes 370 active members in DROP with projected average compensation of \$63,677.

SECTION 3: Supplemental Information for the City of Fresno Employees Retirement System

EXHIBIT C

Reconciliation of Member Data – June 30, 2016 to June 30, 2017

| | Non-DROP Active Members | DROP Members | Vested Terminated Members | Pensioners | Disableds | Beneficiaries | Total |
|-----------------------------------|--|-------------------------|--|-------------------|------------------|----------------------|--------------|
| Number as of June 30, 2016 | 1,592 ⁽¹⁾ | 366 ⁽¹⁾ | 282 | 1,327 | 151 | 380 | 4,098 |
| New members | 297 | 0 | 0 | 0 | 0 | 0 | 297 |
| Terminations – with vested rights | -43 | 0 | 43 | 0 | 0 | 0 | 0 |
| Contributions Refunds | -42 | 0 | -11 | 0 | 0 | 0 | -53 |
| DROP Entry | -56 | 56 | 0 | 0 | 0 | 0 | 0 |
| Retirements | -29 | -53 | -15 | 97 | 0 | 0 | 0 |
| New disabilities | -4 | 0 | 0 | -7 | 11 | 0 | 0 |
| Return to work | 3 | 0 | -3 | 0 | 0 | 0 | 0 |
| Died with or without beneficiary | -3 | 0 | 0 | -40 | -8 | 9 ⁽³⁾ | -42 |
| Data adjustments | 0 | 1 | 8 ⁽⁴⁾ | -1 | 0 | 0 | 8 |
| Number as of June 30, 2017 | 1,715 ⁽²⁾ | 370 ⁽²⁾ | 304 | 1,376 | 154 | 389 | 4,308 |

⁽¹⁾ There was a total of 1,958 actives (including non-DROP and DROP members) at the beginning of the fiscal year.

⁽²⁾ There was a total of 2,085 actives (including non-DROP and DROP members) at the end of the fiscal year.

⁽³⁾ This is the net increase in the number of beneficiaries after subtracting the number of beneficiaries who died during the year.

⁽⁴⁾ These are members who are included in the valuation for the first time this year, all of whom started and terminated employment during 2016/2017.

SECTION 3: Supplemental Information for the City of Fresno Employees Retirement System

EXHIBIT D

Summary Statement of Income and Expenses on an Actuarial Value Basis

| | Year Ended June 30, 2017 | Year Ended June 30, 2016 |
|--|--------------------------|--------------------------|
| Contribution income: | | |
| Employer contributions | \$15,205,360 | \$13,060,088 |
| Employee contributions | 10,180,589 | 9,098,286 |
| Less administrative expenses | <u>-1,386,778</u> | <u>-1,346,189</u> |
| Net contribution income | \$23,999,171 | \$20,812,185 |
| Investment income: | | |
| Interest, dividends and other income | \$21,952,633 | \$23,665,987 |
| Adjustment toward market value | 85,122,423 | 63,736,331 |
| Less investment fees | <u>-7,150,258</u> | <u>-5,665,566</u> |
| Net investment income | <u>99,924,798</u> | <u>81,736,752</u> |
| Total income available for benefits | \$123,923,969 | \$102,548,937 |
| Less benefit payments: | | |
| Benefit payments | -\$54,350,851 | -\$51,198,523 |
| Post retirement supplemental benefits | 0 | 0 |
| Refunds of contributions | <u>-1,199,054</u> | <u>-1,330,298</u> |
| Net benefit payments | -\$55,549,905 | -\$52,528,821 |
| Change in reserve for future benefits | \$68,374,064 | \$50,020,116 |

Note: Results may not total properly due to rounding.

SECTION 3: Supplemental Information for the City of Fresno Employees Retirement System

EXHIBIT E

Summary Statement of Assets

| | Year Ended June 30, 2017 | Year Ended June 30, 2016 |
|--|-------------------------------|-------------------------------|
| Cash equivalents | \$1,920,674 | \$719,521 |
| Accounts receivable: | | |
| Receivables for investments sold | \$1,629,505 | \$16,441,242 |
| Interest and dividends | 3,700,596 | 3,503,934 |
| Other receivables | <u>1,204,764</u> | <u>18,109,594</u> |
| Total accounts receivable | 6,534,865 | 38,054,770 |
| Investments: | | |
| Domestic and international equity | \$712,146,124 | \$616,775,092 |
| Government and corporate bonds | 280,959,629 | 295,642,858 |
| Real estate | 170,247,234 | 168,067,886 |
| Emerging market equity | 43,228,458 | 33,892,404 |
| Collateral held for securities lent | 106,197,004 | 96,620,156 |
| Other investments | <u>69,954,278</u> | <u>58,392,325</u> |
| Total investments at market value | <u>1,382,732,728</u> | <u>1,269,390,721</u> |
| Total assets | \$1,391,188,267 | \$1,308,165,012 |
| Less accounts payable: | | |
| Collateral held for securities lent | -\$106,197,004 | -\$96,620,156 |
| Payable for investments and foreign currency purchased | -9,044,856 | -65,065,416 |
| Other liabilities | <u>-1,824,671</u> | <u>-3,180,421</u> |
| Total accounts payable | -\$117,066,531 | -\$164,865,993 |
| Net assets at market value | <u>\$1,274,121,736</u> | <u>\$1,143,299,019</u> |
| Net assets at actuarial value | <u>\$1,260,320,145</u> | <u>\$1,191,946,081</u> |
| Net assets at valuation value | <u>\$1,145,061,145</u> | <u>\$1,087,125,081</u> |

Note: Results may not total properly due to rounding.

SECTION 3: Supplemental Information for the City of Fresno Employees Retirement System

EXHIBIT F

Actuarial Balance Sheet

An overview of the System’s funding is given by an Actuarial Balance Sheet. In this approach, we first determine the amount and timing of all future payments that will be made by the System for current participants. We then discount these payments at the valuation interest rate to the date of the valuation, thereby determining their present value. We refer to this present value as the “liability” of the Plan.

Second, we determine how this liability will be met. These actuarial “assets” include the net amount of assets already accumulated by the System, 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.

Actuarial Balance Sheet (Dollar Amounts in Thousands)

| Assets | <u>Total</u> |
|--|-----------------|
| 1. Total valuation assets | \$1,145,061 |
| 2. Present value of future member normal cost | \$63,513 |
| 3. Present value of future employer normal cost | 108,548 |
| 4. Unfunded/(prefunded) actuarial accrued liability | <u>-131,377</u> |
| 5. Total current and future assets | \$1,185,745 |
| Liabilities | |
| 6. Present value of benefits already granted, excludes current active DROP | \$561,960 |
| 7. Present value of benefits for current active DROP | 164,328 |
| 8. Present value of benefits to be granted | <u>459,457</u> |
| 9. Total liabilities | \$1,185,745 |

SECTION 3: Supplemental Information for the City of Fresno Employees Retirement System

EXHIBIT G

Summary of Reported Asset Information as of June 30, 2017

| | Reserves \$(000) |
|---|-------------------------|
| Employer Advance/Retired Reserves | \$1,058,198 |
| Active Member Reserves | 100,665 |
| DROP Reserve ⁽¹⁾ | 114,835 |
| Reserve for PRSB ⁽¹⁾ | 0 |
| Reserve for City Surplus ^{(1),(2)} | 424 |
| Net Assets Held in Trust for Benefits | <u>\$1,274,122</u> |

Note: Results may not add due to rounding

⁽¹⁾ *Non-valuation reserve*

⁽²⁾ *The City Surplus Reserve is treated as a liability; it represents the City's prior excess contributions due to the difference between the actual versus the estimated contributions for 2016/2017. This difference is taken into account in developing the contribution rate requirement for 2018/2019.*

SECTION 3: Supplemental Information for the City of Fresno Employees Retirement System

EXHIBIT H

Development of Unfunded / (Prefunded) Actuarial Accrued Liability as of June 30, 2017

| | (Dollar amounts in Thousands) |
|---|--------------------------------------|
| 1 Unfunded/(prefunded) actuarial accrued liability at beginning of year | -\$110,216 |
| 2 Gross Normal Cost at middle of year | 21,486 |
| 3 Expected employer and member contributions | -22,631 |
| 4 Interest (whole year on (1) plus half year on (2) + (3)) | <u>-8,032</u> |
| 5 Expected unfunded/(prefunded) actuarial accrued liability at end of year | -119,393 |
| 6 Actuarial (gain)/loss due to all changes: | |
| <u>Experience (gain)/loss</u> | |
| a. Difference between actual and expected contributions | -\$1,203 |
| b. (Gain)/loss from investment | -13,638 |
| c. Higher than expected salary increases | 5,302 |
| d. Lower than expected COLA benefit increases for continuing retirees and DROP | -6,836 |
| e. Other experience (gain)/loss | <u>4,391</u> |
| f. Subtotal | -11,984 |
| 7 Actual unfunded/(prefunded) actuarial accrued liability at end of year (5) + (6f) | -\$131,377 |

SECTION 3: Supplemental Information for the City of Fresno Employees Retirement System

EXHIBIT I

Section 415 Limitations

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

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

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit indexed for inflation. That limit is \$215,000 for 2017 and \$220,000 for 2018. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must generally be adjusted based on each participant's circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions.

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

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

Contributions rates determined in this valuation have not been reduced for the Section 415 limitations. Actual limitations will result in gains as they occur.

SECTION 3: Supplemental Information for the City of Fresno Employees Retirement System

EXHIBIT J

Definitions of Pension Terms

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

Assumptions or Actuarial Assumptions:

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

- (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future net, in this case, of investment and administrative expenses.
- (b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates;
- (c) Retirement rates — the rate or probability of retirement at a given age; and
- (d) Turnover rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Normal Cost:

The amount of contributions required to fund the level cost allocated to the current year of service.

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:

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

Unfunded (Prefunded) Actuarial Accrued Liability:

The extent to which the actuarial accrued liability of the Plan exceeds (or is exceeded by) the assets of the Plan. There are many approaches to paying off the unfunded or prefunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

SECTION 3: Supplemental Information for the City of Fresno Employees Retirement System

**Amortization of the Unfunded
(Prefunded) Actuarial
Accrued Liability:**

Payments made over a period of years equal in value to the Plan's unfunded or prefunded actuarial accrued liability.

Investment Return:

The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the actual market rate of return to avoid significant swings in the value of assets from one year to the next.

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

EXHIBIT I

Summary of Actuarial Valuation Results

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

| | | |
|---|-----|-------|
| 1. Retired members as of the valuation date (including 389 beneficiaries in pay status) | | 1,919 |
| 2. Members inactive during year ended June 30, 2017 with vested rights | | 304 |
| 3. Members active during the year ended June 30, 2017 | | 2,085 |
| DROP members | 370 | |
| Fully vested non-DROP members | 977 | |
| Not vested | 738 | |

The actuarial factors as of the valuation date are as follows (amounts in 000s):

| | | |
|---|----------------|-----------------|
| Assets | | |
| 1. Valuation value of assets (\$1,274,122 at market value ⁽¹⁾ as reported by the Retirement System and \$1,260,320 at actuarial value ⁽¹⁾) | | \$1,145,061 |
| 2. Present value of future normal costs | | |
| Employee | \$63,513 | |
| Employer | <u>108,548</u> | |
| Total | | \$172,061 |
| 3. Prefunded actuarial accrued liability | | <u>-131,377</u> |
| 4. Present value of current and future assets | | \$1,185,745 |
| Liabilities | | |
| 5. Present value of future benefits | | |
| Retired members and beneficiaries | \$561,960 | |
| Inactive members with vested rights | 50,298 | |
| DROP members | 164,328 | |
| Active non-DROP members | <u>409,159</u> | |
| Total | | \$1,185,745 |

⁽¹⁾ Includes non-valuation reserves.

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

EXHIBIT I (continued)

Summary of Actuarial Valuation Results

| | Dollar Amount | % of Payroll⁽¹⁾ |
|--|----------------------|-----------------------------------|
| The determination of the recommended contribution is as follows (amounts in 000s): | | |
| 1. Total normal cost | \$23,456 | 18.00% |
| 2. Expected employee contributions | <u>-8,260</u> | <u>-6.34%</u> |
| 3. Employer normal cost: (1) + (2) | \$15,196 | 11.66% |
| 4. Surplus offset | -925 | -0.71% |
| 5. Contribution (excess)/shortfall from prior year | <u>-481</u> | <u>-0.37%</u> |
| 6. Total recommended employer contributions: (3) + (4) + (5) | \$13,790 | 10.58% |
| 7. Projected payroll ⁽¹⁾ | \$130,323 | |

⁽¹⁾ Based on projected fiscal year 2018 – 2019 annual payroll for active non-DROP and DROP members shown in (7).

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

EXHIBIT II
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 July 1, 2012 through June 30, 2015 Actuarial Experience Study and June 30, 2016 Economic Actuarial Assumptions Report both dated May 17, 2016.

Economic Assumptions

Net Investment Return: 7.25%, net of administration and investment expenses.

Employee Contribution Crediting Rate: 7.25%, assumed in the valuation.

Consumer Price Index: Increase of 3.00% per year, retiree COLA increases due to CPI are limited to maximum at 3.00% per year.

Salary Increases:

| <u>Annual Rate of Compensation Increase</u> | |
|---|------------------------|
| Inflation: 3.00% per year; plus 0.50% across-the-board salary increase; plus the following Merit and Promotion increases based on completed years of service. | |
| <u>Years of Service</u> | <u>Annual Increase</u> |
| 0 | 8.00% |
| 1 | 5.75% |
| 2 | 4.50% |
| 3 | 3.75% |
| 4 | 3.00% |
| 5 | 1.85% |
| 6 | 1.05% |
| 7 | 0.70% |
| 8 | 0.70% |
| 9+ | 0.25% |

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

Demographic Assumptions

Post – Retirement Mortality Rates:

Healthy: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015, set forward one year.

Disabled: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015, set forward four years.

Pre – Retirement Mortality Rates: Headcount-Weighted RP-2014 Employee Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015, times 85%. All pre-retirement deaths are assumed to be non-service connected deaths.

The tables shown above contain about a 20% margin, based on actual to expected deaths, to reflect future mortality improvement, based on a review of mortality experience as of the measurement date.

*Employee Contribution Rates
and Optional Benefits:*

For healthy members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015, set forward one year, weighted 65% male and 35% female.

For beneficiaries: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015, set forward one year, weighted 35% male and 65% female.

For disabled members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015, set forward four years, weighted 65% male and 35% female.

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

Termination Rates Before Retirement:

| Rate (%) | | |
|------------------|-------------|---------------|
| Mortality | | |
| Age | Male | Female |
| 25 | 0.04 | 0.01 |
| 30 | 0.04 | 0.02 |
| 35 | 0.04 | 0.03 |
| 40 | 0.05 | 0.03 |
| 45 | 0.07 | 0.05 |
| 50 | 0.13 | 0.09 |
| 55 | 0.22 | 0.15 |
| 60 | 0.40 | 0.21 |
| 65 | 0.68 | 0.30 |

All pre-retirement deaths are assumed to be non-service connected.

| Rate (%) | |
|-------------------|--------------------|
| Disability | |
| Age | All Members |
| 20 | 0.00 |
| 25 | 0.00 |
| 30 | 0.01 |
| 35 | 0.03 |
| 40 | 0.14 |
| 45 | 0.20 |
| 50 | 0.26 |
| 55 | 0.48 |
| 60 | 0.90 |
| 65 | 1.79 |

All disabilities are assumed to be non-service connected.

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

Termination Rates Before Retirement (Continued):

Total Termination (Less than 5 years of service)

| <u>Service</u> | <u>Rate (%)</u> |
|----------------|-----------------|
| 0 – 1 | 12.00 |
| 1 – 2 | 10.00 |
| 2 – 3 | 5.00 |
| 3 – 4 | 5.00 |
| 4 – 5 | 5.00 |

85% of members are assumed to elect a withdrawal of contributions.
No termination is assumed after a member is assumed to retire.

Total Termination (5 or more years of service)

| <u>Age</u> | <u>Rate (%)</u> |
|------------|-----------------|
| 20 | 7.50 |
| 25 | 7.20 |
| 30 | 7.00 |
| 35 | 6.40 |
| 40 | 4.80 |
| 45 | 3.70 |
| 50 | 0.00 |

40% of members are assumed to elect a withdrawal of contributions.
The remaining members are assumed to elect a deferred vested benefit.
No vested termination is assumed after a member is assumed to retire.

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

Retirement Rates:

| <u>Age</u> | <u>Rate (%)</u> |
|------------|-----------------|
| 50 | 2.00 |
| 51 | 2.00 |
| 52 | 3.00 |
| 53 | 3.00 |
| 54 | 3.00 |
| 55 | 6.00 |
| 56 | 3.00 |
| 57 | 4.00 |
| 58 | 5.00 |
| 59 | 6.00 |
| 60 | 7.00 |
| 61 | 10.00 |
| 62 | 10.00 |
| 63 | 10.00 |
| 64 | 12.00 |
| 65 | 15.00 |
| 66 | 20.00 |
| 67 | 22.00 |
| 68 | 30.00 |
| 69 | 30.00 |
| 70 | 100.00 |

| <u>DROP Assumptions:</u> | <u>Male and Female (after attaining age 55)</u> |
|--------------------------|---|
| First Year Eligible | 30% |
| Second Year Eligible | 15% |
| Third Year Eligible | 10% |
| Fourth Year Eligible | 10% |
| Fifth Year Eligible | 15% |
| Sixth Year Eligible | 10% |
| Thereafter | 0% |

Members are assumed to remain in DROP for 6 years.

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

**Retirement Age and Benefit for
Deferred Vested Members**

For current deferred vested members, the retirement assumption is age 55.
We assume that no future deferred vested members will continue to work for a reciprocal employer.

Future Benefit Accruals:

1.0 year of service per year.

Unknown Data for Members:

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

**Inclusion of Deferred Vested
Members:**

All deferred vested members are included in the valuation.

Percent Married:

80% of male members; 55% of female members.

Age of Spouse:

Male members are three years older than their spouses.
Female members are two years younger than their spouses.

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

Actuarial Methods

| | |
|--|--|
| Actuarial Cost Method: | Entry Age Actuarial Cost Method. Entry age is the age at the member's hire date. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percentage of compensation. |
| Actuarial Value of Assets: | The Actuarial Value of Assets is determined by phasing in any difference between actual market return and expected return on market value over 5 years. |
| Valuation Value of Assets: | The Actuarial Value of Assets reduced by the value of the non-valuation reserves. |
| Change in Actuarial Assumptions or Methods: | There have been no changes in actuarial assumptions or methods since the previous actuarial valuation. |

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

EXHIBIT III
Summary of Plan Provisions

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

| | |
|--|---|
| Membership Eligibility: | Permanent full-time employees except sworn Fire and Police personnel. |
| Final Compensation for Benefit Determination: | Highest average consecutive thirty-six months of compensation earnable calculated using the rate of pay in effect at the time of the retirement (§3-501). |
| Service: | Years of service (Yrs). |
| Service Retirement Eligibility: | Age 50 with 5 years of service (§3-540). |

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

Service Retirement (Continued):

Benefit Formula Per Year of Service

2% times each of first 25 years of service plus 1% for any years of service in excess of 25, multiplied by the following factor at retirement age (§3-541):

| <u>Age</u> | <u>Factor</u> | <u>Age</u> | <u>Factor</u> |
|------------|---------------|------------|--|
| 55 | 1.00 | 61 | 1.14 |
| 56 | 1.02 | 62 | 1.18 |
| 57 | 1.04 | 63 | 1.22 |
| 58 | 1.06 | 64 | 1.26 |
| 59 | 1.08 | 65 | 1.30 |
| 60 | 1.10 | 65+ | Add 0.01 each quarter year after age 65 |

Effective January 28, 2008, members may retire at age 50 with a reduced early retirement benefit. The reduced early retirement benefit is calculated to be actuarially equivalent to the service retirement benefit payable at age 55.

**Deferred Retirement
Option Program (DROP):**

Eligibility

Same as Service Retirement.

Benefits under DROP

DROP benefits (calculated using age, service, and salary at the commencement date of participation in DROP) will be credited to a DROP account with interest at rates determined by the Board. Members will no longer be required to make member contributions. After around February 2011, active members who signed up for the DROP are required to continue their employee contributions; however, those contributions are deposited into the members' DROP accounts and therefore not available to fund the value of the retirement benefit earned up to the date of the DROP. Therefore, those contributions that will be deposited into the DROP accounts are disregarded in this valuation. Members may participate in DROP for up to ten years (§3-566).

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

Ordinary or Service Connected Disability:

| | |
|------------------------|---|
| <i>Eligibility</i> | Ten years of service (§3-546). |
| <i>Benefit Formula</i> | Greater of 1.8% * FAS * Yrs, 33.33% of FAS, or Service Retirement benefit (§3-547). |

Pre-Retirement Death:

All Members

| | |
|--------------------|---|
| <i>Eligibility</i> | None. |
| <i>Benefit</i> | Refund of employee contributions with interest, plus one month of final compensation for each year of service, to a maximum of six month's compensation (§3-537). |

Vested Members

| | |
|------------------------|---|
| <i>A1. Eligibility</i> | At least five years of service but ineligible for Service Retirement at death (§3-552). |
| <i>B1. Benefit</i> | 50% of Service Retirement Benefit as if the member were age 55 based on years of service at death (§3-552). |

OR

| | |
|------------------------|--|
| <i>A2. Eligibility</i> | Eligible for Service Retirement. |
| <i>B2. Benefit</i> | 50% of Service Retirement Benefit based on benefit due on member's date of death (§3-552). |

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

Death After Retirement:

All Members

Service or

Disability Retirement

50% of member's unmodified allowance continued to eligible spouse/domestic partner (§3-550).

Withdrawal Benefits:

Less than Five Years of Service

Refund of accumulated employee contributions with interest.

Five or More Years of Service

If contributions left on deposit, entitled to earned benefits commencing at any time after eligible to retire (§3-535).

Post-retirement

Cost-of-Living Benefits:

Future changes based on Consumer Price Index to a maximum of 5% per year (§3-553).

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

| | |
|--|---|
| Member Contributions: | <p>Please refer to Appendix A for specific rates.</p> <p><i>Normal</i> – Provide for an average annuity at age 55 equal to 1/150 of FAS for each of the first 25 years of service and 1/300 for each year in excess of 25 (§3-523).</p> <p><i>Cost of Living</i> – One-half of the total normal cost necessary to fund cost-of-living benefits, graded in proportion to the member’s normal contributions (§3-553).</p> |
| City Contributions: | <p>Effective with the June 30, 2013 valuation, any new UAAL established on each subsequent valuation as a result of actuarial gains or losses or plan amendments are amortized over separate 15-year declining periods (with the exception of temporary retirement incentives which are amortized over its own declining period of up to 5 years). Any new UAAL established as a result of changes in actuarial assumptions or methods at each valuation is amortized over separate 25-year declining periods. When there is any “actuarial surplus” (the funded ratio is over 110%), the portion of surplus in excess of 110% will be amortized over a non-declining 25-year period.</p> |
| Post Retirement Supplemental Benefits (PRSB): | <p>PRSB may be paid to retired DROP participants, eligible retirees, and beneficiaries (§3-567). This benefit has been excluded from this valuation.</p> |

NOTE: *The summary of major plan provisions is designed to outline principal plan benefits as interpreted for purposes of the actuarial valuation. If the Retirement System should find the plan summary not in accordance with the actual provisions, the Retirement System should alert the actuary so they can both be sure the proper provisions are valued.*

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

**Appendix A
Member Contribution Rates**

Breakdown of member rate between basic and COLA calculated in the June 30, 2017 and June 30, 2016 valuation:

| | June 30, 2017 Actuarial Valuation | | | | | | | | June 30, 2016 Actuarial Valuation | | | | | | | |
|-------------|-----------------------------------|-------------------------------------|-----------------------------|-------------------------------------|----------------|-------------------------------------|-------|-------------------------------------|-----------------------------------|-------------------------------------|-----------------------------|-------------------------------------|----------------|-------------------------------------|-------|-------------------------------------|
| | BASIC | | COLA, Before Surplus Offset | | Surplus Offset | | TOTAL | | BASIC | | COLA, Before Surplus Offset | | Surplus Offset | | TOTAL | |
| | Rate | Estimated Annual Amt ⁽¹⁾ | Rate | Estimated Annual Amt ⁽¹⁾ | Rate | Estimated Annual Amt ⁽¹⁾ | Rate | Estimated Annual Amt ⁽¹⁾ | Rate | Estimated Annual Amt ⁽¹⁾ | Rate | Estimated Annual Amt ⁽¹⁾ | Rate | Estimated Annual Amt ⁽¹⁾ | Rate | Estimated Annual Amt ⁽¹⁾ |
| All Members | 5.84% | \$6,187 | 2.83% | \$2,998 | -0.87% | -\$925 | 7.80% | \$8,260 | 5.83% | \$6,176 | 2.82% | \$2,987 | -0.41% | -\$434 | 8.24% | \$8,729 |

⁽¹⁾ Amounts are in thousands and are based on the following projected fiscal year 2018 – 2019 annual payroll for members NOT in the DROP (also in thousands):

Payroll (excluding DROP members) \$105,937

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

Appendix A

Member Contribution Rates (Continued)

**Members' Contribution Rates based on the June 30, 2017
Actuarial Valuation as a percentage of payroll**

| <u>Entry Age</u> | <u>Basic</u> | <u>COLA</u> | <u>Surplus Offset</u> | <u>Total</u> |
|------------------|--------------|-------------|-----------------------|--------------|
| 16 | 3.19% | 1.55% | -0.48% | 4.26% |
| 17 | 3.29% | 1.60% | -0.49% | 4.40% |
| 18 | 3.40% | 1.65% | -0.51% | 4.54% |
| 19 | 3.51% | 1.70% | -0.52% | 4.69% |
| 20 | 3.62% | 1.76% | -0.54% | 4.84% |
| 21 | 3.74% | 1.81% | -0.56% | 4.99% |
| 22 | 3.86% | 1.87% | -0.57% | 5.16% |
| 23 | 4.00% | 1.94% | -0.60% | 5.34% |
| 24 | 4.13% | 2.01% | -0.62% | 5.52% |
| 25 | 4.28% | 2.08% | -0.64% | 5.72% |
| 26 | 4.44% | 2.15% | -0.66% | 5.93% |
| 27 | 4.60% | 2.23% | -0.69% | 6.14% |
| 28 | 4.77% | 2.32% | -0.71% | 6.38% |
| 29 | 4.96% | 2.41% | -0.74% | 6.63% |
| 30 | 5.16% | 2.50% | -0.77% | 6.89% |
| 31 | 5.26% | 2.55% | -0.78% | 7.03% |
| 32 | 5.37% | 2.60% | -0.80% | 7.17% |
| 33 | 5.48% | 2.66% | -0.82% | 7.32% |
| 34 | 5.59% | 2.71% | -0.83% | 7.47% |
| 35 | 5.70% | 2.76% | -0.85% | 7.61% |
| 36 | 5.82% | 2.82% | -0.87% | 7.77% |
| 37 | 5.94% | 2.88% | -0.89% | 7.93% |
| 38 | 6.06% | 2.94% | -0.90% | 8.10% |
| 39 | 6.18% | 3.00% | -0.92% | 8.26% |
| 40 | 6.32% | 3.06% | -0.94% | 8.44% |

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

**Appendix A
Member Contribution Rates (Continued)**

| Entry Age | Basic | COLA | Surplus Offset | Total |
|-----------|-------|-------|----------------|--------|
| 41 | 6.45% | 3.13% | -0.96% | 8.62% |
| 42 | 6.59% | 3.20% | -0.98% | 8.81% |
| 43 | 6.74% | 3.27% | -1.01% | 9.00% |
| 44 | 6.90% | 3.35% | -1.03% | 9.22% |
| 45 | 7.07% | 3.43% | -1.05% | 9.45% |
| 46 | 7.22% | 3.50% | -1.08% | 9.64% |
| 47 | 7.38% | 3.58% | -1.10% | 9.86% |
| 48 | 7.54% | 3.66% | -1.13% | 10.07% |
| 49 | 7.67% | 3.72% | -1.14% | 10.25% |
| 50 | 7.74% | 3.75% | -1.15% | 10.34% |
| 51 | 7.78% | 3.77% | -1.16% | 10.39% |
| 52 | 7.79% | 3.78% | -1.16% | 10.41% |
| 53 | 7.74% | 3.75% | -1.15% | 10.34% |
| 54 | 7.59% | 3.68% | -1.13% | 10.14% |

Interest: 7.25% per annum
Mortality: Headcount-Weighted RP-2014 Healthy Annuitant Table, projected 20 years with scale MP-2015, set forward one year, weighted 65% Male and 35% Female
Salary Increase: See Exhibit II in Section 4
COLA: 3.00% per annum
Non-Refundability Factor: 94.19%

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

**Appendix B
Allocation of Actuarial Surplus**

| | June 30 | |
|---|--------------------|------------------|
| | 2017 | 2016 |
| Surplus as of Date of Valuation (Table 1) | \$131,377,145 | \$110,216,081 |
| Actuarial Surplus (Table 1) | 30,008,745 | 12,525,181 |
| Distributable Actuarial Surplus as of date of valuation (Table 2) | \$1,849,370 | 771,898 |
| Allocation of Distributable Surplus as of Date of Valuation: | | |
| Member COLA Contribution Offset (Table 3) | \$924,685 | \$385,949 |
| City COLA Contribution Offset (Table 3) | 924,685 | 385,949 |
| Additional City Allocation (Table 3) | 0 | 0 |
| PRSB Allocation (Table 3) | <u>0</u> | <u>0</u> |
| Total | \$1,849,370 | \$771,898 |

The Allocation of Distributable Actuarial Surplus is sufficient to:

- Provide for an offset to a portion of the member and City COLA contribution requirements for the 2018-2019 fiscal year.

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

**Appendix B
Allocation of Actuarial Surplus (Continued)**

| | June 30 | |
|--|-----------------|-----------------|
| | 2017 | 2016 |
| Table 1: Calculation of Actuarial Surplus | | |
| (1) Valuation Value of Assets | \$1,145,061,145 | \$1,087,125,081 |
| (2) Actuarial Accrued Liability | 1,013,684,000 | 976,909,000 |
| (3) Surplus: (1) – (2), not less than zero | 131,377,145 | 110,216,081 |
| (4) Contingency Reserve: 10% of (2), not more than (3) | 101,368,400 | 97,690,900 |
| (5) Actuarial Surplus: (3) – (4) | 30,008,745 | 12,525,181 |
| Table 2: Determination of Distributable Actuarial Surplus | | |
| (1) Actuarial Surplus (Table 1) | \$30,008,745 | \$12,525,181 |
| (2) Amortization of Balance of Actuarial Surplus: | | |
| a. Amortization Period | 25 | 25 |
| b. Amortization Factor | 0.061628 | 0.061628 |
| c. Amortization of Balance of Actuarial Surplus (1) x (2b) | \$1,849,370 | \$771,898 |

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

**Appendix B
Allocation of Actuarial Surplus (Continued)**

| | June 30 | |
|--|------------------|------------------|
| | 2017 | 2016 |
| Table 3: Allocation of Distributable Actuarial Surplus: | | |
| (1) Distributable Actuarial Surplus | \$1,849,370 | \$771,898 |
| (2) Expected COLA Contributions | | |
| a. City | 3,284,000 | 2,947,000 |
| b. Members | <u>2,998,000</u> | <u>2,656,000</u> |
| c. Total | 6,282,000 | 5,603,000 |
| (3) Actual Amount Allocated to Buydown COLA Contributions | | |
| a. City | 924,685 | 385,949 |
| b. Members | <u>924,685</u> | <u>385,949</u> |
| c. Total | 1,849,370 | 771,898 |
| (4) Net Distributable Actuarial Surplus: (1) – (3c), not less than zero | 0 | 0 |
| (5) Additional City Allocation: (4) x 2/3 | 0 | 0 |
| (6) PRSB Allocation: (4) – (5) | 0 | 0 |
| <p>The City Allocation (items 3a and 5) (along with any City Surplus Reserve and City Prepaid Contribution Accounts) is available to reduce the City's contributions for the fiscal year that commences one year following the date of the valuation.</p> <p>The PRSB Allocations (along with the PRSB Reserve Account) is available to provide retirees and beneficiaries a monthly PRSB benefit during the calendar year that commences 6 months following the date of the valuation. The benefit is derived in Table 5.</p> | | |

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

**Appendix B
Allocation of Actuarial Surplus (Continued)**

| | Fiscal Year 2018-2019 | | | Fiscal Year 2017-2018 | | |
|---|------------------------------|---------------|---------------|------------------------------|---------------|---------------|
| Table 4: City Contribution Requirements | Basic | COLA | Total | Basic | COLA | Total |
| (1) a. City Normal Cost Rate | 9.14% | 2.52% | 11.66% | 9.18% | 2.51% | 11.69% |
| (2) Projected Annual Payroll | \$130,323,000 | \$130,323,000 | \$130,323,000 | \$125,916,000 | \$125,916,000 | \$125,916,000 |
| (3) City Allocation of Fiscal Year Distributable Actuarial Surplus | 0 | 924,685 | 924,685 | 0 | 385,949 | 385,949 |
| (4) City Surplus Reserve Account (From Prior Years) | 0 | 0 | 0 | 424,000 | 0 | 424,000 |
| (5) ½ Year Interest on (4) | 0 | 0 | 0 | 15,370 | 0 | 15,370 |
| (6) Total Contribution Offsets Available (3) + (4) + (5) | 0 | 924,685 | 924,685 | 439,370 | 385,949 | 825,319 |
| (7) Total Contribution Required (1) x (2) | 11,911,522 | 3,284,000 | 15,195,522 | 11,559,089 | 3,160,492 | 14,719,580 |
| (8) Unused Offset (6) – (7), not less than 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (9) Offset Adjustments | 0 | 0 | 0 | 0 | 0 | 0 |
| (10) Additional Offset Required (7) – (6) – (9), not less than 0, from Prepaid Contribution Account | 11,911,522 | 2,359,315 | 14,270,837 | 11,119,719 | 2,774,543 | 13,894,261 |
| (11) Contribution Rate Adopted by the City for FY 2017/2018 | | | | | | 11.39% |
| (12) Projected City Contributions Based on Rate Adopted by the City (11) * (2) | | | | 11,567,290 | 2,774,543 | 14,341,832 |
| (13) Net Additional City Contribution Before Application of Prepaid Employer Contribution Account (10) – (12) | 11,911,522 | 2,359,315 | 14,270,837 | -447,571 | 0 | -447,571 |
| (14) City’s Prepaid Employer Contribution Account Balance (Negative Account Balance Represents Contribution Shortfall) ⁽¹⁾ | 463,795 | 0 | 463,795 | 0 | 0 | 0 |
| (15) ½ Year Interest on (14) | 16,813 | 0 | 16,813 | 0 | 0 | 0 |
| (16) City’s Fiscal Year Contribution After Application of Prepaid Employer Contribution Account (13) – (14) – (15), not less than 0 | 11,430,914 | 2,359,315 | 13,790,229 | 0 | 0 | 0 |
| (17) Projected Residual Prepaid Employer Contribution Account at Year End. (14) + (15) – (13), Adjusted with ½ Year Interest (Negative Account Balance Represents Contribution Shortfall) | | | 0 | 463,795 | 0 | 463,795 |

⁽¹⁾ Contribution shortfall based on the projection of the prepaid contribution account balance.

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

**Appendix B (continued)
Allocation of Actuarial Surplus**

| | June 30 | |
|---|------------|------------|
| | 2017 | 2016 |
| Table 5: Calculations for PRSB and PRSB Reserve Account: | | |
| (1) PRSB Allocation of Distributable Actuarial Surplus | \$0 | \$0 |
| (2) PRSB Reserve Account (as of Valuation Date) | \$0 | \$0 |
| (3) Estimated July 1 to December 31 PRSB Payments | <u>\$0</u> | <u>\$0</u> |
| (4) Total amount available for PRSB (1) + (2) – (3) | \$0 | \$0 |
| (5) 95% x (4) | \$0 | \$0 |
| (6) Number of eligible participants (Retirees & Beneficiaries) | 1,818 | 1,764 |
| (7) Monthly PRSB Benefit for next calendar year (5) / (6) / 12 | \$0.00 | \$0.00 |
| (8) Target Monthly Benefit ⁽¹⁾ | \$1,200.00 | \$1,176.00 |
| (9) Benefit Shortfall (8) – (7) | \$1,200.00 | \$1,176.00 |
| (10) Estimated PRSB Reserve Account as of end of next calendar year: (4) – (6) x (7) x 12 | \$0 | \$0 |

⁽¹⁾ Under section 3-567(f)(4)(iii)(2) of the Municipal Code, we understand that the PRSB reserve shall be used to increase the PRSB benefit to the extent necessary to pay the monthly health insurance premium.

SECTION 4: Reporting Information for the City of Fresno Employees Retirement System

Appendix C

UAAL Amortization Schedule as of June 30, 2017 (Dollar Amounts in Thousands)

| | Date Established | Source | Initial Amount | Outstanding Balance | Years Remaining | Annual Payment |
|--------------------|-------------------------|---------------|-----------------------|----------------------------|------------------------|--------------------------|
| Grand Total | June 30, 2017 | UAAL | N/A | <u>N/A</u> <u>N/A</u> | N/A | <u>N/A</u> <u>N/A</u> |

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