

Fresno County Employees' Retirement Association

**Actuarial Valuation and Review as of
June 30, 2016**

The logo for Segal Consulting is a large, dark blue, stylized arrow pointing to the right. It has a long, thin tail and a wider, triangular head. The text "Segal Consulting" is written in white, sans-serif font, positioned to the right of a white star icon.

★ Segal Consulting

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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December 1, 2016

*Board of Retirement
Fresno County Employees' Retirement Association
1111 "H" Street
Fresno, CA 93721*

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2016. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2017-2018 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 Plan. The census information on which our calculations were based was prepared by FCERA and the financial information was provided by FCERA. That assistance is gratefully acknowledged.

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

The actuarial calculations were completed under the supervision of Andy Yeung, ASA, EA, MAAA, FCA. 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 Plan.

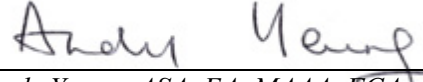
We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

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

By: 

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



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

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SECTION 1: Valuation Summary for the Fresno County Employees' Retirement Association

Purpose

This report has been prepared by Segal Consulting to present a valuation of the Fresno County Employees' Retirement Association (FCERA) as of June 30, 2016. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of the Retirement Association, as administered by the Board;
- The characteristics of covered active members, inactive vested members, retired members and beneficiaries as of June 30, 2016, provided by FCERA;
- The assets of the Plan as of June 30, 2016, provided by FCERA;
- 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 that fully fund the Association's liabilities, and that, 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 Association's assets, liabilities and future contribution requirements. Our calculations are based upon member data and financial information provided to us by the Association'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 Association's employer rates provide for both normal cost and a payment or credit to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have continued with the Board's funding policy to amortize the Association's outstanding balance of the unfunded actuarial accrued liability (UAAL) established as of June 30, 2003 over a declining period with 17 years remaining as of June 30, 2016. Any new UAAL established on each subsequent actuarial valuation after the June 30, 2003 valuation as a result of actuarial gains or losses, changes in actuarial assumptions or plan amendments¹ is amortized over separate 15-year declining period.

Reference: Pgs. 103 - 107

¹ Prior to the Board's most recent review of actuarial funding policy in April 2011, a 30-year amortization period was used for plan amendments.

SECTION 1: Valuation Summary for the Fresno County Employees' Retirement Association

The Actuarial Standards Board's Actuarial Standard of Practice (ASOP) No. 4 provides guidelines that actuaries have to follow when selecting actuarial assumptions. For a plan such as that offered by the Retirement Association that may utilize excess earnings to provide contribution rate offsets and additional settlement and non-statutory benefits, we are required to indicate in the valuation report that the possible impact of any such application of future excess earnings on the future financial condition of the plan has not been explicitly measured in the valuation.²

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2017 through June 30, 2018.

Significant Issues in Valuation Year

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

- | | | |
|-------------------|-------------------------|---|
| <i>Reference:</i> | <i>Pg. 53</i> | ➤ The results of this valuation reflect changes in the actuarial assumptions as adopted by the Board for the June 30, 2016 valuation. These changes were documented in our Actuarial Experience Study and Review of Economic Assumptions and are also outlined in Section 4, Exhibit II of this report. These assumption changes resulted in an increase in the average employer contribution rate of 5.52% of payroll and an increase in the average member rate of 0.32% of payroll. |
| <i>Reference:</i> | <i>Pg. 5
Pg. 46</i> | ➤ As we previously reported in the June 30, 2014 and June 30, 2015 valuation reports, there was a correction to reallocate proceeds from the 2004 issuance of Pension Obligation Bonds among various reserves. After the correction, the balance in the Retiree Health Benefit Reserve (BOR) was -\$3.4 million as of June 30, 2016. For actuarial valuation purposes, we have again limited the balance in the Retiree Health Benefit Reserve (BOR) to be no less than \$0 in determining the valuation value of assets because including a negative balance in that non-valuation reserve would have the unintended consequence of increasing the asset value used in the valuation until that negative balance is offset by future undistributed earnings. |
| <i>Reference:</i> | <i>Pg. 47</i> | ➤ In this June 30, 2016 valuation, the UAAL has increased from \$981.7 million to \$1,194.1 million when determined on a valuation (smoothed) value of assets basis. On a market value basis, the UAAL increased from \$1,042.9 million to \$1,462.8 million. The funded ratio on a valuation value of assets basis has decreased from 80.7% to 78.2%, while on a market value basis, the funded ratio has decreased from 79.4% to 73.3%. A reconciliation of the Association's unfunded actuarial accrued liability is provided in Section 3, Exhibit H. |

² Under the Board's interest crediting policy, the balance of \$800.8 million (negative) in the Contra Tracking Account has to be fully restored before any excess earnings can be utilized in the future to provide any of the above offsets and benefits.

SECTION 1: Valuation Summary for the Fresno County Employees' Retirement Association

- Reference:* Pg. 19 ➤ The aggregate employer rate calculated in this valuation has increased from 51.36% of payroll to 56.74% of payroll. The reasons for this increase are: (i) changes in actuarial assumptions, (ii) lower than expected return on investments (based on valuation value of assets after smoothing), (iii) actual contributions less than expected and (iv) change in the allocation of the explicit administrative expense load to the employer, offset to some degree by (v) continuing active salary increases less than expected, (vi) decrease in UAAL rate due to higher than expected increase in total payroll, (vii) lower than expected COLA increases and (viii) other experience gains. A reconciliation of the Association's aggregate employer rate is provided in Section 2, Subsection D, Chart 15.
- Reference:* Pg. 109 ➤ The Board is considering a three-year phase-in of the employer cost impact due to the changes in actuarial assumptions. The aggregate employer contribution rate for the first year after reflecting a three-year phase-in is 53.05% and is shown in Appendix E of this report. All results shown in this valuation report other than Appendix E exclude the effect of any phase-in.
- Reference:* Pg. 20 ➤ The aggregate member rate calculated in this valuation has increased from 9.33% of payroll to 9.62% of payroll. This increase is due to the changes in actuarial assumptions offset to some degree by changes in the demographics of the active membership and change in the allocation of the explicit administrative expense load to the member. A reconciliation of the Association's aggregate member rate is provided in Section 2, Subsection D, see Chart 16.
- Reference:* Pg. 102 ➤ The employer and member rates developed in this valuation have been determined only with respect to the Regular and the Settlement benefits. Assets and liabilities associated with the non-vested supplemental benefits (i.e., discretionary purchasing power and additional taxable retiree health benefits, if any), have been excluded from the development of the employer and member rates. However, a comparison of the reserve maintained by the Board for the non-vested supplemental benefits and the annual cash payment requirement is provided in Appendix B.
- The Supplemental COLA Reserve of \$159,368 is expected to be depleted during the year 2016-2017. It is our understanding that no payment can be distributed to the recipients once this reserve is depleted.
- Reference:* Pg. 5 ➤ As indicated in Section 2, Subsection B, Chart 7 of this report, the net total unrecognized investment losses as of June 30, 2016 are \$268.7 million compared to the net total unrecognized investment losses of \$61.3 million as of June 30, 2015. These investment losses will be recognized in the determination of the valuation value of assets for funding purposes in the next few years, and will offset any investment gains that may occur after June 30, 2016. If the Association earns the assumed net rate of investment return of 7.00% per year on a **market value** basis, that will result in investment losses on the valuation value of assets in the next few years. This means that, if the actual market return is equal to the assumed 7.00% rate and all other actuarial assumptions are met, the contribution requirements would increase in the next few years.

SECTION 1: Valuation Summary for the Fresno County Employees' Retirement Association

- The current unrecognized investment losses represent about 6.7% of the market value of assets. Unless offset by future investments gains or other favorable experience, the recognition of the \$268.7 million in past market losses is expected to have an impact on the Association's future funded ratio and the aggregate employer contributions. This potential impact may be illustrated as follows:

- If the deferred losses were recognized immediately in the valuation value of assets, the funded percentage would decrease from 78.2% to 73.3%.

For comparison purposes, if all the deferred losses in the June 30, 2015 valuation had been recognized immediately in the June 30, 2015 valuation, the funded percentage would have decreased from 80.7% to 79.4%.

- If the deferred losses were recognized immediately in the actuarial value of assets, the aggregate employer contribution rate would increase from 56.7% of payroll to 62.5% of payroll.

For comparison purposes, if all the deferred losses in the June 30, 2015 valuation had been recognized immediately in the June 30, 2015 valuation, the aggregate employer contribution rate would have increased from 52.0% of payroll to 53.4% of payroll.

Reference: Pg. 79

- In preparing the breakdown of the total costs of the General Tier 1 plan into the cost to provide the "Regular" and the "Settlement" benefits, we have followed the FCERA practice of allocating the cost to provide a benefit under Section 31676.12 as the cost for the "Regular" benefit and allocating the difference between this "Regular" benefit cost and the cost to provide a benefit under Section 31676.14 plus Section 31627 as the "Settlement" benefit. In particular, this means that the difference between benefits under Sections 31676.12 and 31676.14 is considered "Settlement" and so under the Settlement Agreement could be funded out of future undistributed earnings. Based on discussions with Counsel, the Agreement might not be clear as to what should be considered the "Settlement" benefit. We will require guidance from the Board if and when the Board and Counsel consider the use of any future undistributed earnings to pay the cost of the "Settlement" benefit.
- The actuarial valuation report as of June 30, 2016 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 Fresno County Employees' Retirement Association

Impact of Future Experience on Contribution Rates

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

- 1) differences 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 Fresno County Employees' Retirement Association

Summary of Key Valuation Results

	June 30, 2016		June 30, 2015	
Employer Contribution Rates:		Estimated		Estimated
	Total Rate	Annual Amount ⁽¹⁾	Total Rate	Annual Amount ⁽¹⁾
General Tier 1	56.56%	\$116,870,000	51.43%	\$106,269,000
General Tier 2	53.52%	5,137,000	47.74%	4,582,000
General Tier 3	53.06%	18,403,000	47.35%	16,422,000
General Tier 4	43.95%	6,156,000	38.73%	5,425,000
General Tier 5	42.45%	30,096,000	36.96%	26,204,000
Safety Tier 1	81.63%	37,706,000	75.93%	35,074,000
Safety Tier 2	81.80%	3,670,000	75.11%	3,370,000
Safety Tier 4	66.15%	2,526,000	60.38%	2,306,000
Safety Tier 5	63.99%	7,821,000	57.99%	7,088,000
All categories combined	56.74%	228,385,000	51.36%	206,740,000
Average Member Contribution Rates:		Estimated		Estimated
	Total Rate	Annual Amount ⁽¹⁾	Total Rate	Annual Amount ⁽¹⁾
General Tier 1	9.99%	\$20,642,000	9.75%	\$20,146,000
General Tier 2	7.26%	697,000	6.91%	663,000
General Tier 3	8.00%	2,775,000	7.75%	2,688,000
General Tier 4	7.11%	996,000	6.89%	965,000
General Tier 5	7.26%	5,147,000	6.89%	4,885,000
Safety Tier 1	13.21%	6,102,000	12.68%	5,857,000
Safety Tier 2	11.59%	520,000	11.08%	497,000
Safety Tier 4	10.06%	384,000	9.86%	377,000
Safety Tier 5	12.03%	1,470,000	12.03%	1,470,000
All categories combined	9.62%	38,733,000	9.33%	37,548,000
Funded Status:				
Actuarial accrued liability ⁽²⁾	\$5,472,149,000		\$5,074,333,000	
Valuation value of assets (VVA) ⁽³⁾	4,278,001,000		4,092,647,000	
Market value of assets (MVA) ⁽³⁾	4,009,337,000		4,031,390,000	
Funded percentage on a VVA basis	78.2%		80.7%	
Funded percentage on a MVA basis	73.3%		79.4%	
Unfunded actuarial accrued liability on a VVA basis	\$1,194,148,000		\$981,686,000	
Unfunded actuarial accrued liability on a MVA basis	1,462,812,000		1,042,943,000	
Key Economic Assumptions:				
Interest rate	7.00%		7.25%	
Inflation rate	3.00%		3.25%	
Across-the-board salary increase	0.50%		0.50%	

⁽¹⁾ Based on June 30, 2016 projected annual compensation.

⁽²⁾ Excludes liabilities for non-vested supplemental benefits.

⁽³⁾ Excludes non-valuation reserves: contingency reserve, supplemental COLA and retiree health benefit reserve (BOR).

SECTION 1: Valuation Summary for the Fresno County Employees' Retirement Association

Summary of Key Valuation Demographic and Financial Data

	June 30, 2016	June 30, 2015	Percentage Change
Active Members:			
Number of members	7,297	7,001	4.2%
Average age	43.2	43.5	N/A
Average service	10.5	10.9	N/A
Projected total compensation	\$402,534,551	\$383,774,893	4.9%
Average projected compensation	55,164	54,817	0.6%
Retired Member and Beneficiaries:			
Number of members:			
Service retired	5,781	5,663	2.1%
Disability retired	368	344	7.0%
Beneficiaries	883	832	6.1%
Total	7,032	6,839	2.8%
Average age	69.2	68.9	N/A
Average monthly benefit ⁽¹⁾	\$2,855	\$2,823	1.1%
Vested Terminated Members:			
Number of vested terminated members ⁽²⁾	3,289	3,163	4.0%
Average age	45.4	46.0	N/A
Summary of Financial Data:			
Market value of assets ⁽³⁾	\$4,009,495,932	\$4,032,119,349	-0.6%
Return on market value of assets	-0.11%	-0.10%	N/A
Actuarial value of assets ⁽³⁾	\$4,278,160,681	\$4,093,376,893	4.5%
Return on actuarial value of assets	4.97%	7.29%	N/A
Valuation value of assets	\$4,278,001,313	\$4,092,647,359	4.5%
Return on valuation value of assets	4.97%	7.31%	N/A

(1) Benefits include regular and settlement benefits but exclude non-vested supplemental benefits.

(2) Includes members who left their contributions on deposit with less than five years of service.

(3) Includes non-valuation reserves: supplemental COLA and retiree health benefit reserve (BOR).

SECTION 1: Valuation Summary for the Fresno County Employees' Retirement Association

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 of benefits** Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. 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 provisions.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by FCERA. 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 FCERA.
- **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 FCERA. Segal is not responsible for the use or misuse of its report, particularly by any other party.

SECTION 1: Valuation Summary for the Fresno County Employees' Retirement Association

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

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

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

A. MEMBER DATA

The actuarial valuation and review considers the number and demographic characteristics of covered members, including active members, vested terminated members, retired members and beneficiaries.

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

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

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

CHART 1

Member Population: 2007 – 2016

Year Ended June 30	Active Members	Vested Terminated Members	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
2007	7,802	1,393	4,831	0.80
2008	7,740	1,541	5,046	0.85
2009	7,407	1,460	5,322	0.92
2010	6,946	1,452	5,636	1.02
2011	6,763	1,414	5,887	1.08
2012	6,677	1,375	6,235	1.14
2013	6,866	1,295	6,363	1.12
2014	6,968	1,380	6,570	1.14
2015	7,001	3,163 ⁽¹⁾	6,839	1.43
2016	7,297	3,289	7,032	1.41

⁽¹⁾ Effective June 30, 2015, includes terminated members under age 70 only due a refund of member contributions.

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 7,297 active members with an average age of 43.2 years, average years of service of 10.5 and average compensation of \$55,164. The 7,001 active members in the prior valuation had an average age of 43.5 years, average years of service of 10.9 and average compensation of \$54,817.

Inactive Members

In this year's valuation, there were 3,289 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 3,163 in the prior valuation.

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

CHART 2

Distribution of Active Members by Age as of June 30, 2016

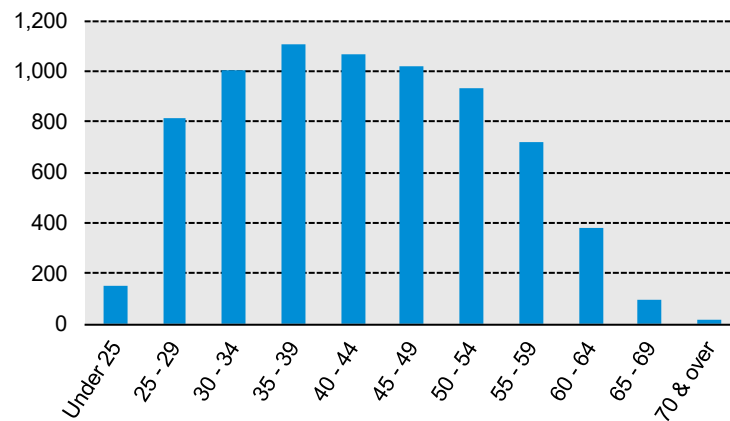
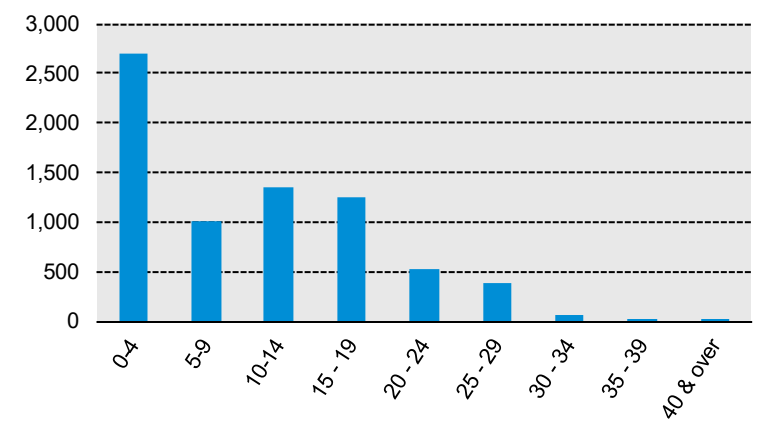


CHART 3

Distribution of Active Members by Years of Service as of June 30, 2016



SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

Retired Members and Beneficiaries

As of June 30, 2016, 6,149 retired members and 883 beneficiaries were receiving total monthly benefits of \$20,076,722. For comparison, in the previous valuation, there were 6,007 retired members and 832 beneficiaries receiving monthly benefits of \$19,309,208. These monthly benefits exclude non-vested supplemental benefits (i.e., discretionary supplemental COLA and additional health benefits).

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, 2016

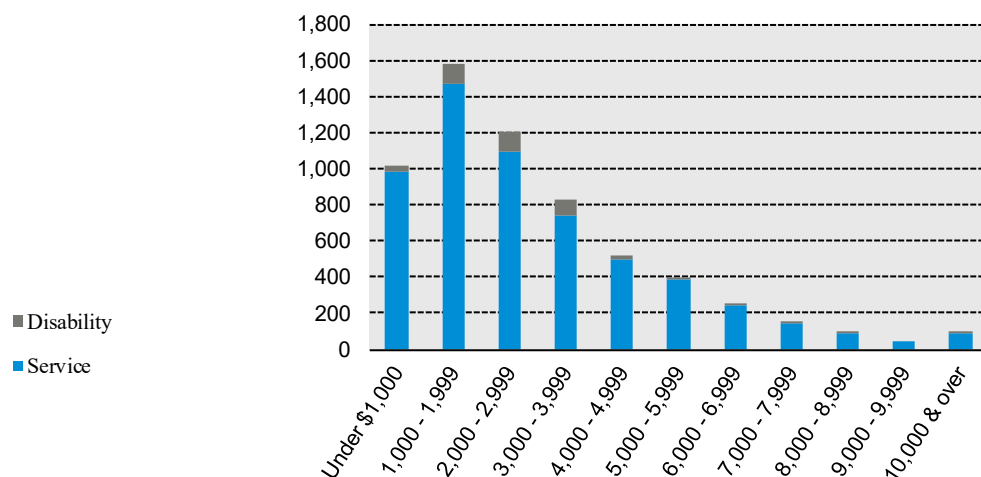
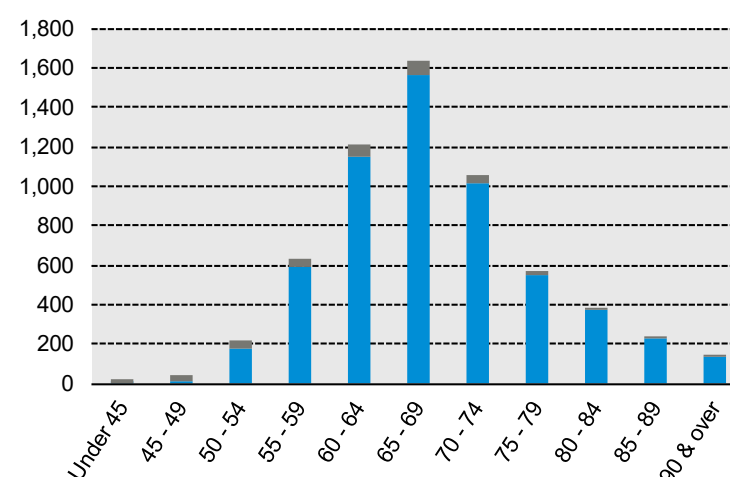


CHART 5

Distribution of Retired Members (Excl. Beneficiaries) by Type and by Age as of June 30, 2016



SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

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.

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.

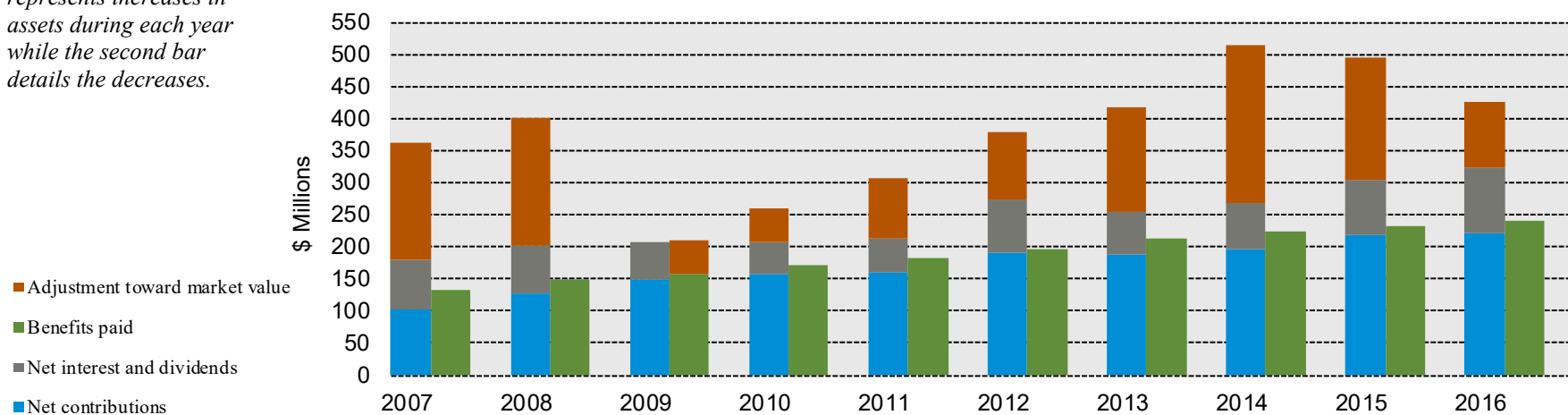
The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value of assets.

The determination of the Actuarial Value of Assets is provided on the following page.

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, 2007 through 2016



SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

CHART 7

Determination of Actuarial Value of Assets for Year Ended June 30, 2016

Six Month Period		Total Actual	Expected Market	Investment	Deferred	Deferred
From	To	Market Return (net)	Return (net) ⁽¹⁾	Gain (Loss)	Factor	Return
1/1/2012	6/30/2012	\$161,262,327	\$115,914,939	\$45,347,388	0.1	\$4,534,739
7/1/2012	12/31/2012	240,685,052	121,699,116	118,985,935	0.2	23,797,187
1/1/2013	6/30/2013	134,122,546	130,563,210	3,559,336	0.3	1,067,801
7/1/2013	12/31/2013	395,606,395	135,374,319	260,232,075	0.4	104,092,830
1/1/2014	6/30/2014	184,000,262	150,143,559	33,856,703	0.5	16,928,352
7/1/2014	12/31/2014	(49,012,922)	146,717,748	(195,730,670)	0.6	(117,438,402)
1/1/2015	6/30/2015	45,076,629	144,685,951	(99,609,322)	0.7	(69,726,525)
7/1/2015	12/31/2015	(150,074,689)	146,021,073	(296,095,762)	0.8	(236,876,610)
1/1/2016	6/30/2016	145,755,632	140,249,099	5,506,533	0.9	4,955,880
1.	Total Deferred Return ⁽²⁾					\$(268,664,749)
2.	Net Market Value					4,009,495,932
3.	Actuarial Value of Assets (Item 2 – Item 1)					4,278,160,681
4.	Actuarial Value (before corridor) as a percentage of Market Value					106.7%
5.	Actuarial Value of Assets – Corridor Limits:					
a.	Lower Limit – 70% of Net Market Value					\$2,806,647,152
b.	Upper Limit – 130% of Net Market Value					5,212,344,711
6.	Actuarial Value of Assets (within corridor)					4,278,160,681
7.	Non-valuation reserves and designations:					
a.	Reserve for Interest Fluctuations (Contingency Reserve), Limited to No Less Than \$0					\$0
b.	Board Contingency Reserve/Undistributed Earnings (“Available Earnings”)					0
c.	Supplemental COLA					159,368
d.	Retiree Health Benefit (BOR), Limited to No Less Than \$0					0
e.	Subtotal					\$159,368
8.	Valuation Value of Assets (Item 6 – Item 7e)					\$4,278,001,313

⁽¹⁾ The expected market return has been calculated by FCERA using an investment return assumption consistent with that used in the applicable actuarial valuation to set the employer and employee contribution rates for that period.

⁽²⁾ The amounts of deferred return that will be recognized in each subsequent valuation are as follows:

6/30/2017	\$(29,324,295)	6/30/2019	\$(113,800,174)	6/30/2021	\$550,653
6/30/2018	\$(58,012,155)	6/30/2020	\$(68,078,778)		

Note: Results may not total properly due to rounding.

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

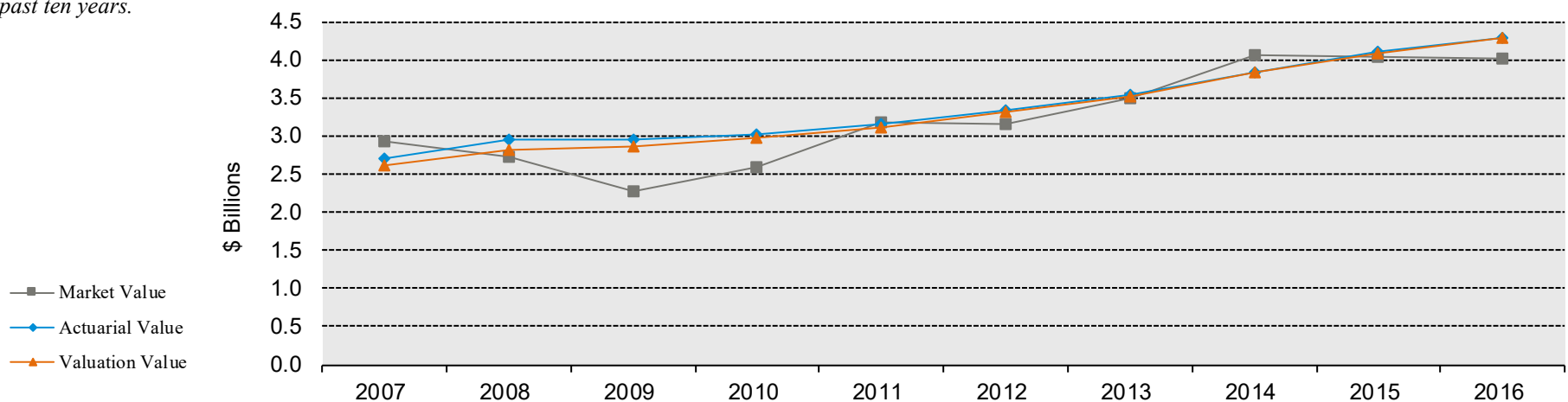
SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

The market value, actuarial value, and valuation value of assets are representations of the FCERA'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 asset value is significant because FCERA'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 ten years.

CHART 8

Market Value, Actuarial Value and Valuation Value of Assets as of June 30, 2007 – 2016



SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

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 loss was \$25.7 million, including a loss of \$93.0 million from investments and a gain of \$67.3 million from all other sources. The net experience variation from individual sources other than investments was 1.2% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

CHART 9

Actuarial Experience for Year Ended June 30, 2016

1. Net loss from investments ⁽¹⁾	\$(92,984,000)
2. Net gain from other experience ⁽²⁾	<u>67,290,000</u>
3. Net experience loss: (1) + (2)	\$(25,694,000)

⁽¹⁾ Details in Chart 10.

⁽²⁾ See Section 3, Items 7(b) through 7(e) in Exhibit H.

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

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

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 FCERA's investment policy. For valuation purposes, the assumed rate of return was 7.25% (based on the June 30, 2015 valuation). The actual rate of return on a valuation basis for the 2015/2016 plan year was 4.97%.

Since the actual return for the year was less than the assumed return, FCERA experienced an actuarial loss during the year ended June 30, 2016 with regard to its investments.

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

CHART 10

Investment Experience for Year Ended June 30, 2016 – Valuation, Actuarial and Market Value of Assets

	Valuation Value	Actuarial Value	Market Value
1. Actual return	\$203,089,850	\$203,088,149	\$(4,319,056)
2. Average value of assets	4,083,779,411	4,084,224,713	4,022,967,169
3. Actual rate of return: (1) ÷ (2)	4.97%	4.97%	(0.11%)
4. Assumed rate of return	7.25%	7.25%	7.25%
5. Expected return: (2) x (4)	296,074,007	296,106,292	291,665,120
6. Actuarial gain/(loss): (1) – (5)	<u>\$(92,984,157)</u>	<u>\$(93,018,143)</u>	<u>\$(295,984,176)</u>

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

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

CHART 11

Investment Return – Valuation Value, Actuarial Value and Market Value: 2007 – 2016

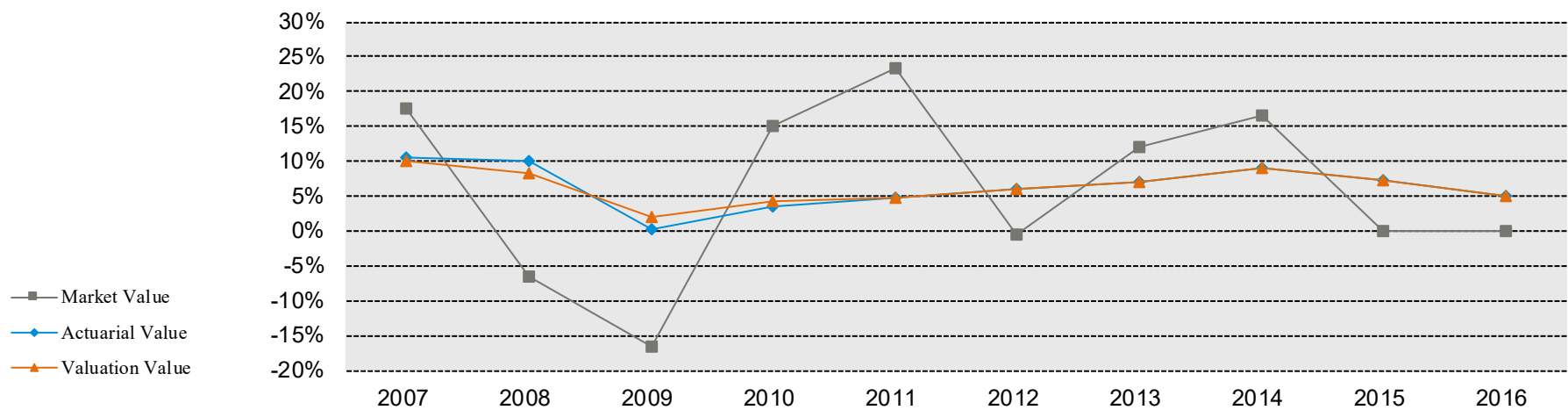
Year Ended June 30	Valuation Value Investment Return		Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent	Amount	Percent
2007	\$237,613,613	9.95%	\$259,818,285	10.61%	\$439,056,103	17.46%
2008	212,997,330	8.17%	271,876,171	10.14%	(190,479,656)	(6.51%)
2009	54,209,327	1.93%	6,924,705	0.24%	(455,354,552)	(16.73%)
2010	123,408,438	4.31%	100,789,315	3.44%	337,869,234	14.98%
2011	144,184,273	4.84%	144,184,272	4.78%	601,313,325	23.34%
2012	187,137,138	6.01%	187,138,723	5.94%	(13,839,384)	(0.44%)
2013	229,380,360	6.96%	229,380,360	6.91%	374,807,596	11.95%
2014	315,164,400	8.98%	318,423,932	9.03%	579,606,657	16.63%
2015	279,206,627	7.31%	278,588,356	7.29%	(3,936,293)	(0.10%)
2016	203,089,850	4.97%	203,088,149	4.97%	(4,319,056)	(0.11%)
Five-Year Average Return		6.84%		6.82%		5.34%
Ten-Year Average Return		6.32%		6.29%		5.34%

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

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 – 2016



SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

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, and
- COLA increases from retirees different than assumed.

The net gain from this other experience for the year ended June 30, 2016 amounted to \$67.3 million which is 1.2% of the actuarial accrued liability. See Exhibit H for a detailed development of the Unfunded Actuarial Accrued Liability.

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

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 negative UAAL) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the Association) 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). The UAAL established as of the June 30, 2003 valuation is being amortized over a declining period with 17 years remaining as of June 30, 2016. Any new UAAL established on each subsequent valuation after June 30, 2003 as a result of actuarial gains or losses, changes in actuarial assumptions or plan amendments⁽¹⁾ are amortized over separate 15-year declining periods.

The recommended employer contributions are provided on Chart 13.

All employer contribution rates shown in this report other than Appendix E are before reflecting the three-year phase-in of the effect of the changes in actuarial assumptions from the June 30, 2015 valuation.

⁽¹⁾ Prior to the Board's most recent review of actuarial funding policy in April 2011, a 30-year amortization period was used for plan amendments.

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

Member Contributions

Non-CalPEPRA Members

Articles 6 and 6.8 of the 1937 Act define the methodology to be used in the calculation of member basic contribution rates for General members and Safety members, respectively.

The basic contribution rate for the Regular benefit is determined so that the accumulation of a member's basic contributions made in a given year until a certain age will be sufficient to fund an annuity at that age that is equal to:

- 1/200 of One-Year Average Final Compensation at age 60 for General Tier 1
- 1/240 of One-Year Average Final Compensation at age 60 for General Tier 2
- 1/200 of Three-Year Average Final Compensation at age 55 for General Tier 3
- 1/120 of Three-Year Average Final Compensation at age 60 for General Tier 4
- 1/200 of One-Year Average Final Compensation at age 50 for Safety Tiers 1 and 2
- 1/100 of Three-Year Average Final Compensation at age 50 for Safety Tier 4

In addition, as a result of the Settlement Agreement, General Tier 1 and Safety Tier 1 members are required to make additional basic contributions in order to receive the Settlement Benefit. The total basic Regular plus Settlement rate is:

- 1/160 of One-Year Average Final Compensation at age 55 for General Tier 1
- 1/160 of One-Year Average Final Compensation at age 50 for Safety Tier 1

It is assumed that contributions are made annually at the same rate, starting at entry age. In addition to their basic contributions, members in Tiers 1, 2 and 3 pay one-half of the total normal cost necessary to fund their cost-of-living benefits. There are no cost-of-living benefits provided in General and Safety Tiers 4. Accumulation includes semi-annual crediting of interest at the assumed investment earning rate.

CalPEPRA Members

Pursuant to Section 7522.30(a) of the Government Code, CalPEPRA members in General and Safety Tiers 5 are required to contribute at least 50% of the Normal Cost rate. In addition, there are certain additional requirements that would have to be met such as requiring the new employees to pay the contribution rate of "similarly situated employees", if it is greater. (reference: Section 7522.30(c)). We further understand

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

that different rules may have to be applied for collectively bargained employees, non-represented, managerial or other supervisory employees. (reference: Section 7522.30(e)). In preparing the Normal Cost rates in this report, we have assumed that exactly 50% of the Normal Cost would be paid by the new members and we have taken into account in this valuation only the requirements of Section 7522.30(c), but not requirements of Section 7522.30(e).

The member contribution rates are provided in Appendix A.

Administrative Expense

The Board adopted an explicit administrative expense assumption of 1.10% of payroll effective with the June 30, 2014 valuation. At the last review of the Economic Actuarial Assumptions Report as of June 30, 2016, the Board acted to continue the same administrative expense assumption of 1.10% of payroll.

This explicit administrative expense is allocated to both the employer and member based on the components of the total average contribution rate (before expenses) for the employer and member. This results in an administrative expense load shown in the following table:

	<u>Average Contribution Rates Before Administrative Expense</u>	<u>Weighting</u>	<u>Total Loading</u>
Employer	55.80%	85.50%	0.94%
Member	9.46%	<u>14.50%</u>	<u>0.16%</u>
		100.00%	1.10%

Under this approach, the employer Normal Cost rate is then increased by the same percent of payroll as the member rate with the remaining employer loading allocated to the employer UAAL rate. The administrative expense load has been added to the Regular rates. The table below shows this allocation.

<u>Allocation of Administrative Expense Load as % of Payroll</u>	
Addition to Employer Basic Normal Cost Rate	0.16%
Addition to Employer Basic UAAL Rate	0.78%
Addition to Member Basic Rate	<u>0.16%</u>
Total Addition to Contribution Rates	1.10%

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

CHART 13

Recommended Employer Contribution Rates (Dollar Amounts in Thousands)

	June 30, 2016 ⁽¹⁾						June 30, 2015 ⁽²⁾	
	REGULAR		SETTLEMENT		TOTAL		REGULAR & SETTLEMENT	
	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾
General Tier 1 Members								
Normal Cost	16.25%	\$33,578	5.12%	\$10,579	21.37%	\$44,157	21.36%	\$44,136
UAAL	<u>29.83%</u>	<u>61,638</u>	<u>5.36%</u>	<u>11,075</u>	<u>35.19%</u>	<u>72,713</u>	<u>30.07%</u>	<u>62,133</u>
Total Contribution	46.08%	\$95,216	10.48%	\$21,654	56.56%	\$116,870	51.43%	\$106,269
General Tier 2 Members								
Normal Cost	18.08%	\$1,735	0.25%	\$24	18.33%	\$1,759	17.67%	\$1,696
UAAL	<u>29.83%</u>	<u>2,863</u>	<u>5.36%</u>	<u>515</u>	<u>35.19%</u>	<u>3,378</u>	<u>30.07%</u>	<u>2,886</u>
Total Contribution	47.91%	\$4,598	5.61%	\$539	53.52%	\$5,137	47.74%	\$4,582
General Tier 3 Members								
Normal Cost	17.55%	\$6,087	0.32%	\$111	17.87%	\$6,198	17.28%	\$5,993
UAAL	<u>29.83%</u>	<u>10,346</u>	<u>5.36%</u>	<u>1,859</u>	<u>35.19%</u>	<u>12,205</u>	<u>30.07%</u>	<u>10,429</u>
Total Contribution	47.38%	\$16,433	5.68%	\$1,970	53.06%	\$18,403	47.35%	\$16,422
General Tier 4 Members								
Normal Cost	8.76%	\$1,227	0.00%	\$0	8.76%	\$1,227	8.66%	\$1,213
UAAL	<u>29.83%</u>	<u>4,178</u>	<u>5.36%</u>	<u>751</u>	<u>35.19%</u>	<u>4,929</u>	<u>30.07%</u>	<u>4,212</u>
Total Contribution	38.59%	\$5,405	5.36%	\$751	43.95%	\$6,156	38.73%	\$5,425
General Tier 5 Members								
Normal Cost	7.26%	\$5,147	0.00%	\$0	7.26%	\$5,147	6.89%	\$4,885
UAAL	<u>29.83%</u>	<u>21,149</u>	<u>5.36%</u>	<u>3,800</u>	<u>35.19%</u>	<u>24,949</u>	<u>30.07%</u>	<u>21,319</u>
Total Contribution	37.09%	\$26,296	5.36%	\$3,800	42.45%	\$30,096	36.96%	\$26,204

⁽¹⁾ The Regular Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense of 0.16% and 0.78% of payroll, respectively.

⁽²⁾ The Regular Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense of 0.17% and 0.76% of payroll, respectively.

⁽³⁾ Amounts are in thousands and are based on June 30, 2016 projected annual compensation shown on the following page.

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

CHART 13 (continued)

Recommended Employer Contribution Rates (Dollar Amounts in Thousands)

	June 30, 2016 ⁽¹⁾						June 30, 2015 ⁽²⁾	
	REGULAR		SETTLEMENT		TOTAL		REGULAR & SETTLEMENT	
	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾
Safety Tier 1 Members								
Normal Cost	23.91%	\$11,045	5.76%	\$2,660	29.67%	\$13,705	29.97%	\$13,844
UAAL	<u>45.38%</u>	<u>20,962</u>	<u>6.58%</u>	<u>3,039</u>	<u>51.96%</u>	<u>24,001</u>	<u>45.96%</u>	<u>21,230</u>
Total Contribution	69.29%	\$32,007	12.34%	\$5,699	81.63%	\$37,706	75.93%	\$35,074
Safety Tier 2 Members								
Normal Cost	29.59%	\$1,328	0.25%	\$11	29.84%	\$1,339	29.15%	\$1,308
UAAL	<u>45.38%</u>	<u>2,036</u>	<u>6.58%</u>	<u>295</u>	<u>51.96%</u>	<u>2,331</u>	<u>45.96%</u>	<u>2,062</u>
Total Contribution	74.97%	\$3,364	6.83%	\$306	81.80%	\$3,670	75.11%	\$3,370
Safety Tier 4 Members								
Normal Cost	14.00%	\$535	0.19%	\$7	14.19%	\$542	14.42%	\$551
UAAL	<u>45.38%</u>	<u>1,732</u>	<u>6.58%</u>	<u>252</u>	<u>51.96%</u>	<u>1,984</u>	<u>45.96%</u>	<u>1,755</u>
Total Contribution	59.38%	\$2,267	6.77%	\$259	66.15%	\$2,526	60.38%	\$2,306
Safety Tier 5 Members								
Normal Cost	12.03%	\$1,470	0.00%	\$0	12.03%	\$1,470	12.03%	\$1,470
UAAL	<u>45.38%</u>	<u>5,546</u>	<u>6.58%</u>	<u>805</u>	<u>51.96%</u>	<u>6,351</u>	<u>45.96%</u>	<u>5,618</u>
Total Contribution	57.41%	\$7,016	6.58%	\$805	63.99%	\$7,821	57.99%	\$7,088
All Categories Combined								
Normal Cost	15.44%	\$62,152	3.33%	\$13,393	18.77%	\$75,544	18.66%	\$75,096
UAAL	<u>32.41%</u>	<u>130,450</u>	<u>5.56%</u>	<u>22,391</u>	<u>37.97%</u>	<u>152,841</u>	<u>32.70%</u>	<u>131,644</u>
Total Contribution	47.85%	\$192,602	8.89%	\$35,784	56.74%	\$228,385	51.36%	\$206,740

⁽¹⁾ The Regular Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense of 0.16% and 0.78% of payroll, respectively.

⁽²⁾ The Regular Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense of 0.17% and 0.76% of payroll, respectively.

⁽³⁾ Amounts are in thousands and are based on June 30, 2016 projected annual compensation (also in thousands):

General Tier 1	\$206,629	Safety Tier 1	\$46,192
General Tier 2	9,598	Safety Tier 2	4,486
General Tier 3	34,682		
General Tier 4	14,008	Safety Tier 4	3,819
General Tier 5	70,898	Safety Tier 5	12,223
Total Compensation		\$402,535	

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

CHART 14

Breakdown of Employer Contribution Rate Into Basic and COLA

	General									
	June 30, 2016					June 30, 2015				
	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Normal Cost										
Regular - Basic	12.81%	14.70%	14.06%	8.60%	7.10%	12.79%	14.29%	13.65%	8.49%	6.72%
Regular - COLA	3.28%	3.22%	3.33%	0.00%	0.00%	3.16%	2.98%	3.14%	0.00%	0.00%
Section 6	4.73%	0.00%	0.00%	0.00%	0.00%	4.86%	0.00%	0.00%	0.00%	0.00%
Section 8	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Section 9	0.39%	0.25%	0.32%	0.00%	0.00%	0.38%	0.23%	0.32%	0.00%	0.00%
Administrative Expense	0.16%	0.16%	0.16%	0.16%	0.16%	0.17%	0.17%	0.17%	0.17%	0.17%
Subtotal	21.37%	18.33%	17.87%	8.76%	7.26%	21.36%	17.67%	17.28%	8.66%	6.89%
UAAL										
Regular – Basic	18.75%	18.75%	18.75%	18.75%	18.75%	16.06%	16.06%	16.06%	16.06%	16.06%
Regular – COLA	10.30%	10.30%	10.30%	10.30%	10.30%	8.62%	8.62%	8.62%	8.62%	8.62%
Section 6	4.39%	4.39%	4.39%	4.39%	4.39%	3.81%	3.81%	3.81%	3.81%	3.81%
Section 8	0.06%	0.06%	0.06%	0.06%	0.06%	0.02%	0.02%	0.02%	0.02%	0.02%
Section 9	0.91%	0.91%	0.91%	0.91%	0.91%	0.80%	0.80%	0.80%	0.80%	0.80%
Administrative Expense	0.78%	0.78%	0.78%	0.78%	0.78%	0.76%	0.76%	0.76%	0.76%	0.76%
Subtotal	35.19%	35.19%	35.19%	35.19%	35.19%	30.07%	30.07%	30.07%	30.07%	30.07%
Total	56.56%	53.52%	53.06%	43.95%	42.45%	51.43%	47.74%	47.35%	38.73%	36.96%

Note: Please refer to Section 4, Exhibit III for definition of Regular and Settlement Sections 6, 8 and 9 benefits.

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

CHART 14 (continued)

Breakdown of Employer Contribution Rate Into Basic and COLA

	Safety							
	June 30, 2016				June 30, 2015			
	Tier 1	Tier 2	Tier 4	Tier 5	Tier 1	Tier 2	Tier 4	Tier 5
Normal Cost								
Regular - Basic	18.73%	23.27%	13.84%	11.87%	18.99%	22.97%	14.06%	11.86%
Regular - COLA	5.02%	6.16%	0.00%	0.00%	4.89%	5.77%	0.00%	0.00%
Section 6	5.43%	0.00%	0.00%	0.00%	5.59%	0.00%	0.00%	0.00%
Section 8	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Section 9	0.33%	0.25%	0.19%	0.00%	0.33%	0.24%	0.19%	0.00%
Administrative Expense	0.16%	0.16%	0.16%	0.16%	0.17%	0.17%	0.17%	0.17%
Subtotal	29.67%	29.84%	14.19%	12.03%	29.97%	29.15%	14.42%	12.03%
UAAL								
Regular – Basic	20.99%	20.99%	20.99%	20.99%	19.77%	19.77%	19.77%	19.77%
Regular – COLA	23.61%	23.61%	23.61%	23.61%	20.69%	20.69%	20.69%	20.69%
Section 6	5.61%	5.61%	5.61%	5.61%	3.92%	3.92%	3.92%	3.92%
Section 8	0.06%	0.06%	0.06%	0.06%	0.02%	0.02%	0.02%	0.02%
Section 9	0.91%	0.91%	0.91%	0.91%	0.80%	0.80%	0.80%	0.80%
Administrative Expense	0.78%	0.78%	0.78%	0.78%	0.76%	0.76%	0.76%	0.76%
Subtotal	51.96%	51.96%	51.96%	51.96%	45.96%	45.96%	45.96%	45.96%
Total	81.63%	81.80%	66.15%	63.99%	75.93%	75.11%	60.38%	57.99%

Note: Please refer to Section 4, Exhibit III for definition of Regular and Settlement Sections 6, 8 and 9 benefits.

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

The employer contribution rates as of June 30, 2016 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

Reconciliation of Recommended Employer Contribution

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

CHART 15

Reconciliation of Recommended Employer Contribution from June 30, 2015 to June 30, 2016 (Dollars in Thousands)

	Contribution Rate	Estimated Amount ⁽¹⁾
Recommended Contribution Rate as of June 30, 2015	51.36%	\$206,740
Effect of actuarial experience during 2015/2016:		
1. Effect of investment loss on valuation value of assets ⁽²⁾	2.00%	\$8,051
2. Effect of difference between actual and expected contributions ⁽³⁾	0.20%	805
3. Effect of salary increases less than expected during 2015/2016	-0.17%	-684
4. Effect of decrease in UAAL rate due to higher than expected increase in total payroll	-0.38%	-1,530
5. Effect of COLA increases less than expected	-1.55%	-6,239
6. Effect of change in explicit administrative expense load	0.01%	40
7. Effect of changes in actuarial assumptions	5.52%	22,220
8. Effect of other experience gains	<u>-0.25%</u>	<u>-1,018</u>
Subtotal	5.38%	\$21,645
Recommended Contribution Rate as of June 30, 2016	56.74%	\$228,385

⁽¹⁾ Based on June 30, 2016 projected annual compensation of \$402,535.

⁽²⁾ Return on valuation value of assets of 4.97% was less than the 7.25% assumed rate of return.

⁽³⁾ Contribution loss from one-year delay in implementing higher contribution rates recommended in June 30, 2015 valuation offset somewhat by the contributions gain from payroll increase more than expected.

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

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

The member contribution rates as of June 30, 2016 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

Reconciliation of Recommended Member Contribution Rate

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

CHART 16

Reconciliation of Recommended Member Contribution from June 30, 2015 to June 30, 2016 (Dollar Amounts in Thousands)

	Contribution Rate	Estimated Amount ⁽¹⁾
Average Contribution Rate as of June 30, 2015	9.33%	\$37,548
Effect of actuarial experience during 2015/2016:		
1. Effect of change in active member demographics	-0.02%	-\$63
2. Effect of change in explicit administrative expense load	-0.01%	-40
3. Effect of changes in actuarial assumptions	<u>0.32%</u>	<u>1,288</u>
Subtotal	0.29%	\$1,185
Average Contribution Rate as of June 30, 2016	9.62%	\$38,733

⁽¹⁾ Based on June 30, 2016 projected annual compensation of \$402,535.

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

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

E. FUNDED RATIO

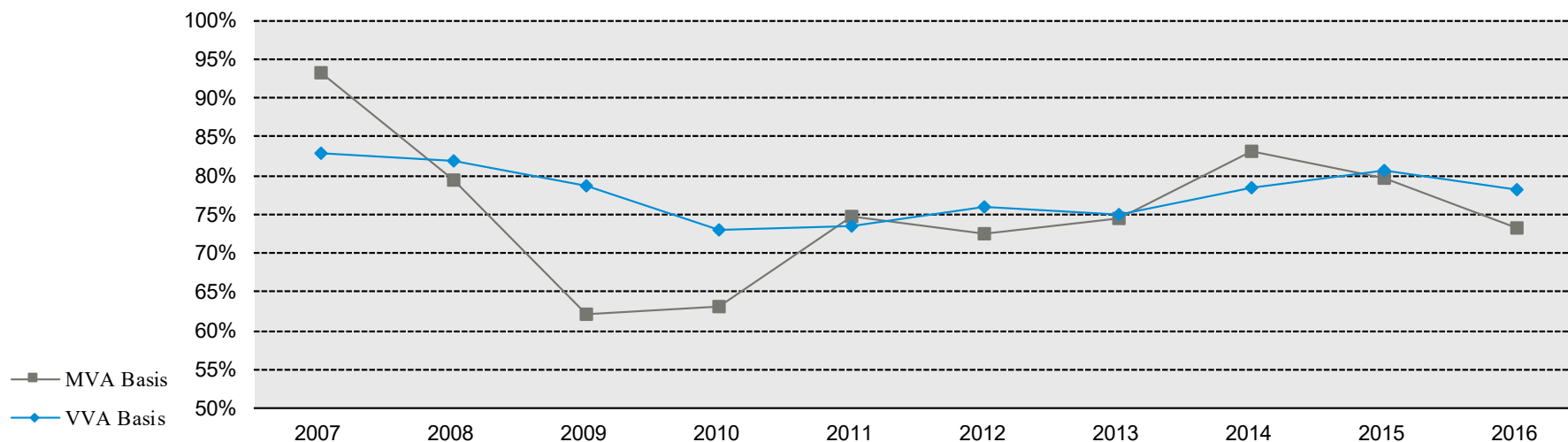
A commonly reported piece of information regarding the Plan's financial status is the funded ratio. These ratios compare the valuation value of assets and market value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors. The chart below depicts a history of the funded

ratio for this plan. Chart 18 on the next page shows the Plan's schedule of funding progress for the last ten years.

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.

CHART 17

Funded Ratio for Plan Years Ending June 30, 2007 - 2016



SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

CHART 18

Schedule of Funding Progress (Dollar Amounts in Thousands)

Actuarial Valuation Date	Valuation Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (a) – (b)	Funded Ratio (%) (a) / (b)	Projected Covered Payroll (c)	UAAL as a Percentage of Projected Covered Payroll (%) [(a) – (b)] / (c)
6/30/2007	\$2,610,269 ⁽¹⁾	\$3,149,570	\$539,301	82.9	\$404,277	133.4
6/30/2008	2,812,423	3,429,990	617,567	82.0	424,083	145.6
6/30/2009	2,864,956	3,644,743	779,787	78.6	422,519	184.6
6/30/2010	2,983,044	4,092,464	1,109,420	72.9	408,861	271.3
6/30/2011	3,114,483	4,237,961	1,123,478	73.5	398,976	281.6
6/30/2012	3,305,045	4,345,402	1,040,357	76.1	365,596	284.6
6/30/2013	3,518,982	4,694,780	1,175,798	75.0	370,079	317.7
6/30/2014	3,824,221	4,876,754	1,052,533	78.4	373,774	281.6
6/30/2015	4,092,647	5,074,333	981,686	80.7	383,775	255.8
6/30/2016	4,278,001	5,472,149	1,194,148	78.2	402,535	296.7

⁽¹⁾ Net of \$3,169 overpayment of member contributions, discounted to June 30, 2007.

SECTION 2: Valuation Results for the Fresno County Employees' Retirement Association

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 FCERA, the current AVR is 10.0. This means that a 1% asset gain/(loss) (relative to the assumed investment return) translates to 10.0% of one-year's payroll. Since FCERA amortizes actuarial gains and losses over a period of 15 years as of June 30, 2016, there would be a 0.9% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

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 FCERA, the current LVR is about 13.6. This is about 36% higher than the AVR. Therefore, we would expect that contribution volatility will increase over the long-term.

CHART 19

Volatility Ratios for Years Ended June 30, 2009 – 2016

Year Ended June 30	Asset Volatility Ratios			Liability Volatility Ratios		
	General	Safety	Total	General	Safety	Total
2009	5.2	6.0	5.4	8.3	10.2	8.6
2010	6.1	7.4	6.3	9.6	12.3	10.0
2011	7.6	9.9	7.9	10.1	13.6	10.6
2012	8.3	10.4	8.6	11.3	14.9	11.9
2013	9.1	11.2	9.5	12.1	15.6	12.7
2014	10.4	13.0	10.8	12.4	16.1	13.0
2015	10.0	13.1	10.5	12.5	16.8	13.2
2016	9.5	12.0	10.0	12.9	16.8	13.6

This chart shows how the asset and liability volatility ratios have varied over time.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT A

Table of Plan Coverage

i. General Tier 1

Category	Year Ended June 30		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	3,420	3,646	-6.2%
Average age	48.5	48.0	N/A
Average service	16.4	15.7	N/A
Projected total compensation	\$206,629,037	\$211,623,282	-2.4%
Projected average compensation	\$60,418	\$58,043	4.1%
Member account balances	\$212,695,411	\$208,315,150	2.1%
Vested terminated members			
Number	2,088	2,193	-4.8%
Average age	48.8	48.6	N/A
Retired members			
Number in pay status	5,147	5,045	2.0%
Average age	69.6	69.3	N/A
Average monthly benefit ⁽¹⁾	\$2,851	\$2,812	1.4%
Disabled members			
Number in pay status	205	192	6.8%
Average age	66.6	67.4	N/A
Average monthly benefit ⁽¹⁾	\$1,973	\$1,944	1.5%
Beneficiaries			
Number in pay status	716	681	5.1%
Average age	72.2	72.2	N/A
Average monthly benefit ⁽¹⁾	\$1,695	\$1,667	1.7%

⁽¹⁾ Benefits include regular and settlement benefits but exclude non-vested supplemental benefits.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT A

Table of Plan Coverage

ii. General Tier 2

Category	Year Ended June 30		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	136	157	-13.4%
Average age	44.4	43.5	N/A
Average service	7.2	6.4	N/A
Projected total compensation	\$9,597,613	\$10,663,149	-10.0%
Projected average compensation	\$70,571	\$67,918	3.9%
Member account balances	\$3,746,879	\$3,800,813	-1.4%
Vested terminated members			
Number	118	110	7.3%
Average age	43.9	44.0	N/A
Retired members			
Number in pay status	16	11	45.5%
Average age	63.1	61.1	N/A
Average monthly benefit ⁽¹⁾	\$2,038	\$2,493	-18.3%
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A

⁽¹⁾ Benefits include regular and settlement benefits but exclude non-vested supplemental benefits.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT A

Table of Plan Coverage

iii. General Tier 3

Category	Year Ended June 30		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	734	801	-8.4%
Average age	41.6	40.6	N/A
Average service	7.2	6.3	N/A
Projected total compensation	\$34,682,256	\$35,740,562	-3.0%
Projected average compensation	\$47,251	\$44,620	5.9%
Member account balances	\$14,609,357	\$13,217,721	10.5%
Vested terminated members			
Number	240	219	9.6%
Average age	40.3	40.0	N/A
Retired members			
Number in pay status	11	7	57.1%
Average age	60.9	64.2	N/A
Average monthly benefit ⁽¹⁾	\$4,535	\$1,079	320.3%
Disabled members			
Number in pay status	2	0	N/A
Average age	57.5	N/A	N/A
Average monthly benefit ⁽¹⁾	\$1,272	N/A	N/A
Beneficiaries			
Number in pay status	2	2	0.0%
Average age	61.9	60.9	N/A
Average monthly benefit ⁽¹⁾	\$1,105	\$1,094	1.0%

⁽¹⁾ Benefits include regular and settlement benefits but exclude non-vested supplemental benefits.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT A

Table of Plan Coverage

iv. General Tier 4

Category	Year Ended June 30		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	293	304	-3.6%
Average age	40.8	39.7	N/A
Average service	3.2	2.5	N/A
Projected total compensation	\$14,008,426	\$13,946,059	0.4%
Projected average compensation	\$47,810	\$45,875	4.2%
Member account balances	\$2,440,685	\$1,821,555	34.0%
Vested terminated members			
Number	115	103	11.7%
Average age	39.3	38.4	N/A
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A

⁽¹⁾ Benefits include regular benefits but exclude non-vested supplemental benefits.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT A

Table of Plan Coverage

v. General Tier 5

Category	Year Ended June 30		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	1,794	1,251	43.4%
Average age	35.6	34.9	N/A
Average service	1.4	1.0	N/A
Projected total compensation	\$70,898,131	\$50,762,002	39.7%
Projected average compensation	\$39,520	\$40,577	-2.6%
Member account balances	\$6,145,706	\$2,915,805	110.8%
Vested terminated members			
Number	436	262	66.4%
Average age	35.5	35.6	N/A
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A

⁽¹⁾ Benefits include regular benefits but exclude non-vested supplemental benefits.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT A

Table of Plan Coverage

vi. Safety Tier 1

Category	Year Ended June 30		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	563	594	-5.2%
Average age	45.4	44.8	N/A
Average service	17.5	16.8	N/A
Projected total compensation	\$46,192,292	\$46,763,419	-1.2%
Projected average compensation	\$82,047	\$78,726	4.2%
Member account balances	\$60,691,297	\$57,752,053	5.1%
Vested terminated members			
Number	212	216	-1.9%
Average age	46.5	45.8	N/A
Retired members			
Number in pay status	607	600	1.2%
Average age	66.1	65.6	N/A
Average monthly benefit ⁽¹⁾	\$4,633	\$4,605	0.6%
Disabled members			
Number in pay status	161	152	5.9%
Average age	59.3	59.1	N/A
Average monthly benefit ⁽¹⁾	\$3,332	\$3,315	0.5%
Beneficiaries			
Number in pay status	165	149	10.7%
Average age	67.0	66.8	N/A
Average monthly benefit ⁽¹⁾	\$2,129	\$2,092	1.8%

⁽¹⁾ Benefits include regular and settlement benefits but exclude non-vested supplemental benefits.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT A

Table of Plan Coverage

vii. Safety Tier 2

Category	Year Ended June 30		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	63	65	-3.1%
Average age	36.8	35.5	N/A
Average service	6.9	6.0	N/A
Projected total compensation	\$4,485,732	\$4,364,865	2.8%
Projected average compensation	\$71,202	\$67,152	6.0%
Member account balances	\$2,665,051	\$2,224,841	19.8%
Vested terminated members			
Number	23	23	0.0%
Average age	35.8	34.3	N/A
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A

⁽¹⁾ Benefits include regular and settlement benefits but exclude non-vested supplemental benefits.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT A

Table of Plan Coverage

viii. Safety Tier 4

Category	Year Ended June 30		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	61	67	-9.0%
Average age	33.3	32.6	N/A
Average service	3.3	2.4	N/A
Projected total compensation	\$3,818,542	\$3,847,528	-0.8%
Projected average compensation	\$62,599	\$57,426	9.0%
Member account balances	\$981,346	\$729,969	34.4%
Vested terminated members			
Number	19	17	11.8%
Average age	35.1	33.3	N/A
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A

⁽¹⁾ Benefits include regular and settlement benefits but exclude non-vested supplemental benefits.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT A

Table of Plan Coverage

ix. Safety Tier 5

Category	Year Ended June 30		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	233	116	100.9%
Average age	29.9	31.1	N/A
Average service	1.4	1.4	N/A
Projected total compensation	\$12,222,522	\$6,064,027	101.6%
Projected average compensation	\$52,457	\$52,276	0.3%
Member account balances	\$1,760,623	\$809,539	117.5%
Vested terminated members			
Number	38	20	90.0%
Average age	30.3	32.3	N/A
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽¹⁾	N/A	N/A	N/A

⁽¹⁾ Benefits include regular and settlement benefits but exclude non-vested supplemental benefits.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT B

**Members in Active Service and Projected Average Compensation
By Age, Years of Service as of June 30, 2016**

i. General Tier 1

Age	Years of Service									
	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	19	6	13	--	--	--	--	--	--	--
	\$41,810	\$39,472	\$42,888	--	--	--	--	--	--	--
30 - 34	171	8	97	66	--	--	--	--	--	--
	50,495	37,483	50,887	\$51,495	--	--	--	--	--	--
35 - 39	498	8	105	303	82	--	--	--	--	--
	57,989	56,397	58,281	59,125	\$53,576	--	--	--	--	--
40 - 44	602	6	58	226	283	29	--	--	--	--
	60,378	42,209	59,213	58,274	62,340	\$63,720	--	--	--	--
45 - 49	627	3	47	174	240	121	42	--	--	--
	61,987	38,970	60,529	58,836	63,337	66,517	\$57,548	--	--	--
50 - 54	628	1	38	137	181	126	125	19	1	--
	62,319	42,723	56,458	60,569	60,017	64,527	66,854	\$65,734	\$50,768	--
55 - 59	525	2	30	108	152	87	96	38	12	--
	63,139	53,442	58,574	59,028	58,535	63,963	69,240	78,253	68,827	--
60 - 64	280	2	18	65	92	54	36	6	7	--
	60,487	34,423	43,963	61,076	63,078	61,906	61,003	68,920	50,079	--
65 - 69	63	--	4	15	22	11	6	1	1	3
	55,202	--	46,647	56,323	53,721	55,300	52,114	89,524	85,178	\$56,239
70 & over	7	--	1	1	4	--	1	--	--	--
	58,604	--	42,842	81,604	63,410	--	32,142	--	--	--
Total	3,420	36	411	1,095	1,056	428	306	64	21	3
	\$60,418	\$43,791	\$55,513	\$58,713	\$60,829	\$64,352	\$65,234	\$73,838	\$62,496	\$56,239

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT B

**Members in Active Service and Projected Average Compensation
By Age, Years of Service as of June 30, 2016**

ii. General Tier 2

Age	Years of Service									
	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	10	5	5	--	--	--	--	--	--	--
	\$56,743	\$57,941	\$55,545	--	--	--	--	--	--	--
30 - 34	19	10	8	1	--	--	--	--	--	--
	61,374	56,244	69,389	\$48,556	--	--	--	--	--	--
35 - 39	27	6	19	2	--	--	--	--	--	--
	64,092	62,278	64,333	67,247	--	--	--	--	--	--
40 - 44	25	5	17	2	1	--	--	--	--	--
	78,103	91,578	73,778	81,877	\$76,701	--	--	--	--	--
45 - 49	11	--	11	--	--	--	--	--	--	--
	65,945	--	65,945	--	--	--	--	--	--	--
50 - 54	18	4	13	1	--	--	--	--	--	--
	68,602	92,148	62,822	49,558	--	--	--	--	--	--
55 - 59	12	1	9	1	1	--	--	--	--	--
	82,997	53,707	93,996	49,785	46,503	--	--	--	--	--
60 - 64	8	1	7	--	--	--	--	--	--	--
	94,589	75,169	97,363	--	--	--	--	--	--	--
65 - 69	4	--	3	1	--	--	--	--	--	--
	68,724	--	72,196	58,307	--	--	--	--	--	--
70 & over	2	--	1	1	--	--	--	--	--	--
	96,613	--	154,564	38,663	--	--	--	--	--	--
Total	136	32	93	9	2	--	--	--	--	--
	\$70,571	\$68,162	\$72,582	\$60,346	\$61,602	--	--	--	--	--

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT B

Members in Active Service and Projected Average Compensation By Age, Years of Service as of June 30, 2016

iii. General Tier 3

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	1	1	--	--	--	--	--	--	--	--
	\$54,635	\$54,635	--	--	--	--	--	--	--	--
25 - 29	52	36	16	--	--	--	--	--	--	--
	39,909	39,375	\$41,109	--	--	--	--	--	--	--
30 - 34	202	65	126	11	--	--	--	--	--	--
	46,770	43,861	48,178	\$47,832	--	--	--	--	--	--
35 - 39	143	37	97	7	2	--	--	--	--	--
	48,501	43,267	49,861	55,843	\$53,694	--	--	--	--	--
40 - 44	96	19	62	13	2	--	--	--	--	--
	51,373	43,361	53,847	52,331	44,573	--	--	--	--	--
45 - 49	74	20	41	7	6	--	--	--	--	--
	47,475	43,530	48,328	46,239	56,236	--	--	--	--	--
50 - 54	65	17	39	5	3	1	--	--	--	--
	44,949	38,540	46,850	42,151	53,338	\$68,622	--	--	--	--
55 - 59	57	14	34	4	5	--	--	--	--	--
	46,150	45,166	48,078	41,726	39,339	--	--	--	--	--
60 - 64	28	6	18	3	1	--	--	--	--	--
	49,307	48,385	51,292	45,026	31,944	--	--	--	--	--
65 - 69	15	2	11	2	--	--	--	--	--	--
	50,925	37,152	55,592	39,030	--	--	--	--	--	--
70 & over	1	1	--	--	--	--	--	--	--	--
	27,405	27,405	--	--	--	--	--	--	--	--
Total	734	218	444	52	19	1	--	--	--	--
	\$47,251	\$42,651	\$49,282	\$48,305	\$48,558	\$68,622	--	--	--	--

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT B

**Members in Active Service and Projected Average Compensation
By Age, Years of Service as of June 30, 2016**

iv. General Tier 4

Age	Years of Service									
	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	41	41	--	--	--	--	--	--	--	--
	\$44,502	\$44,502	--	--	--	--	--	--	--	--
30 - 34	71	71	--	--	--	--	--	--	--	--
	48,102	48,102	--	--	--	--	--	--	--	--
35 - 39	48	45	3	--	--	--	--	--	--	--
	48,151	47,644	\$55,762	--	--	--	--	--	--	--
40 - 44	33	33	--	--	--	--	--	--	--	--
	45,060	45,060	--	--	--	--	--	--	--	--
45 - 49	35	35	--	--	--	--	--	--	--	--
	49,528	49,528	--	--	--	--	--	--	--	--
50 - 54	28	28	--	--	--	--	--	--	--	--
	40,311	40,311	--	--	--	--	--	--	--	--
55 - 59	21	21	--	--	--	--	--	--	--	--
	57,422	57,422	--	--	--	--	--	--	--	--
60 - 64	13	13	--	--	--	--	--	--	--	--
	54,598	54,598	--	--	--	--	--	--	--	--
65 - 69	3	3	--	--	--	--	--	--	--	--
	64,178	64,178	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	293	290	3	--	--	--	--	--	--	--
	\$47,810	\$47,728	\$55,762	--	--	--	--	--	--	--

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT B

**Members in Active Service and Projected Average Compensation
By Age, Years of Service as of June 30, 2016**

v. General Tier 5

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	110	110	--	--	--	--	--	--	--	--
	\$34,423	\$34,423	--	--	--	--	--	--	--	--
25 - 29	549	549	--	--	--	--	--	--	--	--
	38,921	38,921	--	--	--	--	--	--	--	--
30 - 34	409	409	--	--	--	--	--	--	--	--
	39,871	39,871	--	--	--	--	--	--	--	--
35 - 39	256	256	--	--	--	--	--	--	--	--
	40,254	40,254	--	--	--	--	--	--	--	--
40 - 44	150	149	--	1	--	--	--	--	--	--
	41,258	41,283	--	\$37,525	--	--	--	--	--	--
45 - 49	112	111	--	1	--	--	--	--	--	--
	41,147	41,296	--	24,616	--	--	--	--	--	--
50 - 54	84	84	--	--	--	--	--	--	--	--
	37,764	37,764	--	--	--	--	--	--	--	--
55 - 59	74	73	--	1	--	--	--	--	--	--
	43,437	43,316	--	52,248	--	--	--	--	--	--
60 - 64	44	44	--	--	--	--	--	--	--	--
	40,042	40,042	--	--	--	--	--	--	--	--
65 - 69	4	4	--	--	--	--	--	--	--	--
	28,029	28,029	--	--	--	--	--	--	--	--
70 & over	2	2	--	--	--	--	--	--	--	--
	37,012	37,012	--	--	--	--	--	--	--	--
Total	1,794	1,791	--	3 ⁽¹⁾	--	--	--	--	--	--
	\$39,520	\$39,522	--	\$38,130	--	--	--	--	--	--

⁽¹⁾ These members have prior service with General Tier 1.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT B

**Members in Active Service and Projected Average Compensation
By Age, Years of Service as of June 30, 2016**

vi. Safety Tier 1

Age	Years of Service									
	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
30 - 34	24	--	6	18	--	--	--	--	--	--
	\$74,859	--	\$68,081	\$77,118	--	--	--	--	--	--
35 - 39	104	1	8	74	20	1	--	--	--	--
	79,763	\$73,780	71,363	78,239	\$88,763	\$85,691	--	--	--	--
40 - 44	144	1	2	48	74	19	--	--	--	--
	81,809	58,058	71,519	77,640	83,757	87,087	--	--	--	--
45 - 49	151	--	4	33	53	48	13	--	--	--
	82,535	--	67,866	77,789	82,129	84,759	\$92,541	--	--	--
50 - 54	105	--	1	11	20	28	42	3	--	--
	84,215	--	72,250	74,906	80,267	82,683	88,304	\$105,714	--	--
55 - 59	26	--	--	2	8	4	11	1	--	--
	80,846	--	--	84,957	79,038	83,519	79,584	90,262	--	--
60 - 64	7	--	--	1	2	2	1	1	--	--
	99,995	--	--	69,068	81,971	84,349	117,946	180,311	--	--
65 - 69	2	--	--	1	--	--	--	--	--	1
	106,251	--	--	82,597	--	--	--	--	--	\$129,906
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	563	2	21	188	177	102	67	5	--	1
	\$82,047	\$65,919	\$69,816	\$77,751	\$83,207	\$84,575	\$88,137	\$117,543	--	\$129,906

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT B

**Members in Active Service and Projected Average Compensation
By Age, Years of Service as of June 30, 2016**

vii. Safety Tier 2

Age	Years of Service									
	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	11	10	1	--	--	--	--	--	--	--
	\$60,209	\$60,933	\$52,971	--	--	--	--	--	--	--
30 - 34	25	7	15	3	--	--	--	--	--	--
	75,078	60,662	80,587	\$81,175	--	--	--	--	--	--
35 - 39	11	4	4	3	--	--	--	--	--	--
	69,808	65,626	66,007	80,452	--	--	--	--	--	--
40 - 44	7	6	1	--	--	--	--	--	--	--
	63,659	60,513	82,535	--	--	--	--	--	--	--
45 - 49	4	--	3	1	--	--	--	--	--	--
	81,672	--	84,412	73,455	--	--	--	--	--	--
50 - 54	1	--	1	--	--	--	--	--	--	--
	74,104	--	74,104	--	--	--	--	--	--	--
55 - 59	2	--	2	--	--	--	--	--	--	--
	88,667	--	88,667	--	--	--	--	--	--	--
60 - 64	2	--	2	--	--	--	--	--	--	--
	77,425	--	77,425	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	63	27	29	7	--	--	--	--	--	--
	\$71,202	\$61,464	\$78,202	\$79,763	--	--	--	--	--	--

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT B

**Members in Active Service and Projected Average Compensation
By Age, Years of Service as of June 30, 2016**

viii. Safety Tier 4

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	1	1	--	--	--	--	--	--	--	--
	\$59,253	\$59,253	--	--	--	--	--	--	--	--
25 - 29	20	20	--	--	--	--	--	--	--	--
	60,765	60,766	--	--	--	--	--	--	--	--
30 - 34	25	25	--	--	--	--	--	--	--	--
	63,229	63,229	--	--	--	--	--	--	--	--
35 - 39	8	8	--	--	--	--	--	--	--	--
	61,677	61,677	--	--	--	--	--	--	--	--
40 - 44	1	1	--	--	--	--	--	--	--	--
	59,335	59,335	--	--	--	--	--	--	--	--
45 - 49	4	4	--	--	--	--	--	--	--	--
	64,173	64,173	--	--	--	--	--	--	--	--
50 - 54	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
55 - 59	2	2	--	--	--	--	--	--	--	--
	76,909	76,909	--	--	--	--	--	--	--	--
60 - 64	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	61	61	--	--	--	--	--	--	--	--
	\$62,599	\$62,599	--	--	--	--	--	--	--	--

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT B

**Members in Active Service and Projected Average Compensation
By Age, Years of Service as of June 30, 2016**

ix. Safety Tier 5

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	37	37	--	--	--	--	--	--	--	--
	\$49,044	\$49,044	--	--	--	--	--	--	--	--
25 - 29	110	110	--	--	--	--	--	--	--	--
	51,556	51,556	--	--	--	--	--	--	--	--
30 - 34	53	53	--	--	--	--	--	--	--	--
	52,381	52,381	--	--	--	--	--	--	--	--
35 - 39	14	14	--	--	--	--	--	--	--	--
	54,713	54,713	--	--	--	--	--	--	--	--
40 - 44	10	10	--	--	--	--	--	--	--	--
	56,645	56,645	--	--	--	--	--	--	--	--
45 - 49	3	3	--	--	--	--	--	--	--	--
	57,237	57,237	--	--	--	--	--	--	--	--
50 - 54	3	3	--	--	--	--	--	--	--	--
	83,118	83,118	--	--	--	--	--	--	--	--
55 - 59	2	2	--	--	--	--	--	--	--	--
	74,072	74,072	--	--	--	--	--	--	--	--
60 - 64	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
65 - 69	1	1	--	--	--	--	--	--	--	--
	58,937	58,937	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	233	233	--	--	--	--	--	--	--	--
	\$52,457	\$52,457	--	--	--	--	--	--	--	--

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT C

Reconciliation of Member Data – June 30, 2015 to June 30, 2016

	Active Members	Vested Terminated Members	Pensioners	Disableds	Beneficiaries	Total
Number as of June 30, 2015	7,001	3,163	5,663	344	832	17,003
New members	887	95	0	0	0	982
Terminations – with vested rights	-285	285	0	0	0	0
Contributions refunds	-123	-101	0	0	0	-224
Retirements	-195	-94	289	0	0	0
New disabilities	-8	-2	-23	33	0	0
Return to work	29	-29	0	0	0	0
Died with or without beneficiary	-9	-28	-149	-9	55 ⁽¹⁾	-140
Data adjustments	0	0	1	0	-4	-3
Number as of June 30, 2016	7,297	3,289	5,781	368	883	17,618

⁽¹⁾ This is the net increase in the number of beneficiaries after subtracting the number of beneficiaries who died during the year.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT D

Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended June 30	
	2016	2015
Net Contribution income:		
Employer contributions	\$191,529,239	\$184,213,235
Employee contributions	35,211,756	33,109,947
Less administrative fees ⁽¹⁾	<u>(4,814,003)</u>	<u>N/A</u>
Contribution income	\$221,926,993	\$217,323,182
Investment income:		
Interest, dividends and other income	\$118,571,398	\$107,411,249
Adjustment toward market value	102,282,748	191,848,578
Less investment fees	<u>(17,765,997)</u>	<u>(20,671,471)</u>
Net investment income	<u>203,088,149</u>	<u>278,588,356</u>
Total income available for benefits	\$425,015,142	\$495,911,538
Less benefit payments:		
Service retirement	\$(231,686,871)	\$(220,186,023)
Death payments	(1,295,185)	(1,277,447)
Supplemental cost of living	(570,220)	(651,269)
Members refunds	(2,203,568)	(2,281,949)
Health benefit subsidies	<u>(4,475,511)</u>	<u>(6,999,784)</u>
Benefit payments	\$(240,231,354)	\$(231,396,472)
Change in reserve for future benefits	\$184,783,788	\$264,515,066

⁽¹⁾ Prior to 2016, administrative expenses were shown as an offset to investment income in this exhibit.

Results may not total properly due to rounding.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT E

Summary Statement of Assets

	Year Ended June 30,	
	2016	2015
Cash equivalents	\$94,681,304	\$94,482,125
Accounts receivable:		
Investment trades	\$26,812,274	\$13,313,027
Interest and dividends	13,077,363	12,607,803
Contributions and others	7,050,992	13,287,608
Securities lending	<u>132,945</u>	<u>82,586</u>
Total accounts receivable	47,073,575	39,291,024
Investments:		
Equities	\$1,506,843,998	\$1,605,510,034
Fixed income	1,631,199,875	1,567,135,876
Real estate	21,438,571	11,361,741
Securities lending collateral	200,177,900	229,788,086
Capital assets	10,379,124	9,816,120
Others	<u>730,659,584</u>	<u>724,238,871</u>
Total investments at market value	<u>4,100,699,052</u>	<u>4,147,850,728</u>
Total assets	\$4,242,453,931	\$4,281,623,877
Less accounts payable:		
Investment trades	\$(28,988,706)	\$(16,512,308)
Cash collateral payable for securities lending	(200,177,900)	(229,788,086)
Securities lending bank and broker fees	(31,913)	(19,529)
Others	<u>(3,759,480)</u>	<u>(3,184,605)</u>
Total accounts payable	<u>\$(232,957,999)</u>	<u>\$(249,504,528)</u>
Net assets at market value	<u>\$4,009,495,932</u>	<u>\$4,032,119,349</u>
Net assets at actuarial value	<u>\$4,278,160,681</u>	<u>\$4,093,376,893</u>
Net assets at valuation value	<u>\$4,278,001,313</u>	<u>\$4,092,647,359</u>

Results may not total properly due to rounding.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT G

Summary of Reported Asset Information as of June 30, 2016

	Reserves
Used in Development of Valuation Value of Assets	
<i>Regular Valuation Reserves</i>	
Members' Accumulated Contributions	\$392,508,771
Current Service Reserve	1,090,848,569
Annuity Pension Reserve	131,266,792
Current Service Pension Reserve	1,239,814,180
Cost of Living Reserve	1,136,613,812
Survivors' Death Benefit Reserve	(690,410)
Subtotal	\$3,990,361,714
<i>Settlement Reserves (Section 6)</i>	
Supplemental Annuity Reserve	\$614,394,638
Members' Accumulated Contributions	52,042,755
Current Service Reserve	250,849,309
Annuity Pension Reserve	27,600,233
Subtotal	\$944,886,935
<i>Settlement Benefit Reserve (Section 8)</i>	\$108,360,567
<i>Retiree Health Benefit Reserve (Section 9)</i>	\$35,147,255
<i>Contra Tracking Account</i>	\$(800,755,159)
<i>Valuation Value of Assets</i>	\$4,278,001,313
Not Used in Development of Valuation Value of Assets	
<i>Supplemental COLA</i>	\$159,368
<i>Retiree Health Benefit Reserve (BOR)</i>	0 ⁽¹⁾
<i>Contingency Reserve</i>	0
<i>Board Contingency Reserve/Undistributed Earnings ("Available Earnings")</i>	0
<i>Market Stabilization Reserve</i>	(268,664,749)
Total	\$(268,505,381)
<i>Market Value of Assets</i>	\$4,009,495,932

Note: Results may not total properly due to rounding.

⁽¹⁾ The balance in this reserve was equal to \$(3,416,589) but was limited to no less than \$0, reducing the balance in the Current Service Pension Reserve by \$3,416,589.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

EXHIBIT H

Development of Unfunded Actuarial Accrued Liability as of June 30, 2016

		(Dollar amounts in Thousands)
1	Unfunded actuarial accrued liability at beginning of year	\$981,686
2	Total Normal Cost payable at middle of year ⁽¹⁾	109,353
3	Expected administrative expenses	4,224
4	Expected employer and member contributions ⁽²⁾	-235,761
5	Interest (full year on (1) plus half year on (2) + (3) + (4))	<u>68,180</u>
6	Expected unfunded actuarial accrued liability at end of year	\$927,682
7	Actuarial (gain)/loss due to all changes:	
	<u>Experience (gain)/loss</u>	
a.	Loss from investment return on valuation value of assets (4.97%)	\$92,984
b.	Loss from actual contributions less than expected ⁽³⁾	9,341
c.	Gain from lower than expected salary increases	-8,130
d.	Gain from lower than expected COLA increases	-72,001
e.	Other experience losses	<u>3,500</u>
f.	Subtotal	\$25,694
	<u>Other changes</u>	
g.	Change in actuarial assumptions	<u>240,772</u>
h.	Subtotal	\$240,772
8	Actual unfunded actuarial accrued liability at end of year (6) + (7f) + (7h)	\$1,194,148

Notes: The "Net gain from other experience" of \$67,290,000 shown in Section 2, Chart 9 is equal to the sum of items 7(b) through 7(e).

⁽¹⁾ Excludes administrative expense load.

⁽²⁾ Includes contributions toward administrative expenses.

⁽³⁾ Contribution loss from one-year delay in implementing higher contribution rates recommended in June 30, 2015 valuation offset somewhat by the contributions gain from payroll increase more than expected.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

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 indexed for inflation. That limit is \$210,000 for 2016 and \$215,000 for 2017. 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.

For non-PEPRA members, 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 Fresno County Employees' Retirement Association

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 is anticipated to earn over the long-term future;
- (b) Mortality rates — the death rates of employees and pensioners at each age;
- (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 determined cost allocated to the current year of service, as a level % of payroll over the members' career.

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 (Overfunded) 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 overfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

SECTION 3: Supplemental Information for the Fresno County Employees' Retirement Association

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

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

Rate of 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 gains and losses on the market value of assets to avoid significant swings in the value of assets from one year to the next.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

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 883 beneficiaries in pay status)	7,032
2. Members inactive during year ended June 30, 2016 with vested rights	3,289
3. Members active during the year ended June 30, 2016	7,297

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

1. Normal cost ⁽¹⁾		\$114,277
2. Present value of future benefits		6,345,105
3. Present value of future normal costs (employer and member)		872,956
4. Actuarial accrued liability ⁽²⁾		5,472,149
Retired members and beneficiaries	\$3,332,514	
Inactive members with vested rights	276,878	
Active members	1,862,757	
5. Valuation value of assets ⁽²⁾ (\$4,009,496 at market value as reported by FCERA)		4,278,001
6. Unfunded actuarial accrued liability		\$1,194,148

⁽¹⁾ Includes administrative expense load.

⁽²⁾ Excludes non-valuation reserves and designations.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

EXHIBIT I (continued)

Summary of Actuarial Valuation Results

The determination of the recommended average employer contribution is as follows	Dollar Amount (in 000s)	% of Payroll
1. Total Normal Cost	\$114,277	28.39%
2. Expected member contributions	<u>-38,733</u>	<u>-9.62%</u>
3. Employer normal cost: (1) + (2)	\$75,544	18.77%
4. Amortization of Unfunded Actuarial Accrued Liability	<u>152,841</u>	<u>37.97%</u>
5. Total recommended average employer contribution: (3) + (4)	\$228,385	56.74%
6. Projected compensation	\$402,535	

Note: Both total normal cost and total UAAL rates include an explicit administrative expense load.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

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 March 10, 2016. Unless otherwise noted, all actuarial assumptions and methods shown below apply to members for all tiers.

Economic Assumptions

Net Investment Return: 7.00%, net of investment expenses.

Administrative Expenses: 1.10% of payroll, 0.94% allocated to the employers and 0.16% allocated to the members based on the components of the total average contribution rate (before expenses) for the employer and member

Employee Contribution Crediting Rate: 3.00%, compounded semi-annually. (The difference between the 7.00% net investment return assumption and 3.00% is credited to the other valuation reserves.)

Consumer Price Index: Increase of 3.00% per year, retiree COLA increases due to CPI subject to a 3.00% maximum change per year for General Tiers 1, 2 and 3, and Safety Tiers 1 and 2. General and Safety Tiers 4 and 5 receive no COLA increases.

Payroll Growth: Inflation of 3.00% per year plus “across the board” real salary increases of 0.50% per year.

Demographic Assumptions

Post – Retirement Mortality Rates:

Healthy:

For General Members and all Beneficiaries: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set forward one year for females.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Disabled:

For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set back two years.

For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set forward eight years.

For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set forward seven years.

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

*Member Contribution Rates
and Optional Benefits:*

For General Members and Beneficiaries: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set forward one year for females, weighted 35% male and 65% female for members and weighted 65% male and 35% female for beneficiaries.

For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set back two years weighted, 80% male and 20% female.

For Safety Beneficiaries: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set forward one year for females, weighted 20% male and 80% female.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Termination Rates Before Retirement:

Pre – Retirement Mortality Rates: For General and Safety Members: Headcount-Weighted RP-2014 Healthy Employee Mortality Table projected 20 years with the two-dimensional scale MP2015D times 75%. All pre-retirement deaths are assumed to be non-service connected deaths.

Age	Rate (%) Mortality			
	General ⁽¹⁾		Safety ⁽¹⁾	
	Male	Female	Male	Female
25	0.03	0.01	0.03	0.01
30	0.03	0.02	0.03	0.02
35	0.04	0.02	0.04	0.02
40	0.04	0.03	0.04	0.03
45	0.07	0.05	0.07	0.05
50	0.11	0.08	0.11	0.08
55	0.20	0.13	0.20	0.13
60	0.35	0.19	0.35	0.19
65	0.60	0.27	0.60	0.27

⁽¹⁾ All pre-retirement deaths are assumed to be non-service connected.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Termination Rates Before Retirement (Continued):

Age	Rate (%) Disability		
	General ⁽¹⁾		Safety ⁽²⁾
	Male	Female	Male and Female
20	0.01	0.01	0.05
25	0.01	0.02	0.11
30	0.02	0.02	0.24
35	0.04	0.06	0.42
40	0.12	0.10	0.56
45	0.21	0.14	0.66
50	0.25	0.17	0.76
55	0.31	0.24	1.52
60	0.68	0.33	3.20
65	0.96	0.59	4.00
70	1.00	0.90	4.00

⁽¹⁾ 50% of General disabilities are assumed to be duty disabilities. The other 50% are assumed to be ordinary disabilities.

⁽²⁾ 100% of Safety disabilities are assumed to be duty disabilities.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Termination Rates Before Retirement (Continued):

Rate (%)		
Total Termination (< 5 Years of Service)		
Years of Service	General	Safety
0	17.00	14.00
1	9.50	7.50
2	8.00	6.00
3	7.00	5.00
4	6.75	4.75

Rate (%)		
Total Termination (5+ Years of Service)		
Age	General	Safety
20	5.75	3.50
25	5.75	3.50
30	5.30	2.90
35	4.55	2.20
40	3.92	1.85
45	3.58	1.60
50	3.44	1.50
55	3.31	1.50
60	3.10	0.60
65	3.00	0.00
70	1.20	0.00

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Termination Rates Before Retirement (Continued):

Proportion of Total Termination Assumed to Receive Refunds and Deferred Vested Benefits (%)		
Years of Service	Refunds	Deferred Vested Benefits
0-4	60.00	40.00
5-9	30.00	70.00
10-14	25.00	75.00
15-19	15.00	85.00
20 or more	10.00	90.00

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Retirement Rates:

Rate (%)						
General						
Age	Tier 1	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
	Male	Female	Male & Female	Male & Female	Male & Female	Male & Female
50	5.00	4.00	3.00	2.40	2.00	0.00
51	3.50	4.00	3.00	2.40	2.00	0.00
52	3.00	4.00	3.60	2.80	2.50	4.50
53	4.00	4.00	3.60	2.80	2.50	2.00
54	4.00	6.00	4.20	3.40	3.00	2.50
55	8.00	9.00	8.40	6.70	4.00	3.50
56	9.00	11.00	10.00	8.00	5.00	4.50
57	14.00	14.00	10.00	8.00	6.00	5.50
58	15.00	15.00	10.00	8.00	7.00	6.50
59	16.00	16.00	10.00	12.00	8.00	7.50
60	25.00	20.00	15.00	15.40	9.00	8.50
61	20.00	22.00	15.00	15.40	10.00	9.50
62	25.00	28.00	25.00	27.40	16.00	15.00
63	25.00	22.00	24.00	19.00	16.00	15.00
64	25.00	25.00	24.00	19.00	19.00	18.00
65	45.00	35.00	35.00	34.60	23.00	22.00
66	40.00	35.00	34.00	26.60	20.00	20.00
67	40.00	35.00	34.00	26.60	20.00	20.00
68	40.00	45.00	35.00	32.00	25.00	25.00
69	50.00	45.00	35.00	37.00	30.00	30.00
70	50.00	50.00	70.00	60.00	60.00	60.00
71	50.00	50.00	70.00	60.00	60.00	60.00
72	50.00	50.00	70.00	60.00	60.00	60.00
73	50.00	50.00	70.00	60.00	60.00	60.00
74	50.00	50.00	70.00	60.00	60.00	60.00
75	100.00	100.00	100.00	100.00	100.00	100.00

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Retirement Rates (Continued):

Age	Rate (%)		
	Safety		
	Tier 1 & Tier 2	Tier 4	Tier 5
	Male & Female	Male & Female	Male & Female
45	1.00	1.00	0.00
46	1.00	1.00	0.00
47	1.00	1.00	0.00
48	1.00	1.00	0.00
49	3.00	2.00	0.00
50	5.00	4.00	4.00
51	7.00	4.00	4.00
52	8.00	5.00	5.00
53	14.00	6.00	6.00
54	27.00	11.00	11.00
55	40.00	20.00	20.00
56	25.00	20.00	20.00
57	25.00	20.00	25.00
58	20.00	20.00	20.00
59	20.00	23.00	23.00
60	40.00	45.00	45.00
61	40.00	45.00	45.00
62	50.00	45.00	45.00
63	50.00	45.00	45.00
64	50.00	45.00	45.00
65	100.00	100.00	100.00

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

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

For current deferred vested members, retirement assumptions are as follows:

General: Age 58
Safety: Age 54

We assume that 20% of future General and 30% of future Safety deferred vested members terminated with less than five years of service will continue to work for a reciprocal employer. For those future deferred vested members terminated with five or more years of service, we assume that 35% of General and 55% of Safety will continue to work for a reciprocal employer. In addition, we assume 4.50% and 4.90% compensation increases per annum for General and Safety members, respectively.

Future Benefit Accruals:

1.0 year of service per year of employment.

Annual Leave Conversion:

Eligibility for annual leave plans is determined based on hire date along with other factors. The number of members in each plan used to set the assumptions below can be found on page 59 of our July 1, 2012 through June 30, 2015 Actuarial Experience Study. The following assumptions for the amount of service converted from unused annual leave at retirement are used:

New Annual Leave Plan:

35 hours per year of service.

Annual Leave Plan II:

25 hours per year of service.

Vacation/Sick Leave Plans:

35 hours per year of service for General and 40 hours per year of service for Safety.

Annual Leave IV Plan or
the Old Annual Leave Plan:

Based on actual hours in a member's frozen time-off bank.

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:

75% of male members; 50% of female members.

Age of Spouse:

Male retirees are 3 years older than their spouses, and Female retirees are 2 years younger than their spouses.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Individual Salary Increases:

<u>Annual Rate of Compensation Increase</u>		
Inflation: 3.00%; plus “across the board” salary increases of 0.50% per year; plus the following merit and promotional increases.		
Service	General	Safety
0	8.00%	8.00%
1	7.00%	7.00%
2	6.00%	5.50%
3	5.00%	5.50%
4	4.00%	5.00%
5	2.75%	3.75%
6	2.25%	3.25%
7	1.25%	2.75%
8 or more	1.00%	1.40%

*Increase in Section 7522.10
Compensation Limit:*

Increase of 3.00% per year from the valuation date.

Actuarial Methods

Actuarial Value of Assets:

The actuarial value of assets is determined by recognizing any difference between actual and expected market return over 10 six-month interest crediting periods. The actuarial value of assets is further adjusted, if necessary, to be within 30% of the market value of assets.

Valuation Value of Assets:

The actuarial value of assets, reduced by the value of the non-valuation reserves.

Actuarial Cost Method:

Entry Age 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.

Changes in Actuarial Assumptions and Methods:

The Board adopted demographic and economic assumptions as recommended by Segal in the July 1, 2012 through June 30, 2015 Actuarial Experience Study and June 30, 2016 Economic Actuarial Assumptions Report both dated March 10, 2016. Previously, these assumptions were as follows:

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)

Economic Assumptions

Net Investment Return:	7.25%, net of investment expenses.
Consumer Price Index:	Increase of 3.25% per year, retiree COLA increases due to CPI subject to a 3.00% maximum change per year for General Tiers 1, 2 and 3, and Safety Tiers 1 and 2. General and Safety Tiers 4 and 5 receive no COLA increases.
Payroll Growth:	Inflation of 3.25% per year plus “across the board” real salary increases of 0.50% per year.

Demographic Assumptions

Post – Retirement Mortality Rates:

Healthy:

For General Members and all Beneficiaries: RP-2000 Combined Healthy Mortality Table projected with Scale AA to 2015, set back one year for males and set back two years for females.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale AA to 2015, set back one year.

Disabled:

For General Members: RP-2000 Combined Healthy Mortality Table projected with Scale AA to 2015, set forward six years for males and set forward five years for females.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale AA to 2015, set forward one year.

The above mortality tables contain about a 10% margin, based on actual to expected deaths, as a provision appropriate to reasonably anticipate future mortality improvement, based on a review of mortality experience as of the measurement date.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)

Member Contribution Rates and Optional Benefits:

For General Members and Beneficiaries: RP-2000 Combined Healthy Mortality Table projected with Scale AA to 2015, set back one year for males and set back two years for females, weighted 35% male and 65% female for members and weighted 65% male and 35% female for beneficiaries.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale AA to 2015, set back one year, weighted 80% male and 20% female.

For Safety Beneficiaries: RP-2000 Combined Healthy Mortality Table projected with Scale AA to 2015, set back one year for males and set back two years for females, weighted 20% male and 80% female.

Termination Rates Before Retirement:

Age	Rate (%) Mortality			
	General ⁽¹⁾		Safety ⁽¹⁾	
	Male	Female	Male	Female
25	0.03	0.02	0.03	0.02
30	0.04	0.02	0.04	0.02
35	0.07	0.03	0.07	0.04
40	0.09	0.05	0.09	0.05
45	0.12	0.07	0.12	0.08
50	0.15	0.11	0.15	0.12
55	0.24	0.18	0.24	0.21
60	0.47	0.36	0.47	0.41
65	0.91	0.71	0.91	0.80

⁽¹⁾ All pre-retirement deaths are assumed to be non-service connected.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)

Termination Rates Before Retirement (Continued):

Age	Rate (%)		
	Disability		
	General ⁽¹⁾		Safety ⁽²⁾
	Male	Female	Male and Female
20	0.01	0.01	0.01
25	0.01	0.02	0.11
30	0.02	0.02	0.24
35	0.03	0.06	0.42
40	0.04	0.10	0.62
45	0.17	0.16	0.82
50	0.28	0.19	1.02
55	0.39	0.29	2.24
60	0.78	0.44	3.00
65	1.00	0.50	3.00

⁽¹⁾ One-third of General disabilities are assumed to be duty disabilities. The other two-thirds are assumed to be ordinary disabilities.

⁽²⁾ 100% of Safety disabilities are assumed to be duty disabilities.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)

Termination Rates Before Retirement (Continued):

Rate (%)			
Total Termination (< 5 Years of Service)			
Years of Service	General		Safety
	Male	Female	Male and Female
0	17.00	15.00	17.00
1	8.00	7.00	6.00
2	7.00	6.50	5.00
3	6.00	5.00	4.75
4	6.00	5.00	4.50

Rate (%)			
Total Termination (5+ Years of Service)			
Age	General		Safety
	Male	Female	Male and Female
20	5.50	5.00	3.75
25	5.50	5.00	3.75
30	4.90	5.00	3.30
35	4.20	4.70	2.70
40	3.88	4.20	2.20
45	3.68	3.70	1.40
50	3.54	3.35	1.00
55	3.35	3.10	1.00
60	3.10	3.00	0.40
65	2.10	2.10	0.00

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)

Termination Rates Before Retirement (Continued):

Proportion of Total Termination Assumed to Receive Refunds and Deferred Vested Benefits (%)		
Years of Service	Refunds	Deferred Vested Benefits
0-4	90.00	10.00
5-9	30.00	70.00
10-14	30.00	70.00
15-19	15.00	85.00
20 or more	15.00	85.00

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)

Retirement Rates:

Age	Rate (%)					
	General					
	Tier 1	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
	Male	Female	Male & Female	Male & Female	Male & Female	Male & Female
50	4.00	5.00	3.00	3.00	2.00	0.00
51	3.00	5.00	3.00	3.00	2.00	0.00
52	3.00	5.00	3.60	3.60	2.50	4.50
53	4.00	5.00	3.60	3.60	2.50	2.00
54	5.00	6.00	4.20	4.20	3.00	2.50
55	8.00	9.00	8.40	8.40	4.00	3.50
56	11.00	12.00	10.00	10.00	5.00	4.50
57	16.00	14.00	10.00	10.00	6.00	5.50
58	21.00	15.00	10.00	10.00	7.00	6.50
59	22.00	18.00	10.00	15.00	8.00	7.50
60	25.00	19.00	15.00	19.20	9.00	8.50
61	25.00	23.00	15.00	19.20	11.00	10.50
62	27.00	27.00	25.00	34.20	17.00	16.00
63	27.00	25.00	24.00	23.70	16.00	15.00
64	30.00	27.00	24.00	23.70	20.00	19.00
65	40.00	40.00	35.00	43.30	25.00	24.00
66	50.00	40.00	34.00	33.30	21.00	21.00
67	50.00	40.00	34.00	33.30	21.00	21.00
68	50.00	45.00	35.00	40.00	25.00	25.00
69	50.00	50.00	35.00	46.70	30.00	30.00
70	100.00	100.00	100.00	100.00	100.00	100.00

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)**Retirement Rates (Continued):**

Age	Rate (%)		
	Safety		
	Tier 1 & Tier 2	Tier 4	Tier 5
	Male & Female	Male & Female	Male & Female
45	1.00	1.00	0.00
46	1.00	1.00	0.00
47	1.00	1.00	0.00
48	1.00	1.00	0.00
49	3.00	2.00	0.00
50	6.00	4.00	4.00
51	6.00	4.00	4.00
52	9.00	5.00	5.00
53	18.00	6.00	6.00
54	30.00	11.00	11.00
55	40.00	20.00	20.00
56	25.00	20.00	20.00
57	25.00	20.00	20.00
58	25.00	20.00	20.00
59	25.00	23.00	23.00
60	50.00	50.00	50.00
61	50.00	50.00	50.00
62	50.00	50.00	50.00
63	50.00	50.00	50.00
64	50.00	50.00	50.00
65	100.00	100.00	100.00

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)

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

For current deferred vested members, retirement assumptions are as follows:

General: Age 58
Safety: Age 55

We assume that 40% of future General and 65% of future Safety deferred vested members will continue to work for a reciprocal employer. For these members, we assume 4.75% and 5.25% compensation increases per annum for General and Safety members, respectively.

Annual Leave Conversion:

Eligibility for annual leave plans is determined based on hire date along with other factors. The number of members in each plan used to set the assumptions below can be found on page 48 of our June 30, 2012 Actuarial Experience Study. The following assumptions for amount of service converted from unused annual leave at retirement are used:

New Annual Leave Plan: 40 hours per year of service.

Annual Leave Plan II: 30 hours per year of service.

Vacation/Sick Leave Plans: 35 hours per year of service for General and 40 hours per year of service for Safety.

Annual Leave IV Plan or
the Old Annual Leave Plan: Based on actual hours in a member's frozen time off bank.

Percent Married: 75% of male members; 55% of female members.

Age of Spouse: Wives are 3 years younger than their husbands.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)

Individual Salary Increases:

<u>Annual Rate of Compensation Increase</u>		
Inflation: 3.25%; plus “across the board” salary increases of 0.50% per year; plus the following merit and promotional increases.		
Service	General	Safety
0	7.00%	7.00%
1	6.00%	6.00%
2	5.50%	5.50%
3	5.00%	5.25%
4	4.00%	4.25%
5	2.25%	3.75%
6	1.50%	3.50%
7	1.25%	3.25%
8 or more	1.00%	1.50%

*Increase in Section 7522.10
Compensation Limit:*

Increase of 3.25% per year from the valuation date.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

EXHIBIT III

Summary of Plan Provisions

This exhibit summarizes the major provisions of the FCERA 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:

	Membership with FCERA usually begins with the first day of the pay period following the date of appointment to a permanent position of at least 50% full-time.
<i>General and Safety Tier 1</i>	All General and Safety members hired on or before February 26, 2006 and General and Safety members of certain bargaining units hired after February 26, 2006.
<i>General and Safety Tier 2</i>	General and Safety members of certain bargaining units hired after February 26, 2006 and former Tier 1 members hired on or before February 26, 2006 who have elected to transfer to Tier 2.
<i>General Tier 3</i>	General members of certain bargaining units hired after December 17, 2007 and those eligible Tier 2 members hired on or before December 17, 2007.
<i>General and Safety Tier 4</i>	General and Safety County members hired on or after June 11, 2012 and prior to January 1, 2013.
<i>General and Safety Tier 5</i>	All General and Safety members hired on or after January 1, 2013.

Final Compensation for Benefit Determination:

<i>General and Safety Tiers 1 & 2</i>	Highest one-year average final compensation (§31462.1) (FAS1).
<i>General Tiers 3 & 4 and Safety Tier 4</i>	Highest three-year average final compensation (§31462) (FAS3).
<i>General and Safety Tier 5</i>	Highest consecutive three years of pensionable compensation (§7522.10(c), §7522.32 and §7522.34) (FAS3)

Service:	Years of service (Yrs).
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SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Service Retirement Eligibility:

General

General Tiers 1, 2, 3 &4

Age 50 with 10 years of service, or age 70 regardless of service, or after 30 years of service, regardless of age (§31672).

General Tier 5

Age 52 with 5 years of service (§7522.20(a)) or age 70 regardless of service (§31672.3).

Safety

Safety Tiers 1, 2 &4

Age 50 with 10 years of service, or after 30 years of service, regardless of age (§31663.25).

Safety Tier 5

Age 50 with 5 years of service (§7522.25(d)) or age 70 regardless of service (§31672.3).

Benefit Formula:

	Retirement Age	Benefit Formula
<i>General Tier 1</i>	50	$(1.86\% \times \text{FAS1} - 1/3 \times 1.86\% \times \$350 \times 12) \times \text{Yrs}$
<i>Regular benefit under §31676.12 and</i>	55	$(2.50\% \times \text{FAS1} - 1/3 \times 2.50\% \times \$350 \times 12) \times \text{Yrs}$
<i>Settlement benefit under §31676.14 and §31627</i>	60 or later	$(3.27\% \times \text{FAS1} - 1/3 \times 3.27\% \times \$350 \times 12) \times \text{Yrs}$
<i>General Tier 2 (§31676.16)</i>	50	$(1.43\% \times \text{FAS1} - 1/3 \times 1.43\% \times \$350 \times 12) \times \text{Yrs}$
	55	$(2.00\% \times \text{FAS1} - 1/3 \times 2.00\% \times \$350 \times 12) \times \text{Yrs}$
	60	$(2.26\% \times \text{FAS1} - 1/3 \times 2.26\% \times \$350 \times 12) \times \text{Yrs}$
	62	$(2.37\% \times \text{FAS1} - 1/3 \times 2.37\% \times \$350 \times 12) \times \text{Yrs}$
	63 or later	$(2.42\% \times \text{FAS1} - 1/3 \times 2.42\% \times \$350 \times 12) \times \text{Yrs}$
<i>General Tier 3 (§31676.15)</i>	50	$(1.49\% \times \text{FAS3} - 1/3 \times 1.49\% \times \$350 \times 12) \times \text{Yrs}$
	55	$(2.00\% \times \text{FAS3} - 1/3 \times 2.00\% \times \$350 \times 12) \times \text{Yrs}$
	60	$(2.62\% \times \text{FAS3} - 1/3 \times 2.62\% \times \$350 \times 12) \times \text{Yrs}$
	62	$(2.82\% \times \text{FAS3} - 1/3 \times 2.82\% \times \$350 \times 12) \times \text{Yrs}$
	65 or later	$(3.13\% \times \text{FAS3} - 1/3 \times 3.13\% \times \$350 \times 12) \times \text{Yrs}$

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

	Retirement Age	Benefit Formula
<i>General Tier 4 (§31676.1)</i>	50	$(1.18\% \times \text{FAS3} - 1/3 \times 1.18\% \times \$350 \times 12) \times \text{Yrs}$
	55	$(1.49\% \times \text{FAS3} - 1/3 \times 1.49\% \times \$350 \times 12) \times \text{Yrs}$
	60	$(1.92\% \times \text{FAS3} - 1/3 \times 1.92\% \times \$350 \times 12) \times \text{Yrs}$
	62	$(2.09\% \times \text{FAS3} - 1/3 \times 2.09\% \times \$350 \times 12) \times \text{Yrs}$
	65 or later	$(2.43\% \times \text{FAS3} - 1/3 \times 2.43\% \times \$350 \times 12) \times \text{Yrs}$
<i>General Tier 5 (§7522.20(a))</i>	52	$1.00\% \times \text{FAS3} \times \text{Yrs}$
	55	$1.30\% \times \text{FAS3} \times \text{Yrs}$
	60	$1.80\% \times \text{FAS3} \times \text{Yrs}$
	62	$2.00\% \times \text{FAS3} \times \text{Yrs}$
	65	$2.30\% \times \text{FAS3} \times \text{Yrs}$
	67 or later	$2.50\% \times \text{FAS3} \times \text{Yrs}$
<i>Safety Tier 1</i>	50	$(2.50\% \times \text{FAS1} - 1/3 \times 2.50\% \times \$350 \times 12) \times \text{Yrs}$
<i>Regular benefit under §31664 and Settlement benefit under §31627</i>	55 or later	$(3.27\% \times \text{FAS1} - 1/3 \times 3.27\% \times \$350 \times 12) \times \text{Yrs}$
<i>Safety Tier 2 (§31664.2)</i>	50	$(2.29\% \times \text{FAS1} - 1/3 \times 2.29\% \times \$350 \times 12) \times \text{Yrs}$
	55 or later	$(3.00\% \times \text{FAS1} - 1/3 \times 3.00\% \times \$350 \times 12) \times \text{Yrs}$
<i>Safety Tier 4 (§31664)</i>	50	$(2.00\% \times \text{FAS3} - 1/3 \times 2.00\% \times \$350 \times 12) \times \text{Yrs}$
	55 or later	$(2.62\% \times \text{FAS3} - 1/3 \times 2.62\% \times \$350 \times 12) \times \text{Yrs}$
<i>Safety Tier 5 (§7522.25(d))</i>	50	$2.00\% \times \text{FAS3} \times \text{Yrs}$
	55	$2.50\% \times \text{FAS3} \times \text{Yrs}$
	57 or later	$2.70\% \times \text{FAS3} \times \text{Yrs}$

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Maximum Benefit:

*General Tiers 1, 2, 3 & 4 and
Safety Tiers 1, 2 & 4*

100% of Final Compensation (§31676.14, §31676.16, §31676.15, §31676.1, §31664 and §31664.2).

General Tier 5 and Safety Tier 5

None.

Ordinary Disability:*

General Tiers 1, 2, 4 & 5

Eligibility

Five years of service (§31720).

Benefit Formula

1.5% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 65, but the total benefit cannot be more than one-third of Final Compensation. The service retirement benefit is paid, if greater.

General Tier 3

Eligibility

Five years of service (§31720).

Benefit Formula

1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 65, but the total benefit cannot be more than one-third of Final Compensation. The service retirement benefit is paid, if greater.

Safety Tiers 1, 2, 4 & 5

Eligibility

Five years of service (§31720).

Benefit Formula

1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 55, but the total benefit cannot be more than one-third of Final Compensation. The service retirement benefit is paid, if greater.

** For General and Safety Tier 1 members who retire because of disability, there is an allocation of the value of their disability benefits made by the Association's Pension Administration System between the "Regular" and "Settlement" benefits assuming those members would have been eligible to retire and collect a service retirement benefit. While it does not change the total contribution rates paid by each of the employer and the employee, consistent with the prior valuations we have continued in this valuation to adjust the allocation of the rates between "Regular" and "Settlement" benefits so as to be consistent with the allocation made by the Association's Pension Administration System.*

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Line-of-Duty Disability:*

All Members

Eligibility

No age or service requirements (§31720).

Benefit Formula

50% of the Final Compensation or 100% of Service Retirement benefit, if greater (§31727.4).

Pre-Retirement Death:

All Members

Eligibility

None.

Basic lump sum benefit

Refund of employee contributions with interest, plus one month's compensation for each year of service, to a maximum of six months' compensation (§31781).

Death in line of duty

50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor children (§31787).

OR

Vested Members

Eligibility

Five years of service.

Basic benefit

60% of the greater of Service or Ordinary Disability Retirement benefit payable to surviving eligible spouse (§31765.1, §31781.1), in lieu of the basic lump sum benefit above.

Death in line of duty

50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor children (§31787).

** For General and Safety Tier I members who retire because of disability, there is an allocation of the value of their disability benefits made by the Association's Pension Administration System between the "Regular" and "Settlement" benefits assuming those members would have been eligible to retire and collect a service retirement benefit. While it does not change the total contribution rates paid by each of the employer and the employee, consistent with the prior valuations we have continued in this valuation to adjust the allocation of the rates between "Regular" and "Settlement" benefits so as to be consistent with the allocation made by the Association's Pension Administration System.*

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Death After Retirement:

All Members

Service or

Ordinary Disability Retirement

60% of member's unmodified allowance continued to eligible spouse (§31760.1). An eligible spouse is a surviving spouse who was married to the member at least one year prior to the date of retirement (§31760.1) or at least two years prior to the date of death and has attained age 55 on or prior to the date of death (§31786.1).

Line-of-Duty Disability

100% of member's allowance continued to eligible spouse (§31786).

Withdrawal Benefits:

Less than Five Years of Service

Refund of accumulated employee contributions with interest, or earned benefit at age 70 (§31628). Effective January 1, 2003, a member may also elect to leave contributions on deposit in the retirement fund (§31629.5).

Five or More Years of Service

If contributions left on deposit, entitled to earned benefits commencing at any time after eligible to retire (§31700).

Post-retirement

Cost-of-Living Benefits:

General Tiers 1, 2 & 3 and Safety Tiers 1 & 2

Future changes based on Consumer Price Index to a maximum of 3% per year; excess "banked" (§31870.1).

General Tiers 4 & 5 and Safety Tiers 4 & 5

None.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Conversion of Annual Leave

General members

New Annual Leave Plan (5Y)	Members who entered the plan on or before October 10, 1983 and in bargaining groups who have agreed to this plan may convert hours in excess of 1,100 hours.
Annual Leave Plan II (5Y)	Members who entered the plan after October 10, 1983 with accruals in the 5Y leave plan and in bargaining groups who have agreed to this plan may convert hours in excess of 400 hours.
Vacation/Sick Leave Plans (5Q, 5S and 5W)	Members who entered the plan on or after December 14, 1998 and in bargaining groups who have agreed to these plans may convert all accrued sick leave hours to service upon retirement.
Annual Leave IV Plan or the Old Annual Leave Plan (5O)	Members hired on or after October 10, 1983 or prior to that date, respectively, and who are in bargaining groups who have agreed to these plans, management or are unrepresented will convert any frozen hours balance to service at retirement.

Safety members

New Annual Leave Plan (5Y)	Members who entered the plan on or before October 10, 1983 and in bargaining groups who have agreed to this plan may convert hours in excess of 1,100 hours.
Annual Leave Plan II (5Y)	Members who entered the plan after October 10, 1983 with accruals in the 5Y leave plan and in bargaining groups who have agreed to this plan may convert hours in excess of 400 hours.
Vacation/Sick Leave Plans (5Q, 5S and 5W)	Members who entered the plan on or after December 14, 1998 and in bargaining groups who have agreed to these plans may convert all accrued sick leave hours to service.
Annual Leave IV Plan or the Old Annual Leave Plan (5O)	Members hired on or after October 10, 1983 or prior to that date, respectively, and who are in bargaining groups who have agreed to these plans, management or are unrepresented will convert any frozen hours balance to service at retirement.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

County Contributions:	Unfunded Actuarial Accrued Liability established as of June 30, 2003 is amortized over a declining period with 17-years remaining. Unfunded Actuarial Accrued Liability established as a result of the Tier 3 benefit improvement is amortized over a declining period with 20-years remaining. The amortization period for UAAL established on each subsequent valuation as a result of actuarial gains or losses, changes in actuarial assumptions or plan amendments is a declining 15-year period.
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Ventura Settlement Benefits:

Section 6	For Tier 1 members retiring on or after January 1, 2001 –The difference between the regular plus settlement benefits, and the regular benefit (i.e., Section 31676.12 for General Tier 1 and Section 31664 for Safety Tier 1)
Section 8	For Tier 1 members who retired prior to January 1, 2001 - \$15 per month per year of service, up to a maximum monthly benefit of \$450.
Section 9	All retired members (excluding General Tiers 4 & 5 and Safety Tier 5 members) are entitled to a \$3 per month per year of service benefit. Future increase in this benefit will be tied to the amount of future undistributed earnings. For the purpose of this valuation, it is assumed that there will be no future increase in the amount of benefit.

Non-Vested Supplemental Benefit:	Non-vested discretionary purchasing power and additional retiree health benefits are also paid to eligible retirees and beneficiaries. These benefits and the associated reserves have been excluded from the development of employer and member contribution rates in this valuation.
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Member Contributions:	Please refer to Appendix A for specific rates.
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General Tier 1

<i>Regular Basic</i>	Provide for an average annuity at age 60 equal to 1/200 of FAS1 (§31621.5).
<i>Regular Plus Settlement Basic</i>	Provide for an average annuity at age 55 equal to 1/160 of FAS1 (§31627).
<i>Cost-of-Living</i>	Provide for one-half of future Cost-of-Living costs.

General Tier 2

<i>Basic</i>	Provide for an average annuity at age 60 equal to 1/240 of FAS1 (§31621.4).
<i>Cost-of-Living</i>	Provide for one-half of future Cost-of-Living costs.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

General Tier 3

Basic

Provide for an average annuity at age 55 equal to 1/200 of FAS3 (§31621.6 and §31630).

Cost-of-Living

Provide for one-half of future Cost-of-Living costs.

General Tier 4

Basic

Provide for an average annuity at age 60 equal to 1/120 of FAS3 (§31621).

Cost-of-Living

Not applicable.

General Tier 5

50% of the total Normal Cost rate.

Safety Tier 1

Regular Basic

Provide for an average annuity at age 50 equal to 1/200 of FAS1 (§31639.5).

Regular Plus Settlement Basic

Provide for an average annuity at age 50 equal to 1/160 of FAS1 (§31627).

Cost-of-Living

Provide for one-half of future Cost-of-Living costs.

Safety Tier 2

Basic

Provide for an average annuity at age 50 equal to 1/200 of FAS1 (§31639.5).

Cost-of-Living

Provide for one-half of future Cost-of-Living costs.

Safety Tier 4

Basic

Provide for an average annuity at age 50 equal to 1/100 of FAS3 (§31639.25).

Cost-of-Living

Not applicable.

Safety Tier 5

50% of the total Normal Cost rate.

Other Information:

Non-Tier 5 Safety members with 30 or more years of service are exempt from paying member contributions. The same applies for General members hired on or before March 7, 1973.

NOTE: *The summary of major plan provisions is designed to outline principal plan benefits as interpreted for purposes of the actuarial valuation. If the Association should find the plan summary not in accordance with the actual provisions, the Association should alert Segal, to ensure the proper provisions are valued.*

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix A

Member Contribution Rates

Comparison of Total Member Rate from June 30, 2016 (New) and June 30, 2015 (Current) Valuations

General Tier 1 ⁽¹⁾				General Tier 2 ⁽¹⁾			
Entry Age	Current ⁽²⁾	New ⁽³⁾	Change	Entry Age	Current ⁽²⁾	New ⁽³⁾	Change
25	8.98%	9.21%	0.23%	25	5.90%	6.15%	0.25%
35	10.29%	10.58%	0.29%	35	6.76%	7.05%	0.29%
45	12.01%	12.42%	0.41%	45	7.77%	8.15%	0.39%
General Tier 3 ⁽¹⁾				General Tier 4 ⁽¹⁾			
Entry Age	Current ⁽²⁾	New ⁽³⁾	Change	Entry Age	Current ⁽²⁾	New ⁽³⁾	Change
25	7.04%	7.24%	0.20%	25	5.98%	6.16%	0.18%
35	8.08%	8.32%	0.24%	35	6.85%	7.06%	0.21%
45	9.41%	9.75%	0.34%	45	7.88%	8.16%	0.27%
General Tier 5							
Entry Age	Current ⁽²⁾	New ⁽³⁾	Change				
Any ⁽⁴⁾	6.89%	7.26%	0.37%				

⁽¹⁾ For non-CalPEPRA members, contributions for the first \$350 of monthly payroll are based on 2/3 (no adjustment for the administrative expense load) of the above rates.

⁽²⁾ Includes an explicit administrative expense load of 0.17% of payroll that has been allocated to the Current member contribution rates.

⁽³⁾ Includes an explicit administrative expense load of 0.16% of payroll that has been allocated to the New member contribution rates.

⁽⁴⁾ CalPEPRA member rates are independent of entry age.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix A

Member Contribution Rates (Continued)

Comparison of Total Member Rate from June 30, 2016 (New) and June 30, 2015 (Current) Valuations

Safety Tier 1 ⁽¹⁾				Safety Tier 2 ⁽¹⁾			
Entry Age	Current ⁽²⁾	New ⁽³⁾	Change	Entry Age	Current ⁽²⁾	New ⁽³⁾	Change
25	12.68%	13.21%	0.53%	25	10.81%	11.26%	0.45%
30	13.44%	14.03%	0.59%	30	11.45%	11.96%	0.51%
35	14.30%	15.00%	0.70%	35	12.19%	12.79%	0.60%
Safety Tier 4 ⁽¹⁾				Safety Tier 5			
Entry Age	Current ⁽²⁾	New ⁽³⁾	Change	Entry Age	Current ⁽²⁾	New ⁽³⁾	Change
25	9.64%	9.83%	0.19%	Any ⁽⁴⁾	12.03%	12.03%	0.00%
30	10.21%	10.45%	0.23%				
35	10.87%	11.16%	0.29%				

⁽¹⁾ For non-CalPEPRA members, contributions for the first \$350 of monthly payroll are based on 2/3 (no adjustment for the administrative expense load) of the above rates.

⁽²⁾ Includes an explicit administrative expense load of 0.17% of payroll that has been allocated to the Current member contribution rates.

⁽³⁾ Includes an explicit administrative expense load of 0.16% of payroll that has been allocated to the New member contribution rates.

⁽⁴⁾ CalPEPRA member rates are independent of entry age.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix A

Member Contribution Rates (Continued)

General Tier 1 Members' Contribution Rates based on the June 30, 2016 Actuarial Valuation as a percentage of payroll

Entry Age	Basic Regular First \$350 per month	Basic Regular Over \$350 per month	COLA Regular First \$350 per month	COLA Regular Over \$350 per month	Basic Settlement First \$350 per month	Basic Settlement Over \$350 per month	COLA Settlement First \$350 per month	COLA Settlement Over \$350 per month	Combined First \$350 per month	Combined Over \$350 per month
15	2.37%	3.47%	1.65%	2.48%	0.93%	1.39%	0.53%	0.80%	5.48%	8.14%
16	2.37%	3.47%	1.65%	2.48%	0.93%	1.39%	0.53%	0.80%	5.48%	8.14%
17	2.40%	3.52%	1.68%	2.52%	0.94%	1.41%	0.54%	0.81%	5.56%	8.26%
18	2.43%	3.57%	1.71%	2.56%	0.95%	1.42%	0.55%	0.82%	5.64%	8.37%
19	2.46%	3.62%	1.73%	2.59%	0.96%	1.44%	0.55%	0.83%	5.70%	8.48%
20	2.50%	3.67%	1.75%	2.63%	0.97%	1.46%	0.56%	0.84%	5.78%	8.60%
21	2.53%	3.71%	1.78%	2.67%	0.99%	1.49%	0.57%	0.86%	5.87%	8.73%
22	2.56%	3.77%	1.80%	2.70%	1.00%	1.50%	0.57%	0.86%	5.93%	8.83%
23	2.60%	3.82%	1.83%	2.74%	1.01%	1.52%	0.58%	0.87%	6.02%	8.95%
24	2.63%	3.87%	1.85%	2.78%	1.03%	1.55%	0.59%	0.89%	6.10%	9.09%
25	2.67%	3.92%	1.88%	2.82%	1.05%	1.57%	0.60%	0.90%	6.20%	9.21%
26	2.70%	3.97%	1.91%	2.86%	1.07%	1.60%	0.61%	0.92%	6.29%	9.35%
27	2.74%	4.03%	1.93%	2.90%	1.07%	1.61%	0.61%	0.92%	6.35%	9.46%
28	2.77%	4.08%	1.96%	2.94%	1.09%	1.64%	0.63%	0.94%	6.45%	9.60%
29	2.81%	4.14%	1.99%	2.98%	1.11%	1.66%	0.63%	0.95%	6.54%	9.73%
30	2.85%	4.19%	2.01%	3.02%	1.13%	1.69%	0.65%	0.97%	6.64%	9.87%
31	2.89%	4.25%	2.05%	3.07%	1.14%	1.71%	0.65%	0.98%	6.73%	10.01%
32	2.92%	4.31%	2.07%	3.11%	1.15%	1.73%	0.66%	0.99%	6.80%	10.14%

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Entry Age	Basic Regular	Basic Regular	COLA Regular	COLA Regular	Basic Settlement	Basic Settlement	COLA Settlement	COLA Settlement	Combined	Combined
	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month
33	2.96%	4.37%	2.10%	3.15%	1.17%	1.76%	0.67%	1.01%	6.90%	10.29%
34	3.00%	4.42%	2.13%	3.20%	1.19%	1.79%	0.69%	1.03%	7.01%	10.44%
35	3.04%	4.49%	2.16%	3.24%	1.21%	1.81%	0.69%	1.04%	7.10%	10.58%
36	3.08%	4.55%	2.19%	3.29%	1.23%	1.84%	0.71%	1.06%	7.21%	10.74%
37	3.13%	4.61%	2.23%	3.34%	1.25%	1.88%	0.72%	1.08%	7.33%	10.91%
38	3.17%	4.67%	2.26%	3.39%	1.27%	1.91%	0.73%	1.10%	7.43%	11.07%
39	3.21%	4.74%	2.29%	3.43%	1.29%	1.94%	0.74%	1.11%	7.53%	11.22%
40	3.26%	4.81%	2.32%	3.48%	1.31%	1.97%	0.75%	1.13%	7.64%	11.39%
41	3.30%	4.87%	2.36%	3.54%	1.35%	2.02%	0.77%	1.16%	7.78%	11.59%
42	3.35%	4.94%	2.39%	3.59%	1.37%	2.06%	0.79%	1.18%	7.90%	11.77%
43	3.40%	5.02%	2.43%	3.64%	1.40%	2.10%	0.81%	1.21%	8.04%	11.97%
44	3.45%	5.09%	2.47%	3.70%	1.44%	2.16%	0.83%	1.24%	8.19%	12.19%
45	3.50%	5.17%	2.51%	3.76%	1.48%	2.22%	0.85%	1.27%	8.34%	12.42%
46	3.55%	5.25%	2.55%	3.82%	1.53%	2.29%	0.87%	1.31%	8.50%	12.67%
47	3.61%	5.34%	2.59%	3.88%	1.57%	2.35%	0.90%	1.35%	8.67%	12.92%
48	3.67%	5.43%	2.63%	3.95%	1.58%	2.37%	0.91%	1.36%	8.79%	13.11%
49	3.73%	5.52%	2.68%	4.02%	1.58%	2.37%	0.91%	1.36%	8.90%	13.27%
50	3.80%	5.63%	2.73%	4.10%	1.53%	2.29%	0.87%	1.31%	8.93%	13.33%
51	3.88%	5.74%	2.79%	4.19%	1.44%	2.16%	0.83%	1.24%	8.94%	13.33%
52	3.96%	5.86%	2.85%	4.27%	1.32%	1.98%	0.76%	1.14%	8.89%	13.25%
53	4.01%	5.94%	2.89%	4.33%	1.19%	1.79%	0.69%	1.03%	8.78%	13.09%
54	4.06%	6.01%	2.93%	4.39%	1.05%	1.57%	0.60%	0.90%	8.64%	12.87%

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Entry Age	Basic Regular First \$350 per month	Basic Regular Over \$350 per month	COLA Regular First \$350 per month	COLA Regular Over \$350 per month	Basic Settlement First \$350 per month	Basic Settlement Over \$350 per month	COLA Settlement First \$350 per month	COLA Settlement Over \$350 per month	Combined First \$350 per month	Combined Over \$350 per month
55	4.07%	6.03%	2.93%	4.40%	1.05%	1.57%	0.60%	0.90%	8.65%	12.90%
56	4.06%	6.02%	2.93%	4.39%	1.05%	1.57%	0.60%	0.90%	8.64%	12.88%
57	4.03%	5.97%	2.91%	4.36%	1.05%	1.57%	0.60%	0.90%	8.59%	12.80%
58	3.98%	5.89%	2.86%	4.29%	1.05%	1.57%	0.60%	0.90%	8.49%	12.65%
59+	3.90%	5.77%	2.81%	4.21%	1.05%	1.57%	0.60%	0.90%	8.36%	12.45%

Interest:	7.00% per annum
COLA:	3.00%
Administrative Expenses:	0.16% of payroll added to Basic Regular rates
Mortality:	Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set forward one year for females, weighted 35% male and 65% female
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	75.01% for Regular Benefits, applied to Basic rates prior to adjustment for administrative expenses, and 57.40% for Settlement Benefits.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix A

Member Contribution Rates (Continued)

General Tier 2 Members' Contribution Rates based on the June 30, 2016 Actuarial Valuation as a percentage of payroll						
Entry Age	Basic Regular First \$350 per month	Basic Regular Over \$350 per month	COLA Regular First \$350 per month	COLA Regular Over \$350 per month	Combined First \$350 per month	Combined Over \$350 per month
15	2.00%	2.92%	1.68%	2.52%	3.68%	5.44%
16	2.00%	2.92%	1.68%	2.52%	3.68%	5.44%
17	2.03%	2.96%	1.71%	2.56%	3.74%	5.52%
18	2.05%	3.00%	1.73%	2.60%	3.78%	5.60%
19	2.08%	3.04%	1.75%	2.63%	3.83%	5.67%
20	2.11%	3.08%	1.78%	2.67%	3.89%	5.75%
21	2.13%	3.12%	1.81%	2.71%	3.94%	5.83%
22	2.16%	3.16%	1.83%	2.75%	3.99%	5.91%
23	2.19%	3.21%	1.85%	2.78%	4.04%	5.99%
24	2.22%	3.25%	1.88%	2.82%	4.10%	6.07%
25	2.25%	3.29%	1.91%	2.86%	4.16%	6.15%
26	2.28%	3.34%	1.93%	2.90%	4.21%	6.24%
27	2.31%	3.38%	1.96%	2.94%	4.27%	6.32%
28	2.34%	3.43%	1.99%	2.99%	4.33%	6.42%
29	2.37%	3.47%	2.02%	3.03%	4.39%	6.50%

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Entry Age	Basic Regular	Basic Regular	COLA Regular	COLA Regular	Combined	Combined
	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month
30	2.40%	3.52%	2.05%	3.07%	4.45%	6.59%
31	2.43%	3.57%	2.07%	3.11%	4.50%	6.68%
32	2.46%	3.62%	2.11%	3.16%	4.57%	6.78%
33	2.50%	3.66%	2.13%	3.20%	4.63%	6.86%
34	2.53%	3.71%	2.17%	3.25%	4.70%	6.96%
35	2.56%	3.76%	2.19%	3.29%	4.75%	7.05%
36	2.60%	3.82%	2.23%	3.34%	4.83%	7.16%
37	2.63%	3.87%	2.26%	3.39%	4.89%	7.26%
38	2.67%	3.92%	2.29%	3.44%	4.96%	7.36%
39	2.70%	3.98%	2.33%	3.49%	5.03%	7.47%
40	2.74%	4.03%	2.36%	3.54%	5.10%	7.57%
41	2.78%	4.09%	2.39%	3.59%	5.17%	7.68%
42	2.82%	4.15%	2.43%	3.64%	5.25%	7.79%
43	2.86%	4.21%	2.47%	3.70%	5.33%	7.91%
44	2.90%	4.27%	2.51%	3.76%	5.41%	8.03%
45	2.94%	4.33%	2.55%	3.82%	5.49%	8.15%
46	2.99%	4.40%	2.59%	3.88%	5.58%	8.28%
47	3.04%	4.47%	2.63%	3.94%	5.67%	8.41%
48	3.09%	4.55%	2.67%	4.01%	5.76%	8.56%
49	3.14%	4.63%	2.72%	4.08%	5.86%	8.71%

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Entry Age	Basic Regular	Basic Regular	COLA Regular	COLA Regular	Combined	Combined
	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month
50	3.20%	4.71%	2.77%	4.16%	5.97%	8.87%
51	3.26%	4.81%	2.83%	4.25%	6.09%	9.06%
52	3.33%	4.91%	2.89%	4.34%	6.22%	9.25%
53	3.37%	4.97%	2.93%	4.40%	6.30%	9.37%
54	3.41%	5.03%	2.97%	4.45%	6.38%	9.48%
55	3.42%	5.05%	2.98%	4.47%	6.40%	9.52%
56	3.41%	5.04%	2.97%	4.46%	6.38%	9.50%
57	3.39%	5.00%	2.95%	4.42%	6.34%	9.42%
58	3.34%	4.93%	2.91%	4.36%	6.25%	9.29%
59+	3.28%	4.83%	2.85%	4.27%	6.13%	9.10%

Interest:	7.00% per annum
COLA:	3.00%
Administrative Expenses:	0.16% of payroll added to Basic Regular rates
Mortality:	Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set forward one year for females, weighted 35% male and 65% female
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	91.40% for Regular Benefits, applied to Basic rates prior to adjustment for administrative expenses

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association**Appendix A****Member Contribution Rates (Continued)****General Tier 3 Members' Contribution Rates based on the June 30, 2016
Actuarial Valuation as a percentage of payroll**

Entry Age	Basic Regular	Basic Regular	COLA	COLA	Combined	Combined
	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month
15	2.56%	3.76%	1.76%	2.64%	4.32%	6.40%
16	2.56%	3.76%	1.76%	2.64%	4.32%	6.40%
17	2.59%	3.81%	1.79%	2.68%	4.38%	6.49%
18	2.63%	3.86%	1.81%	2.72%	4.44%	6.58%
19	2.66%	3.91%	1.83%	2.75%	4.49%	6.66%
20	2.70%	3.97%	1.86%	2.79%	4.56%	6.76%
21	2.73%	4.02%	1.89%	2.83%	4.62%	6.85%
22	2.77%	4.08%	1.91%	2.87%	4.68%	6.95%
23	2.81%	4.13%	1.94%	2.91%	4.75%	7.04%
24	2.84%	4.19%	1.97%	2.95%	4.81%	7.14%
25	2.88%	4.24%	2.00%	3.00%	4.88%	7.24%
26	2.92%	4.30%	2.03%	3.04%	4.95%	7.34%
27	2.96%	4.36%	2.05%	3.08%	5.01%	7.44%
28	3.00%	4.42%	2.08%	3.12%	5.08%	7.54%
29	3.04%	4.48%	2.11%	3.17%	5.15%	7.65%

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Entry Age	Basic Regular	Basic Regular	COLA Regular	COLA Regular	Combined	Combined
	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month
30	3.08%	4.54%	2.14%	3.21%	5.22%	7.75%
31	3.12%	4.60%	2.17%	3.26%	5.29%	7.86%
32	3.16%	4.67%	2.21%	3.31%	5.37%	7.98%
33	3.21%	4.73%	2.23%	3.35%	5.44%	8.08%
34	3.25%	4.80%	2.27%	3.40%	5.52%	8.20%
35	3.30%	4.87%	2.30%	3.45%	5.60%	8.32%
36	3.34%	4.93%	2.33%	3.50%	5.67%	8.43%
37	3.39%	5.01%	2.37%	3.55%	5.76%	8.56%
38	3.44%	5.08%	2.41%	3.61%	5.85%	8.69%
39	3.49%	5.15%	2.44%	3.66%	5.93%	8.81%
40	3.54%	5.23%	2.48%	3.72%	6.02%	8.95%
41	3.60%	5.32%	2.52%	3.78%	6.12%	9.10%
42	3.65%	5.40%	2.57%	3.85%	6.22%	9.25%
43	3.72%	5.49%	2.61%	3.91%	6.33%	9.40%
44	3.78%	5.59%	2.65%	3.98%	6.43%	9.57%
45	3.85%	5.69%	2.71%	4.06%	6.56%	9.75%
46	3.91%	5.78%	2.75%	4.12%	6.66%	9.90%
47	3.96%	5.86%	2.79%	4.18%	6.75%	10.04%
48	3.98%	5.90%	2.81%	4.21%	6.79%	10.11%
49	3.99%	5.91%	2.81%	4.22%	6.80%	10.13%

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Entry Age	Basic Regular	Basic Regular	COLA Regular	COLA Regular	Combined	Combined
	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month
50	3.97%	5.88%	2.79%	4.19%	6.76%	10.07%
51	3.93%	5.82%	2.77%	4.15%	6.70%	9.97%
52	3.87%	5.72%	2.72%	4.08%	6.59%	9.80%
53	3.99%	5.90%	2.81%	4.21%	6.80%	10.11%
54+	4.12%	6.09%	2.90%	4.35%	7.02%	10.44%

Interest: 7.00% per annum

COLA: 3.00%

Administrative Expenses: 0.16% of payroll added to Basic Regular rates

Mortality: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set forward one year for females, weighted 35% male and 65% female

Salary Increase: Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)

COLA Loading Factor: 73.36% for Regular Benefits, applied to Basic rates prior to adjustment for administrative expenses

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix A

Member Contribution Rates (Continued)

General Tier 4 Members' Contribution Rates based on the June 30, 2016 Actuarial Valuation as a percentage of payroll								
Entry Age	Basic Regular First \$350 per month	Basic Regular Over \$350 per month	Age	Basic Regular First \$350 per month	Basic Regular Over \$350 per month	Age	Basic Regular First \$350 per month	Basic Regular Over \$350 per month
15	3.68%	5.45%	30	4.45%	6.59%	45	5.49%	8.16%
16	3.68%	5.45%	31	4.51%	6.69%	46	5.58%	8.28%
17	3.73%	5.52%	32	4.57%	6.78%	47	5.67%	8.42%
18	3.79%	5.60%	33	4.63%	6.87%	48	5.76%	8.56%
19	3.84%	5.68%	34	4.70%	6.97%	49	5.86%	8.72%
20	3.89%	5.75%	35	4.76%	7.06%	50	5.97%	8.88%
21	3.94%	5.83%	36	4.83%	7.16%	51	6.07%	9.02%
22	4.00%	5.91%	37	4.89%	7.26%	52	6.14%	9.13%
23	4.05%	5.99%	38	4.96%	7.36%	53	6.19%	9.20%
24	4.10%	6.08%	39	5.03%	7.47%	54	6.20%	9.22%
25	4.16%	6.16%	40	5.10%	7.57%	55	6.17%	9.17%
26	4.22%	6.24%	41	5.18%	7.68%	56	6.10%	9.07%
27	4.27%	6.33%	42	5.25%	7.80%	57	6.00%	8.93%
28	4.33%	6.42%	43	5.33%	7.91%	58	6.19%	9.21%
29	4.39%	6.51%	44	5.41%	8.03%	59+	6.39%	9.51%

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Interest:	7.00% per annum
COLA:	0.00%
Administrative Expenses:	0.16% of payroll added to Basic Regular rates
Mortality:	Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set forward one year for females, weighted 35% male and 65% female
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix A
Member Contribution Rates (Continued)

General Tier 5 Members' Contribution Rates based on the June 30, 2016
Actuarial Valuation as a percentage of payroll

	All Eligible Pay ⁽¹⁾
All members	7.26%
Administrative Expenses:	0.16% of payroll added to the rate

⁽¹⁾ It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2016 is \$117,020. For an employer that is not enrolled in Social Security, the maximum amount is \$140,424 (reference Section 7522.10). These amounts are adjusted for changes to the Consumer Price Index for All Urban Consumers after 2016 (reference Section 7522.10(d)).

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix A

Member Contribution Rates (Continued)

Safety Tier 1 Members' Contribution Rates based on the June 30, 2016 Actuarial Valuation as a percentage of payroll										
Entry Age	Basic Regular First \$350 per month	Basic Regular Over \$350 per month	COLA Regular First \$350 per month	COLA Regular Over \$350 per month	Basic Settlement First \$350 per month	Basic Settlement Over \$350 per month	COLA Settlement First \$350 per month	COLA Settlement Over \$350 per month	Combined First \$350 per month	Combined Over \$350 per month
15	3.20%	4.71%	3.27%	4.90%	0.76%	1.14%	0.75%	1.12%	7.98%	11.87%
16	3.20%	4.71%	3.27%	4.90%	0.76%	1.14%	0.75%	1.12%	7.98%	11.87%
17	3.23%	4.77%	3.31%	4.96%	0.77%	1.15%	0.75%	1.13%	8.06%	12.01%
18	3.27%	4.82%	3.35%	5.02%	0.78%	1.17%	0.77%	1.15%	8.17%	12.16%
19	3.31%	4.88%	3.39%	5.08%	0.79%	1.18%	0.77%	1.16%	8.26%	12.30%
20	3.34%	4.93%	3.43%	5.14%	0.80%	1.20%	0.79%	1.18%	8.36%	12.45%
21	3.38%	4.99%	3.47%	5.20%	0.81%	1.21%	0.79%	1.19%	8.45%	12.59%
22	3.42%	5.05%	3.51%	5.26%	0.81%	1.22%	0.80%	1.20%	8.54%	12.73%
23	3.46%	5.11%	3.55%	5.33%	0.82%	1.23%	0.81%	1.21%	8.64%	12.88%
24	3.50%	5.17%	3.59%	5.39%	0.83%	1.25%	0.82%	1.23%	8.74%	13.04%
25	3.54%	5.23%	3.64%	5.46%	0.85%	1.27%	0.83%	1.25%	8.86%	13.21%
26	3.58%	5.29%	3.68%	5.52%	0.85%	1.28%	0.84%	1.26%	8.95%	13.35%
27	3.62%	5.35%	3.73%	5.59%	0.87%	1.30%	0.85%	1.28%	9.07%	13.52%
28	3.67%	5.42%	3.77%	5.66%	0.87%	1.31%	0.86%	1.29%	9.17%	13.68%
29	3.71%	5.48%	3.82%	5.73%	0.89%	1.33%	0.87%	1.31%	9.29%	13.85%
30	3.75%	5.55%	3.87%	5.80%	0.90%	1.35%	0.89%	1.33%	9.41%	14.03%
31	3.80%	5.62%	3.92%	5.88%	0.91%	1.37%	0.90%	1.35%	9.53%	14.22%
32	3.85%	5.69%	3.97%	5.96%	0.93%	1.39%	0.91%	1.37%	9.66%	14.41%
33	3.90%	5.77%	4.03%	6.04%	0.93%	1.40%	0.92%	1.38%	9.78%	14.59%
34	3.95%	5.84%	4.08%	6.12%	0.95%	1.43%	0.94%	1.41%	9.92%	14.80%
35	4.00%	5.93%	4.14%	6.21%	0.96%	1.44%	0.95%	1.42%	10.05%	15.00%

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Entry Age	Basic Regular First \$350 per month	Basic Regular Over \$350 per month	COLA Regular First \$350 per month	COLA Regular Over \$350 per month	Basic Settlement First \$350 per month	Basic Settlement Over \$350 per month	COLA Settlement First \$350 per month	COLA Settlement Over \$350 per month	Combined First \$350 per month	Combined Over \$350 per month
36	4.06%	6.01%	4.20%	6.30%	0.97%	1.46%	0.96%	1.44%	10.19%	15.21%
37	4.12%	6.10%	4.27%	6.40%	0.99%	1.49%	0.98%	1.47%	10.36%	15.46%
38	4.18%	6.20%	4.33%	6.50%	1.01%	1.51%	0.99%	1.49%	10.51%	15.70%
39	4.25%	6.30%	4.41%	6.61%	1.03%	1.54%	1.01%	1.52%	10.70%	15.97%
40	4.33%	6.42%	4.49%	6.74%	1.04%	1.56%	1.03%	1.54%	10.89%	16.26%
41	4.42%	6.55%	4.58%	6.87%	1.06%	1.59%	1.05%	1.57%	11.11%	16.58%
42	4.46%	6.61%	4.63%	6.95%	1.08%	1.62%	1.07%	1.60%	11.24%	16.78%
43	4.50%	6.66%	4.67%	7.00%	1.09%	1.63%	1.07%	1.61%	11.33%	16.90%
44	4.52%	6.70%	4.69%	7.04%	1.09%	1.63%	1.07%	1.61%	11.37%	16.98%
45	4.50%	6.67%	4.67%	7.01%	1.09%	1.63%	1.07%	1.61%	11.33%	16.92%
46	4.47%	6.63%	4.65%	6.97%	1.08%	1.62%	1.07%	1.60%	11.27%	16.82%
47	4.45%	6.60%	4.62%	6.93%	1.07%	1.61%	1.06%	1.59%	11.20%	16.73%
48	4.39%	6.51%	4.55%	6.83%	1.05%	1.58%	1.04%	1.56%	11.03%	16.48%
49+	4.31%	6.38%	4.46%	6.69%	1.03%	1.55%	1.02%	1.53%	10.82%	16.15%

Interest:	7.00% per annum
COLA:	3.00%
Administrative Expenses:	0.16% of payroll added to Basic Regular rates
Mortality:	Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set back two years, weighted 80% male and 20% female
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	107.65% for Regular Benefits, applied to Basic rates prior to adjustment for administrative expenses, and 98.50% for Settlement Benefits

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association**Appendix A****Member Contribution Rates (Continued)**

Safety Tier 2 Members' Contribution Rates based on the June 30, 2016 Actuarial Valuation as a percentage of payroll						
Entry Age	Basic Regular	Basic Regular	COLA Regular	COLA Regular	Combined	Combined
	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month	First \$350 per month	Over \$350 per month
15	3.20%	4.71%	3.61%	5.42%	6.81%	10.13%
16	3.20%	4.71%	3.61%	5.42%	6.81%	10.13%
17	3.23%	4.77%	3.65%	5.48%	6.88%	10.25%
18	3.27%	4.82%	3.70%	5.55%	6.97%	10.37%
19	3.31%	4.88%	3.74%	5.61%	7.05%	10.49%
20	3.34%	4.93%	3.79%	5.68%	7.13%	10.61%
21	3.38%	4.99%	3.83%	5.75%	7.21%	10.74%
22	3.42%	5.05%	3.88%	5.82%	7.30%	10.87%
23	3.46%	5.11%	3.93%	5.89%	7.39%	11.00%
24	3.50%	5.17%	3.97%	5.96%	7.47%	11.13%
25	3.54%	5.23%	4.02%	6.03%	7.56%	11.26%
26	3.58%	5.29%	4.07%	6.10%	7.65%	11.39%
27	3.62%	5.35%	4.12%	6.18%	7.74%	11.53%
28	3.67%	5.42%	4.17%	6.25%	7.84%	11.67%
29	3.71%	5.48%	4.22%	6.33%	7.93%	11.81%
30	3.75%	5.55%	4.27%	6.41%	8.02%	11.96%
31	3.80%	5.62%	4.33%	6.50%	8.13%	12.12%
32	3.85%	5.69%	4.39%	6.58%	8.24%	12.27%
33	3.90%	5.77%	4.45%	6.67%	8.35%	12.44%
34	3.95%	5.84%	4.51%	6.76%	8.46%	12.60%

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Entry Age	Basic Regular First \$350 per month	Basic Regular Over \$350 per month	COLA Regular First \$350 per month	COLA Regular Over \$350 per month	Combined First \$350 per month	Combined Over \$350 per month
35	4.00%	5.93%	4.57%	6.86%	8.57%	12.79%
36	4.06%	6.01%	4.64%	6.96%	8.70%	12.97%
37	4.12%	6.10%	4.71%	7.07%	8.83%	13.17%
38	4.18%	6.20%	4.79%	7.18%	8.97%	13.38%
39	4.25%	6.30%	4.87%	7.31%	9.12%	13.61%
40	4.33%	6.42%	4.96%	7.44%	9.29%	13.86%
41	4.42%	6.55%	5.07%	7.60%	9.49%	14.15%
42	4.46%	6.61%	5.12%	7.68%	9.58%	14.29%
43	4.50%	6.66%	5.16%	7.74%	9.66%	14.40%
44	4.52%	6.70%	5.19%	7.78%	9.71%	14.48%
45	4.50%	6.67%	5.17%	7.75%	9.67%	14.42%
46	4.47%	6.63%	5.13%	7.70%	9.60%	14.33%
47	4.45%	6.60%	5.11%	7.66%	9.56%	14.26%
48	4.39%	6.51%	5.03%	7.55%	9.42%	14.06%
49+	4.31%	6.38%	4.93%	7.40%	9.24%	13.78%

Interest: 7.00% per annum

COLA: 3.00%

Administrative Expenses: 0.16% of payroll added to Basic Regular rates

Mortality: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set back two years weighted, 80% male and 20% female

Salary Increase: Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)

COLA Loading Factor: 118.95% for Regular Benefits, applied to Basic rates prior to adjustment for administrative expenses

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association**Appendix A****Member Contribution Rates (Continued)****Safety Tier 4 Members' Contribution Rates based on the June 30, 2016
Actuarial Valuation as a percentage of payroll**

Entry Age	Basic Regular First \$350 per month	Basic Regular Over \$350 per month	Age	Basic Regular First \$350 per month	Basic Regular Over \$350 per month
15	5.95%	8.85%	33	7.13%	10.86%
16	5.79%	8.85%	34	7.23%	11.01%
17	5.86%	8.95%	35	7.33%	11.16%
18	5.93%	9.06%	36	7.44%	11.32%
19	6.00%	9.16%	37	7.56%	11.49%
20	6.07%	9.27%	38	7.68%	11.68%
21	6.15%	9.38%	39	7.81%	11.88%
22	6.22%	9.49%	40	7.93%	12.05%
23	6.29%	9.60%	41	8.01%	12.18%
24	6.37%	9.71%	42	8.06%	12.25%
25	6.45%	9.83%	43	8.07%	12.26%
26	6.53%	9.95%	44	8.04%	12.22%
27	6.61%	10.07%	45	7.99%	12.14%
28	6.69%	10.19%	46	7.90%	12.01%
29	6.77%	10.32%	47	7.77%	11.82%
30	6.86%	10.45%	48	8.03%	12.20%
31	6.95%	10.58%	49+	8.29%	12.60%
32	7.04%	10.72%			

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Interest:	7.00% per annum
COLA:	0.00%
Administrative Expenses:	0.16% of payroll added to Basic Regular rates
Mortality:	Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP2015D, set back two years weighted, 80% male and 20% female
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix A

Member Contribution Rates (Continued)

**Safety Tier 5 Members' Contribution Rates based on the June 30, 2016
Actuarial Valuation as a percentage of payroll**

	<u>All Eligible Pay⁽¹⁾</u>
All members	12.03%
Administrative Expenses:	0.16% of payroll added to the rate

⁽¹⁾ *It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2016 is \$117,020. For an employer that is not enrolled in Social Security, the maximum amount is \$140,424 (reference Section 7522.10). These amounts are adjusted for changes to the Consumer Price Index for All Urban Consumers after 2016 (reference Section 7522.10(d)).*

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix B

Non-Valuation Reserves and Benefits

The Board of Retirement has established a Supplemental COLA Reserve and a Retiree Health Benefit Reserve (BOR) to pay non-vested discretionary purchasing power and additional taxable retiree health benefits, if any. As requested by the Association, we have provided below a table of the anticipated cash payments and determined the sufficiency of current reserves to make those payments. Please note that in determining the sufficiency of the reserves, we assume no new excess earnings transfers will be made by the Board.

Supplemental COLA Benefit^{(1) (2) (3)}

Total Undiscounted Benefits as of June 30, 2016:	\$4,131,190
Reserve ⁽⁴⁾ as of June 30, 2016:	\$159,368

It is anticipated that the current reserve will be depleted during the year 2016-2017 for the current recipients. Furthermore, we assume that no new members will become eligible for this benefit.

Period	Payment (undiscounted)
2016 – 2017 ⁽⁵⁾	\$156,161

Retiree Health Benefit (BOR)^{(1) (3)}

Total Undiscounted Benefits as of June 30, 2016:	Not Applicable
Reserve ⁽⁴⁾ as of June 30, 2016:	-\$3,416,589

As of June 30, 2016, the Retiree Health Benefit Reserve (BOR) remained negative after a prior restatement of the reserve balance by FCERA. For valuation purposes, Segal has assumed this non-valuation reserve to be no less than \$0 in determining the Valuation Value of Asset as of June 30, 2016 and reduced the valuation reserves by \$3,416,589. As long as this reserve is zero (or negative), no benefit can be paid out of this reserve.

⁽¹⁾ Assuming no change in the level of benefit provided as of June 30, 2016.

⁽²⁾ Including only those members receiving the benefits as of June 30, 2016.

⁽³⁾ Assuming no interest will be credited and no excess earnings will be transferred to this reserve.

⁽⁴⁾ Based on actuarial value of assets.

⁽⁵⁾ Payment will only be paid for part of the year.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix C

Amortization Schedule for UAAL

General – Regular Benefits	Source	Initial Amount	Outstanding Balance	Years Remaining	Payment
June 30, 2003	Restart Amortization	N/A ⁽¹⁾	\$61,593,269	17	\$4,839,260
June 30, 2004	Actuarial Loss/POB Proceeds ⁽²⁾	N/A ⁽¹⁾	(18,762,531)	3	(6,704,247)
June 30, 2005	Actuarial Loss	\$165,807,070	81,112,164	4	22,094,710
June 30, 2006	Actuarial Loss	74,355,835	42,914,216	5	9,504,598
June 30, 2006	Plan Provision Change	333,000	378,967	20	26,468
June 30, 2007	Actuarial Loss	9,736,697	6,390,138	6	1,198,573
June 30, 2007	Assumption Change	48,705,000	31,964,804	6	5,995,510
June 30, 2008	Actuarial Loss	37,435,443	27,069,947	7	4,422,363
June 30, 2009	Actuarial Loss	99,661,060	77,791,515	8	11,298,751
June 30, 2010	Actuarial Loss	40,450,188	33,553,771	9	4,401,181
June 30, 2010	Assumption Change	180,478,000	149,708,020	9	19,636,901
June 30, 2011	Actuarial Loss	33,654,586	29,332,179	10	3,517,691
June 30, 2012	Actuarial Gain	(37,654,021)	(34,140,584)	11	(3,780,899)
June 30, 2013	Actuarial Gain	(55,328,951)	(51,762,168)	12	(5,337,145)
June 30, 2013	Assumption Change	152,395,000	142,570,854	12	14,700,338
June 30, 2014	Actuarial Gain	(35,957,667)	(34,587,367)	13	(3,343,319)
June 30, 2015	Actuarial Loss	1,049,334	1,031,734	14	94,043
June 30, 2016	Actuarial Loss	26,665,072	26,665,072	15	2,303,462
June 30, 2016	Assumption Change	146,934,000	<u>146,934,000</u>	15	<u>12,692,893</u>
	Total		\$719,758,000		\$97,561,132

⁽¹⁾ The initial amounts are only available for periods based on prior audit and valuation results reviewed or prepared by Segal.

⁽²⁾ It appears that the proceeds from the Pension Obligation Bonds issued by the County were used to offset the actuarial loss in the June 30, 2004 valuation.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix C (continued)

Amortization Schedule for UAAL

General – Settlement Benefits	Source	Initial Amount	Outstanding Balance	Years Remaining	Payment
June 30, 2003	Restart Amortization ⁽¹⁾	N/A ⁽²⁾	\$142,977,910	17	\$11,233,488
June 30, 2004	Actuarial Loss/POB Proceeds ⁽³⁾	N/A ⁽²⁾	(20,890,234)	3	(7,464,519)
June 30, 2005	Actuarial Loss	\$10,771,055	5,269,158	4	1,435,303
June 30, 2006	Actuarial Loss	8,282,685	4,780,324	5	1,058,741
June 30, 2007	Actuarial Gain	(162,430)	(106,601)	6	(19,995)
June 30, 2007	Assumption Change	37,063,000	24,324,230	6	4,562,399
June 30, 2008	Actuarial Loss	11,510,769	8,323,553	7	1,359,802
June 30, 2009	Actuarial Loss	17,637,452	13,767,103	8	1,999,589
June 30, 2010	Actuarial Loss	4,210,394	3,492,558	9	458,112
June 30, 2010	Assumption Change	38,322,000	31,788,422	9	4,169,624
June 30, 2011	Actuarial Loss	208,522	181,741	10	21,795
June 30, 2012	Actuarial Gain	(18,843,015)	(17,084,804)	11	(1,892,057)
June 30, 2013	Actuarial Gain	(20,059,381)	(18,766,252)	12	(1,934,969)
June 30, 2013	Assumption Change	41,809,000	39,113,782	12	4,032,983
June 30, 2014	Actuarial Gain	(16,375,093)	(15,751,060)	13	(1,522,545)
June 30, 2015	Actuarial Gain	(16,849,948)	(16,567,333)	14	(1,510,112)
June 30, 2016	Actuarial Gain	(2,623,929)	(2,623,929)	15	(226,668)
June 30, 2016	Assumption Change	25,697,000	<u>25,697,000</u>	15	<u>2,219,835</u>
	Total		\$207,925,568		\$17,980,806

⁽¹⁾ The outstanding balance includes the full General Section 8 UAAL and General Section 9 UAAL. This also includes \$5,900,000 for the full General Section 8 UAAL and the full General Section 9 UAAL due to change in actuarial assumption as of June 30, 2016.

⁽²⁾ The initial amounts are only available for periods based on prior audit and valuation results reviewed or prepared by Segal.

⁽³⁾ It appears that the proceeds from the Pension Obligation Bonds issued by the County were used to offset the actuarial losses in the June 30, 2004 valuation.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix C (continued)

Amortization Schedule for UAAL

Safety – Regular Benefits	Source	Initial Amount	Outstanding Balance	Years Remaining	Payment
June 30, 2003	Restart Amortization	N/A ⁽¹⁾	\$21,072,299	17	\$1,655,608
June 30, 2004	Actuarial Loss/POB Proceeds ⁽²⁾	N/A ⁽¹⁾	(4,054,503)	3	(1,448,759)
June 30, 2005	Actuarial Loss	\$28,456,160	13,920,641	4	3,791,942
June 30, 2006	Actuarial Loss	36,122,657	20,848,068	5	4,617,409
June 30, 2007	Actuarial Loss	11,440,206	7,508,139	6	1,408,272
June 30, 2007	Assumption Change	18,663,000	12,248,416	6	2,297,387
June 30, 2008	Actuarial Loss	25,279,442	18,279,820	7	2,986,337
June 30, 2009	Actuarial Loss	33,290,245	25,985,060	8	3,774,175
June 30, 2010	Actuarial Loss	7,016,461	5,820,212	9	763,426
June 30, 2010	Assumption Change	44,211,000	36,673,396	9	4,810,376
June 30, 2011	Actuarial Gain	(3,902,219)	(3,401,038)	10	(407,872)
June 30, 2012	Actuarial Gain	(4,727,978)	(4,286,818)	11	(474,744)
June 30, 2013	Actuarial Gain	(17,551,239)	(16,419,797)	12	(1,693,029)
June 30, 2013	Assumption Change	47,490,000	44,428,556	12	4,580,983
June 30, 2014	Actuarial Gain	(11,045,503)	(10,624,574)	13	(1,027,003)
June 30, 2015	Actuarial Gain	(375,371)	(369,075)	14	(33,641)
June 30, 2016	Actuarial Gain	(3,837,802)	(3,837,802)	15	(331,528)
June 30, 2016	Assumption Change	51,927,000	<u>51,927,000</u>	15	<u>4,485,714</u>
	Total		\$215,718,000		\$29,755,053

⁽¹⁾ The initial amounts are only available for periods based on prior audit and valuation results reviewed or prepared by Segal.

⁽²⁾ It appears that the proceeds from the Pension Obligation Bonds issued by the County were used to offset the actuarial loss in the June 30, 2004 valuation.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix C (continued)

Amortization Schedule for UAAL

Safety – Settlement Benefits	Source	Initial Amount	Outstanding Balance	Years Remaining	Payment
June 30, 2003	Restart Amortization ⁽¹⁾	N/A ⁽²⁾	\$24,284,179	17	\$1,907,959
June 30, 2004	Actuarial Loss/POB Proceeds ⁽³⁾	N/A ⁽²⁾	(3,320,379)	3	(1,186,441)
June 30, 2005	Actuarial Gain	\$(8,133,004)	(3,978,632)	4	(1,083,767)
June 30, 2006	Actuarial Loss	6,885,605	3,974,005	5	880,159
June 30, 2007	Actuarial Loss	810,988	532,247	6	99,831
June 30, 2007	Assumption Change	4,474,000	2,936,259	6	550,742
June 30, 2008	Actuarial Loss	4,845,166	3,503,588	7	572,374
June 30, 2009	Actuarial Loss	7,849,312	6,126,866	8	889,891
June 30, 2010	Actuarial Loss	1,272,629	1,055,657	9	138,468
June 30, 2010	Assumption Change	6,935,000	5,752,641	9	754,562
June 30, 2011	Actuarial Gain	(433,930)	(378,198)	10	(45,356)
June 30, 2012	Actuarial Gain	(1,098,338)	(995,854)	11	(110,286)
June 30, 2013	Actuarial Gain	(3,609,401)	(3,376,720)	12	(348,170)
June 30, 2013	Assumption Change	10,467,000	9,792,244	12	1,009,668
June 30, 2014	Actuarial Gain	(2,617,021)	(2,517,290)	13	(243,329)
June 30, 2015	Actuarial Gain	(7,407,553)	(7,283,310)	14	(663,874)
June 30, 2016	Actuarial Loss	5,491,129	5,491,129	15	474,351
June 30, 2016	Assumption Change	9,148,000	<u>9,148,000</u>	15	<u>790,250</u>
	Total		\$50,746,432		\$4,387,032

⁽¹⁾ The outstanding balance includes the full Safety Section 8 UAAL and Safety Section 9 UAAL. This also includes \$1,166,000 for the full Safety Section 8 UAAL and the full Safety Section 9 UAAL due to change in actuarial assumption as of June 30, 2016.

⁽²⁾ The initial amounts are only available for periods based on prior audit and valuation results reviewed or prepared by Segal.

⁽³⁾ It appears that the proceeds from the Pension Obligation Bonds issued by the County were used to offset the actuarial losses in the June 30, 2004 valuation.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix C (continued)

Amortization Schedule for UAAL

Total	Source	Initial Amount	Outstanding Balance	Years Remaining	Payment
June 30, 2003	Restart Amortization ⁽¹⁾	N/A ⁽²⁾	\$249,927,657	17	\$19,636,316
June 30, 2004	Actuarial Loss/POB Proceeds ⁽³⁾	N/A ⁽²⁾	(47,027,647)	3	(16,803,966)
June 30, 2005	Actuarial Loss	\$196,901,281	96,323,331	4	26,238,188
June 30, 2006	Actuarial Loss	125,646,782	72,516,613	5	16,060,907
June 30, 2006	Plan Provision Change	333,000	378,967	20	26,468
June 30, 2007	Actuarial Loss	21,825,461	14,323,923	6	2,686,681
June 30, 2007	Assumption Change	108,905,000	71,473,709	6	13,406,038
June 30, 2008	Actuarial Loss	79,070,820	57,176,908	7	9,340,876
June 30, 2009	Actuarial Loss	158,438,069	123,670,544	8	17,962,406
June 30, 2010	Actuarial Loss	52,949,672	43,922,198	9	5,761,187
June 30, 2010	Assumption Change	269,946,000	223,922,479	9	29,371,463
June 30, 2011	Actuarial Loss	29,526,959	25,734,684	10	3,086,258
June 30, 2012	Actuarial Gain	(62,323,352)	(56,508,060)	11	(6,257,986)
June 30, 2013	Actuarial Gain	(96,548,872)	(90,324,937)	12	(9,313,313)
June 30, 2013	Assumption Change	252,161,000	235,905,436	12	24,323,972
June 30, 2014	Actuarial Gain	(65,995,284)	(63,480,291)	13	(6,136,196)
June 30, 2015	Actuarial Gain	(23,583,538)	(23,187,984)	14	(2,113,584)
June 30, 2016	Actuarial Loss	25,694,470	25,694,470	15	2,219,617
June 30, 2016	Assumption Change	233,706,000 ⁽⁴⁾	233,706,000	15	20,188,692
	Total		\$1,194,148,000		\$149,684,024

⁽¹⁾ The outstanding balance includes the full Section 8 UAAL and Section 9 UAAL. This also includes \$7,066,000 for the full Section 8 UAAL and the full Section 9 UAAL due to change in actuarial assumption as of June 30, 2016.

⁽²⁾ The initial amounts are only available for periods based on prior audit and valuation results reviewed or prepared by Segal.

⁽³⁾ It appears that the proceeds from the Pension Obligation Bonds issued by the County were used to offset the actuarial losses in the June 30, 2004 valuation.

⁽⁴⁾ This amount together with the \$7,066,000 in footnote 1 equals to \$240,772,000, which is the total UAAL due to change in actuarial assumptions as shown on page 47.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix D

Schedule of UAAL and Associated Funded Ratios (Dollar Amounts in Thousands)

	Regular Benefit	Settlement Benefit	Total
A. AAL	\$4,301,949	\$1,170,200	\$5,472,149
B. Valuation Value of Assets	3,366,473	911,528	4,278,001
C. UAAL (A - B)	935,476	258,672	\$1,194,148
D. Funded Ratio (B / A)	78.25%	77.90%	78.18%

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix E

Recommended Employer Contribution Rates with Three-Year Phase-in of Changes in Actuarial Assumptions (Dollar Amounts in Thousands)

	June 30, 2016 ⁽¹⁾						June 30, 2015 ⁽²⁾	
	REGULAR		SETTLEMENT		TOTAL		REGULAR & SETTLEMENT	
	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾
General Tier 1 Members								
Normal Cost	16.25%	\$33,578	5.12%	\$10,579	21.37%	\$44,157	21.36%	\$44,136
UAAL	<u>27.02%</u>	<u>55,831</u>	<u>4.82%</u>	<u>9,960</u>	<u>31.84%</u>	<u>65,791</u>	<u>30.07%</u>	<u>62,133</u>
Total Contribution	43.27%	\$89,409	9.94%	\$20,539	53.21%	\$109,948	51.43%	\$106,269
General Tier 2 Members								
Normal Cost	18.08%	\$1,735	0.25%	\$24	18.33%	\$1,759	17.67%	\$1,696
UAAL	<u>26.91%</u>	<u>2,582</u>	<u>4.82%</u>	<u>463</u>	<u>31.73%</u>	<u>3,045</u>	<u>30.07%</u>	<u>2,886</u>
Total Contribution	44.99%	\$4,317	5.07%	\$487	50.06%	\$4,804	47.74%	\$4,582
General Tier 3 Members								
Normal Cost	17.55%	\$6,087	0.32%	\$111	17.87%	\$6,198	17.28%	\$5,993
UAAL	<u>27.00%</u>	<u>9,364</u>	<u>4.83%</u>	<u>1,675</u>	<u>31.83%</u>	<u>11,039</u>	<u>30.07%</u>	<u>10,429</u>
Total Contribution	44.55%	\$15,451	5.15%	\$1,786	49.70%	\$17,237	47.35%	\$16,422
General Tier 4 Members								
Normal Cost	8.76%	\$1,227	0.00%	\$0	8.76%	\$1,227	8.66%	\$1,213
UAAL	<u>27.16%</u>	<u>3,805</u>	<u>4.82%</u>	<u>675</u>	<u>31.98%</u>	<u>4,480</u>	<u>30.07%</u>	<u>4,212</u>
Total Contribution	35.92%	\$5,032	4.82%	\$675	40.74%	\$5,707	38.73%	\$5,425
General Tier 5 Members								
Normal Cost	7.26%	\$5,147	0.00%	\$0	7.26%	\$5,147	6.89%	\$4,885
UAAL	<u>27.15%</u>	<u>19,249</u>	<u>4.83%</u>	<u>3,424</u>	<u>31.98%</u>	<u>22,673</u>	<u>30.07%</u>	<u>21,319</u>
Total Contribution	34.41%	\$24,396	4.83%	\$3,424	39.24%	\$27,820	36.96%	\$26,204

⁽¹⁾ The Regular Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense of 0.16% and 0.78% of payroll, respectively.

⁽²⁾ The Regular Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense of 0.17% and 0.76% of payroll, respectively.

⁽³⁾ Amounts are in thousands and are based on June 30, 2016 projected annual compensation shown on the following page.

SECTION 4: Reporting Information for the Fresno County Employees' Retirement Association

Appendix E (continued)

Recommended Employer Contribution Rates with Three-Year Phase-in of Changes in Actuarial Assumptions (Dollar Amounts in Thousands)

	June 30, 2016 ⁽¹⁾						June 30, 2015 ⁽²⁾	
	REGULAR		SETTLEMENT		TOTAL		REGULAR & SETTLEMENT	
	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾	Rate	Estimated Annual Amount ⁽³⁾
Safety Tier 1 Members								
Normal Cost	23.91%	\$11,045	5.76%	\$2,660	29.67%	\$13,705	29.97%	\$13,844
UAAL	<u>40.65%</u>	<u>18,778</u>	<u>5.71%</u>	<u>2,637</u>	<u>46.36%</u>	<u>21,415</u>	<u>45.96%</u>	<u>21,230</u>
Total Contribution	64.56%	\$29,823	11.47%	\$5,297	76.03%	\$35,120	75.93%	\$35,074
Safety Tier 2 Members								
Normal Cost	29.59%	\$1,328	0.25%	\$11	29.84%	\$1,339	29.15%	\$1,308
UAAL	<u>40.72%</u>	<u>1,827</u>	<u>5.68%</u>	<u>255</u>	<u>46.40%</u>	<u>2,082</u>	<u>45.96%</u>	<u>2,062</u>
Total Contribution	70.31%	\$3,155	5.93%	\$266	76.24%	\$3,421	75.11%	\$3,370
Safety Tier 4 Members								
Normal Cost	14.00%	\$535	0.19%	\$7	14.19%	\$542	14.42%	\$551
UAAL	<u>40.97%</u>	<u>1,564</u>	<u>5.70%</u>	<u>218</u>	<u>46.67%</u>	<u>1,782</u>	<u>45.96%</u>	<u>1,755</u>
Total Contribution	54.97%	\$2,099	5.89%	\$225	60.86%	\$2,324	60.38%	\$2,306
Safety Tier 5 Members								
Normal Cost	12.03%	\$1,470	0.00%	\$0	12.03%	\$1,470	12.03%	\$1,470
UAAL	<u>40.77%</u>	<u>4,984</u>	<u>5.69%</u>	<u>695</u>	<u>46.46%</u>	<u>5,679</u>	<u>45.96%</u>	<u>5,618</u>
Total Contribution	52.80%	\$6,454	5.69%	\$695	58.49%	\$7,149	57.99%	\$7,088
All Categories Combined								
Normal Cost	15.44%	\$62,152	3.33%	\$13,392	18.77%	\$75,544	18.66%	\$75,096
UAAL	<u>29.31%</u>	<u>117,984</u>	<u>4.97%</u>	<u>20,002</u>	<u>34.28%</u>	<u>137,986</u>	<u>32.70%</u>	<u>131,644</u>
Total Contribution	44.75%	\$180,136	8.30%	\$33,394	53.05%	\$213,530	51.36%	\$206,740

⁽¹⁾ The Regular Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense of 0.16% and 0.78% of payroll, respectively.

⁽²⁾ The Regular Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense of 0.17% and 0.76% of payroll, respectively.

⁽³⁾ Amounts are in thousands and are based on June 30, 2016 projected annual compensation (also in thousands):

General Tier 1	\$206,629	Safety Tier 1	\$46,192
General Tier 2	9,598	Safety Tier 2	4,486
General Tier 3	34,682		
General Tier 4	14,008	Safety Tier 4	3,819
General Tier 5	70,898	Safety Tier 5	12,223
Total Compensation		\$402,535	