

Fresno County Employees' Retirement Association

Governmental Accounting Standards (GAS) 68

**Actuarial Valuation Based on June 30, 2016
Measurement Date for Employer Reporting
as of June 30, 2017**



This report has been prepared at the request of the Board of Retirement to assist the sponsors of the Fund in preparing their financial report for their liabilities associated with the FCERA pension plan. 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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March 13, 2017

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

Dear Board Members:

We are pleased to submit this Governmental Accounting Standards (GAS) 68 Actuarial Valuation based on June 30, 2016 measurement date for employer reporting as of June 30, 2017. It contains information that will need to be disclosed in order for Fresno County Employees' Retirement Association (FCERA) employers to comply with GAS 68.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist the sponsors in preparing their financial report for their liabilities associated with the FCERA pension plan. The census and financial information on which our calculations were based 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; and changes in plan provisions or applicable law.


The actuarial calculations were completed under the supervision of Andy Yeung, ASA, MAAA, FCA, Enrolled Actuary. 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 expectations for FCERA.

We look forward to reviewing this report with you and to answering any questions.

Sincerely,

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

By: 
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SECTION 1

VALUATION SUMMARY

Purpose	i
General Observations on GAS 68 Actuarial Valuation.....	i
Significant Issues in Valuation Year.....	ii
Summary of Key Valuation Results.....	iv
Important Information about Actuarial Valuations	v

SECTION 2

GAS 68 INFORMATION

EXHIBIT 1 General Information – “Financial Statements”, Note Disclosures and Required Supplementary Information for a Cost-Sharing Pension Plan	1
EXHIBIT 2 Net Pension Liability	5
EXHIBIT 3 Target Asset Allocation	7
EXHIBIT 4 Discount Rate Sensitivity	9
EXHIBIT 5 Schedule of Changes in Net Pension Liability – Last Two Fiscal Years	10
EXHIBIT 6 Schedule of Employer’s Contributions – Last Ten Fiscal Years.....	11
EXHIBIT 7 Determination of Proportionate Share	13

SECTION 2 (CONTINUED)

EXHIBIT 8 Pension Expense	17
EXHIBIT 9 Deferred Outflows of Resources and Deferred Inflows of Resources.....	23
EXHIBIT 10 Schedule of Proportionate Share of the Net Pension Liability	30
EXHIBIT 11 Schedule of Reconciliation of Net Pension Liability	36
EXHIBIT 12 Schedule of Recognition of Changes in Total Net Pension Liability	42
EXHIBIT 13 Allocation of Changes in Total Net Pension Liability	44

SECTION 3

ACTUARIAL ASSUMPTIONS AND METHODS AND APPENDICES

Actuarial Assumptions and Methods	45
Appendix A Calculation of Discount Rate as of June 30, 2016	65
Appendix B Glossary of Terms.....	67

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

Purpose

This report has been prepared by Segal Consulting to present certain disclosure information required by Governmental Accounting Standards (GAS) 68 for employer reporting as of June 30, 2017. The results used in preparing this GAS 68 report are comparable to those used in preparing the Governmental Accounting Standards (GAS) 67 report for the plan based on a reporting date and a measurement date as of June 30, 2016. This valuation is based on:

- The benefit provisions of FCERA, as administered by the Board of Retirement;
- The characteristics of covered active members, terminated vested members, and retired members and beneficiaries as of June 30, 2015, 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 as of June 30, 2016; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc., as of June 30, 2016.

General Observations on GAS 68 Actuarial Valuation

The following points should be considered when reviewing this GAS 68 report:

- The Governmental Accounting Standards Board (GASB) rules only define pension liability and expense for financial reporting purposes, and do not apply to contribution amounts for pension funding purposes. Employers and plans can still develop and adopt funding policies under current practices.
- When measuring pension liability GASB uses the same actuarial cost method (Entry Age method) and the same type of discount rate (expected return on assets) as FCERA uses for funding. This means that the Total Pension Liability (TPL) measure for financial reporting shown in this report is determined generally on the same basis as FCERA's Actuarial Accrued Liability (AAL) measure for funding. We note that the same is generally true for the Normal Cost component of the annual plan cost for funding and financial reporting.
- The Net Pension Liability (NPL) is equal to the difference between the TPL and the Plan Fiduciary Net Position. The Plan Fiduciary Net Position is equal to the market value of assets and therefore, the NPL measure is very similar to an Unfunded Actuarial Accrued Liability (UAAL) calculated on a market value basis.

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

- For this report, the reporting dates for the employer are June 30, 2017 and 2016. The NPL's measured as of June 30, 2016 and June 30, 2015 have been determined by rolling forward the TPL as of June 30, 2015 and June 30, 2014, respectively. In addition, we have adjusted the TPL to include \$0.2 million¹ and \$0.7 million² as of June 30, 2016 and June 30, 2015, respectively, that were set aside by the Retirement Board to pay non-vested Supplemental COLA and Retiree Health Insurance benefits.

The Plan Fiduciary Net Position (plan assets) was valued as of the measurement dates. Consistent with the provisions of GAS 68, the assets and liabilities measured as of June 30, 2016 and June 30, 2015 are not adjusted or rolled forward to the June 30, 2017 and June 30, 2016 reporting dates, respectively.

- The pension expenses shown in this report for each employer exclude any expense attributable to employer-paid member contributions. It is our understanding upon discussion with FCERA that the employer contributions reported by FCERA do not include any employer-paid member contributions.

Significant Issues in Valuation Year

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

- The NPL increased from \$1,085.1 million as of June 30, 2015 to \$1,533.0 million as of June 30, 2016 primarily due to the -0.1% return on the market value of assets during 2015/2016 that was less than the assumed return of 7.25% (a loss of \$296.0 million) and changes in actuarial assumptions. This loss was offset to some extent by the gains from lower than expected active salary increases and lower than expected retiree COLA increases during 2014/2015 (because liabilities are rolled forward from June 30, 2015 to June 30, 2016, those gains are not reflected until this valuation as of June 30, 2016). The \$1,533.0 million was measured using the new actuarial assumptions (see additional discussions below) and the NPL would have been lower by about \$235.2 million if measured using the old assumptions. Changes in these values during the last two fiscal years ending June 30, 2016 and June 30, 2015 can be found in Exhibit 5.
- The discount rates originally used to determine the TPL and NPL as of June 30, 2016 and June 30, 2015 were 7.25% and 7.25%, respectively, following the same assumptions used by the Association in the pension funding valuations as of June 30, 2015 and June 30, 2014. However, as the Retirement Board has approved a new discount rate of 7.00% (together

¹ The balance in the Supplemental COLA Reserve was \$0.2 million and the balance in the Retiree Health Reserve was \$0 (after limiting that balance to be no less than \$0).

² The balance in the Supplemental COLA Reserve was \$0.7 million and the balance in the Retiree Health Reserve was \$0 (after limiting that balance to be no less than \$0).

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

with other new actuarial assumptions) for use in the pension funding valuation as of June 30, 2016, we have estimated the impact of this assumption change by (1) revaluing the actuarial valuation TPL as of June 30, 2015 (before the roll forward) and (2) using this revalued TPL in rolling forward the results from June 30, 2015 to June 30, 2016. The detailed calculations used in this derivation of the TPL and NPL as of June 30, 2016 can be found in Appendix A of Section 3. Various other information that is required to be disclosed can be found throughout Exhibits 1 through 13 in Section 2.

- The Safety membership class has only one employer (i.e., County of Fresno) that was making contributions in 2015/2016 and 2014/2015, so all of the NPLs for Safety as of both June 30, 2016 and June 30, 2015 are allocated to the County.

For General membership, the NPLs as of June 30, 2016 and June 30, 2015 are allocated based on the actual employer contributions within the General membership class made during 2015/2016 and 2014/2015, respectively. The steps we used are as follows:

- Calculate ratio of employer's and member's contributions to the total contributions for the membership class.
- Multiply this ratio by the NPL for the membership class to determine the employer's proportionate share of the NPL for the membership class.

If the employer is in both membership classes (i.e., County of Fresno), the employer's total allocated NPL is the sum of its allocated NPL from each membership class. Proportionate share of total plan NPL is then the ratio of the employer's total allocated NPL to the total NPL of all employers. The NPL allocation can be found in Exhibit 7 in Section 2.

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

Summary of Key Valuation Results

Reporting Date for Employer under GAS 68	6/30/2017⁽¹⁾	6/30/2016⁽²⁾
Measurement Date for Employer under GAS 68	6/30/2016	6/30/2015
Disclosure elements for fiscal year ending June 30:		
1. Service cost ⁽³⁾⁽⁴⁾	\$105,592,251	\$104,671,060
2. Total Pension Liability	5,542,506,355	5,117,241,216
3. Plan Fiduciary Net Position	4,009,495,932	4,032,119,349
4. Net Pension Liability	1,533,010,423	1,085,121,867
5. Pension expense	207,305,373	91,862,328
Schedule of contributions for fiscal year ending June 30:		
6. Actuarially determined contributions	\$191,529,000	\$184,213,000
7. Actual contributions	191,529,000	184,213,000
8. Contribution deficiency (excess) (6) – (7)	0	0
Demographic data for plan year ending June 30: ⁽⁵⁾		
9. Number of retired members and beneficiaries	7,032	6,839
10. Number of vested terminated members ⁽⁶⁾	3,289	3,163
11. Number of active members	7,297	7,001
Key assumptions as of June 30:		
12. Investment rate of return	7.00%	7.25%
13. Inflation rate	3.00%	3.25%
14. Projected salary increases ⁽⁷⁾	General: 4.50% to 11.50% and Safety: 4.90% to 11.50%	General: 4.75% to 10.75% and Safety: 5.25% to 10.75%

⁽¹⁾ The reporting date and measurement date for the plan are June 30, 2016.

⁽²⁾ The reporting date and measurement date for the plan are June 30, 2015.

⁽³⁾ Please note that service cost is always based on the previous year's assumptions, meaning each of these values is based on the assumptions as of the June 30, 2015 measurement date.

⁽⁴⁾ Excludes administrative expense load.

⁽⁵⁾ Data as of June 30, 2015 is used in the measurement of the TPL as of June 30, 2016.

⁽⁶⁾ Includes members who left their contributions on deposit even though they have less than five years of service.

⁽⁷⁾ Includes inflation at 3.00% plus real across-the-board salary increases of 0.50% plus merit and promotional increases for June 30, 2016 and includes inflation at 3.25% plus real across-the-board salary increases of 0.50% plus merit and promotional increase for June 30, 2015.

SECTION 1: Valuation Summary for 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 (as well as the plan summary included in our funding valuation report) to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by 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 Board to assist the sponsors of the Fund in preparing items related to the pension plan in their financial reports. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan’s assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term

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

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 Consulting 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: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 1

General Information – “Financial Statements”, Note Disclosures and Required Supplementary Information for a Cost-Sharing Pension Plan

Plan Description

Plan administration. The Fresno County Employees' Retirement Association (FCERA) was established by the County of Board of Supervisors on January 1, 1945. FCERA is administered by the Board of Retirement and governed by the County Employees' Retirement Law of 1937 (California Government Code Section 31450 et. seq.) FCERA is a cost-sharing multiple employer define benefit public employee retirement system whose main function is to provide service retirement, disability, death and survivor benefits to the General and Safety members employed by the County of Fresno. FCERA also provides retirement benefits to the employee members of the Superior Court County of Fresno, Clovis Veterans Memorial District, Fresno-Madera Area Agency on Aging and Fresno Mosquito and Vector Control District.

The management of FCERA is vested with the FCERA Board of Retirement. The Board consists of nine members and two alternates. The County Treasurer is elected by the general public and a member of the Board of Retirement by law. Four members are appointed by the Board of Supervisors, one of whom may be a County Supervisor. Two active members elected by the General members; one active member and one alternate are elected by the Safety members; one retired member and one alternate are elected by the retired members. All members of the Board of Retirement serve terms of three years except for the County Treasurer whose term runs concurrent with his term as County Treasurer.

Plan membership. At June 30, 2016, pension plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	7,032
Vested terminated members entitled to, but not yet receiving benefits ⁽¹⁾	3,289
Active members	<u>7,297</u>
Total	17,618

⁽¹⁾ Includes terminated members due a refund of member contributions.

Benefits provided. FCERA provides service retirement, disability, death and survivor benefits to eligible employees. All regular full-time employees and permanent part-time employees who work 50% or more for the County of Fresno or the other participating agencies become members of FCERA effective on the first day of the first full pay period after employment in a permanent position. There are separate retirement benefits for General and Safety members. Safety membership is extended to those involved in active law enforcement, fire suppression, and district attorney investigators. All other employees are classified as General members. The tiers and their basic provisions are listed below:

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

<u>Tier Name</u>	<u>Governing Code</u>	<u>Effective Date</u>	<u>Basic Provisions</u>	<u>Final Average Salary Period</u>	<u>Plan Sponsors</u>
Pre-Ventura General	§31676.12	Various	2.0% at 57; maximum 3% COLA	Highest 1-year	All
General Tier 1	§31676.14 and the Settlement Agreement	January 1, 2001	2.5% at 55; maximum 3% COLA	Highest 1-year	All
General Tier 2	§31676.16	February 26, 2006	2.0% at 55; maximum 3% COLA	Highest 1-year	County and FMAAA
General Tier 3	§31676.15	December 17, 2007	2.0% at 55; maximum 3% COLA	Highest 3-years	County
General Tier 4	§31676.1	June 11, 2012	2.0% at 61; no COLA	Highest 3-years	County
General Tier 5	§7522.20(a)	January 1, 2013	2.5% at 67; no COLA	Highest 3-years	All
Pre-Ventura Safety	§31664	Various	2.0% at 50; maximum 3% COLA	Highest 1-year	All
Safety Tier 1	§31664 and the Settlement Agreement	January 1, 2001	2.5% at 50; maximum 3% COLA	Highest 1-year	County and NCFPD
Safety Tier 2	§31664.2	February 26, 2006	3.0% at 55; maximum 3% COLA	Highest 1-year	County
Safety Tier 4	§31664	June 11, 2012	2.0% at 50; no COLA	Highest 3-years	County
Safety Tier 5	§7522.25(d)	January 1, 2013	2.7% at 57; no COLA	Highest 3-years	All

Note: FMAAA – Fresno-Madera Area Agency on Aging

NCFPD – North Central Fire Protection District (NCFPD withdrew active membership from FCERA as of August 31, 2007)

There is no Safety Tier 3 offered by FCERA

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

Any new member who becomes a member on or after January 1, 2013 is placed into Tier 5 and is subject to the provisions of California Public Employees' Pension Reform Act of 2013 (PEPRA) and California Government Code 7522 et seq.

General members enrolled in Tiers 1, 2, 3, or 4 are eligible to retire once they attain the age of 70 regardless of service or at age 50 and have acquired 10 or more years of retirement service credit. A member with 30 years of service is eligible to retire regardless of age. General members enrolled in General Tier 5 are eligible to retire once they attain the age of 70 regardless of service or at age 52 and have acquired five years of retirement service credit.

Safety members enrolled in Tiers 1, 2, or 4 are eligible to retire once they attain the age of 70 regardless of service or at age 50 and have acquired 10 or more years of retirement service credit. A member with 20 years of service is eligible to retire regardless of age. Safety members enrolled in Safety Tier 5 are eligible to retire once they attain the age of 70 regardless of service or at age 50 and have acquired five years of retirement service credit.

The retirement benefit the member will receive is based upon age at retirement, final average compensation, years of retirement service credit and retirement plan and tier.

For members enrolled in Tier 1, 2, 3, or 4, the maximum monthly retirement allowance is 100% of final compensation. There is no maximum for members enrolled in Tier 5. However, for members with membership dates on or after January 1, 2013 the maximum amount of pensionable compensation that can be taken into account for 2016 is equal to \$117,020 for those enrolled in Social Security (\$140,424 for those not enrolled in Social Security). This limit is adjusted on an annual basis. Members are exempt from paying member contributions and employers are exempt from paying employer contributions on compensation in excess of the annual cap.

The member may elect an unmodified retirement allowance, or choose an optional retirement allowance. The unmodified retirement allowance provides the highest monthly benefit and a 60% continuance to an eligible surviving spouse or domestic partner. An eligible surviving spouse or domestic partner is one married to or registered with the member one year prior to the effective retirement date. Certain surviving spouses or domestic partners may also be eligible if marriage or domestic partnership was at least two years prior to the date of death and the surviving spouse or domestic partner has attained age 55 on or prior to the date of death. There are four optional retirement allowances the member may choose. Each of the optional retirement allowances requires a reduction in the unmodified retirement allowance in order to allow the member the ability to provide certain benefits to a surviving spouse, domestic partner, or named beneficiary having an insurable interest in the life of the member.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

FCERA provides an annual cost-of-living benefit to all retirees in Tier 1, 2, or 3. The cost-of-living adjustment, based upon the Consumer Price Index for the West Region (with 1982-84 as the base period), is capped at 3.0%.

The County of Fresno and the other participating agencies contribute to the retirement plan based upon actuarially determined contribution rates adopted by the Board of Retirement. Employer contribution rates are adopted annually based upon recommendations received from FCERA's actuary after the completion of the annual actuarial valuation. The average employer contribution rate as of June 30, 2016 for 2015/2016 (based on the June 30, 2014 valuation) was 51.72% of compensation.

Members are required to make contributions to FCERA regardless of the retirement plan or tier in which they are included. The average member contribution rate as of June 30, 2016 for 2015/2016 (based on the June 30, 2014 valuation) was 9.51% of compensation.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 2

Net Pension Liability

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
The components of the Net Pension Liability as follows:		
Total Pension Liability	\$5,542,506,355	\$5,117,241,216
Plan Fiduciary Net Position	<u>4,009,495,932</u>	<u>4,032,119,349</u>
Net Pension Liability	\$1,533,010,423	\$1,085,121,867
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	72.34%	78.79%

The Net Pension Liability (NPL) was measured as of June 30, 2016 and 2015. The Plan Fiduciary Net Position (plan assets) was valued as of the measurement date while the Total Pension Liability (TPL) was determined based upon rolling forward the TPL from actuarial valuations as of June 30, 2015 and 2014, respectively.

Plan provisions. The plan provisions used in the measurement of the NPL as of June 30, 2015 and 2014 are the same as those used in the FCERA actuarial valuation as of June 30, 2016 and 2015, respectively.

Actuarial assumptions. The TPL as of June 30, 2016 was remeasured by (1) revaluing the TPL as of June 30, 2015 (before the roll forward) to reflect the following actuarial assumptions that the Retirement Board has adopted for use in the pension funding valuation as of June 30, 2016 and (2) using this revalued TPL in rolling forward the results from June 30, 2015 to June 30, 2016:

Inflation	3.00%
Salary increases	General: 4.50% to 11.50% and Safety: 4.90% to 11.50%, vary by service, including inflation
Investment rate of return	7.00%, net of pension plan investment expense, including inflation
Administrative expenses	1.10% of payroll allocated to both the employer and member based on the components of the total contribution rate (before expenses) for the employer and member.
Other assumptions	See analysis of actuarial experience during the period July 1, 2012 through June 30, 2015

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

The TPL as of June 30, 2015 was determined by actuarial valuations as of June 30, 2014. The actuarial assumptions used were based on the results of an experience study for the period from July 1, 2009 through June 30, 2012 and they are the same assumptions used in the June 30, 2015 funding valuation for FCERA.

Inflation	3.25%
Salary increases	General: 4.75% to 10.75% and Safety: 5.25% to 10.75%, vary by service, including inflation
Investment rate of return	7.25%, net of pension plan investment expense, including inflation
Administrative expenses	1.10% of payroll allocated to both the employer and member based on the components of the total contribution rate (before expenses) for the employer and member.
Other assumptions	See analysis of actuarial experience during the period July 1, 2009 through June 30, 2012

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 3

Target Asset Allocation

The long-term expected rate of return on pension plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adding expected inflation and subtracting expected investment expenses and a risk margin. The target allocation and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before deducting investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Large Cap U.S. Equity	14%	5.80%
Small Cap U.S. Equity	3%	6.52%
Developed International Equity	12%	6.89%
Emerging Markets Equity	7%	8.88%
U.S. Core Fixed Income	5%	0.76%
High Yield Fixed Income	5%	3.55%
Global Bonds	7%	0.41%
Bank Loans	5%	2.34%
TIPS	4%	0.41%
Emerging Market Debt	5%	4.52%
Real Estate	5%	4.48%
Commodities	3%	4.14%
Infrastructure	3%	3.80%
Hedge Funds	8%	4.40%
Private Credit	8%	7.70%
Private Equity	<u>6%</u>	9.00%
Total	100%	

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 3 (continued)

Target Asset Allocation

Discount rate: The discount rates used to measure the TPL were 7.00% and 7.25% as of June 30, 2016 and June 30, 2015, respectively. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the actuarially determined contribution rates. For this purpose, only employer contributions that are intended to fund benefits for current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the Plan Fiduciary Net Position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the TPL as of both June 30, 2016 and June 30, 2015.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 4

Discount Rate Sensitivity

Sensitivity of the June 30, 2016 Net Pension Liability to changes in the discount rate. The following presents the NPL of FCERA as of June 30, 2016, which is allocated to all employers, calculated using the discount rate of 7.00%, as well as what FCERA's NPL would be if it were calculated using a discount rate that is 1-percentage-point lower (6.00%) or 1-percentage-point higher (8.00%) than the current rate. The determination of the NPL by employer is shown later in Exhibit 7.

Net Pension Liability	1% Decrease (6.00%)	Current Discount Rate (7.00%)	1% Increase (8.00%)
County of Fresno	\$2,147,357,173	\$1,425,569,599	\$834,573,292
Fresno-Madera Area Agency on Aging	6,414,666	4,258,515	2,493,069
Clovis Veterans Memorial District	2,349,088	1,559,493	912,976
Fresno Mosquito and Vector Control District	2,692,656	1,787,578	1,046,504
Superior Court County of Fresno	<u>150,383,338</u>	<u>99,835,238</u>	<u>58,446,689</u>
Total for all Employers	\$2,309,196,921	\$1,533,010,423	\$897,472,530

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 5

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

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Total Pension Liability		
1. Service cost	\$105,592,251	\$104,671,060
2. Interest	366,855,100	355,525,811
3. Change of benefit terms	0	0
3. Differences between expected and actual experience	(42,178,682)	(50,048,133)
5. Changes of assumptions	235,227,824	0
6. Benefit payments, including refunds of member contributions	(240,231,354)	(231,396,472)
7. Other ⁽¹⁾	<u>0</u>	<u>10,306,014</u>
8. Net change in Total Pension Liability	\$425,265,139	\$189,058,280
9. Total Pension Liability – beginning	<u>5,117,241,216</u>	<u>4,928,182,936</u>
10. Total Pension Liability – ending	<u>\$5,542,506,355</u>	<u>\$5,117,241,216</u>
Plan Fiduciary Net Position		
10. Contributions – employer	\$191,529,239	\$184,213,235
11. Contributions – employee	35,211,756	33,109,947
12. Net investment income	(4,319,055)	360,796
13. Benefit payments, including refunds of member contributions	(240,231,354)	(231,396,472)
14. Administrative expense	(4,814,003)	(4,297,090)
15. Other	<u>0</u>	<u>0</u>
16. Net change in Plan Fiduciary Net Position	\$(22,623,417)	\$(18,009,584)
17. Plan Fiduciary Net Position – beginning	<u>4,032,119,349</u>	<u>4,050,128,933</u>
18. Plan Fiduciary Net Position – ending	<u>\$4,009,495,932</u>	<u>\$4,032,119,349</u>
19. Net Pension Liability – ending (9) – (18)	<u>\$1,533,010,423</u>	<u>\$1,085,121,867</u>
20. Plan Fiduciary Net Position as a percentage of the Total Pension Liability	72.34%	78.79%
21. Covered payroll ⁽²⁾⁽³⁾	\$370,318,000	\$351,109,000
22. Plan Net Pension Liability as percentage of covered payroll	413.97%	309.06%

⁽¹⁾ Estimated liability impact for including a group of about 1,420 members reported for the first time as vested terminated members in the June 30, 2015 funding valuation.

⁽²⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

⁽³⁾ As directed by FCERA and based on input from FCERA's outside auditor, we have used the pensionable salaries in preparing this report in lieu of the total (pensionable and non-pensionable) salaries used in preparing last year's report pursuant to GAS Statement 82.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 6

Schedule of Employer's Contributions – Last Ten Fiscal Years

Year Ended June 30	Actuarially Determined Contributions⁽¹⁾	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency (Excess)	Covered Payroll⁽²⁾⁽³⁾	Contributions as a Percentage of Covered Payroll
2007	\$69,997,000	\$69,997,000	\$0	\$370,720,000	18.88%
2008	97,305,000	97,305,000	0	394,449,000	24.67%
2009	113,959,000	113,959,000	0	399,799,000	28.50%
2010	126,138,000	126,138,000	0	392,713,000	32.12%
2011	130,290,000	130,290,000	0	385,204,000	33.82%
2012	157,869,000	157,869,000	0	346,742,000	45.53%
2013	158,572,000	158,572,000	0	346,808,000	45.72%
2014	165,309,000	165,309,000	0	350,326,000	47.19%
2015	184,213,000	184,213,000	0	351,109,000	52.47%
2016	191,529,000	191,529,000	0	370,318,000	51.72%

See accompanying notes to this schedule on next page.

⁽¹⁾ All "Actuarially Determined Contributions" through June 30, 2016 were determined as the "Annual Required Contribution" under GAS 25 and 27.

⁽²⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

⁽³⁾ As directed by FCERA and based on input from FCERA's outside auditor, we have used the pensionable salaries in preparing this report in lieu of the total (pensionable and non-pensionable) salaries used in preparing last year's report pursuant to GAS Statement 82.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

Notes to Exhibit 6

**Methods and assumptions used to establish
"actuarially determined contribution" rates:**

Valuation date	Actuarially determined contribution rates are calculated as of June 30, one year prior to the end of the fiscal year in which contributions are reported
Actuarial cost method	Entry Age Actuarial Cost Method
Amortization method	Level percent of payroll (3.75% payroll growth assumed)
Remaining amortization period	UAAL established as of June 30, 2003 is amortized over a declining period (with 16 years remaining as of the June 30, 2014 valuation which set the rates for the 2015/2016 fiscal year) plus 15 years (declining) for UAAL due to actuarial gains or losses, changes in actuarial assumptions or plan amendments ⁽¹⁾ established on each subsequent valuation.
Asset valuation method	The actuarial value of assets is determined by recognizing any difference between the actual and the 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. The valuation value of assets is the actuarial value of assets reduced by the value of the non-valuation reserves. Deferred gains and losses as of June 30, 2011 have been combined and will be recognized in equal amounts over a period of four and a half years from that date.
Actuarial assumptions:	
June 30, 2014 valuation (for year ended 2016 ADC)	
<i>Investment rate of return</i>	7.25%, net of pension plan investment expenses, including inflation
<i>Inflation rate</i>	3.25%
<i>Administrative expenses</i>	1.10% of payroll allocated to both the employer and member based on the components of the total average contribution rate (before expenses) for the employer and member.
<i>Projected salary increases⁽²⁾</i>	General: 4.75% to 10.75% and Safety: 5.25% to 10.75%, vary by service, including inflation
<i>Cost of living adjustments</i>	3.00% of retirement income for General Tiers 1, 2 and 3, and Safety Tiers 1 and 2; 0.00% for General Tiers 4 and 5 and Safety Tiers 4 and 5
<i>Other assumptions</i>	Same as those used in the June 30, 2014 funding actuarial 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.

⁽²⁾ Includes inflation at 3.25% plus real across-the-board salary increases of 0.50% plus merit and promotional increases.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 7

Determination of Proportionate Share

Actual Employer Contributions by Employer and Membership Class June 30, 2014 to June 30, 2015						
Employer	General	General Percentage⁽¹⁾	Safety	Safety Percentage	Total Contributions	Total Percentage
County of Fresno	\$130,511,612	91.172%	\$41,065,012	100.000%	\$171,576,624	93.140%
Fresno-Madera Area Agency on Aging	538,229	0.376%	0	0.000%	538,229	0.292%
Clovis Veterans Memorial District	175,451	0.123%	0	0.000%	175,451	0.095%
Fresno Mosquito and Vector Control District	215,660	0.151%	0	0.000%	215,660	0.117%
Superior Court County of Fresno	<u>11,707,271</u>	<u>8.178%</u>	<u>0</u>	<u>0.000%</u>	<u>11,707,271</u>	<u>6.356%</u>
Total for all Employers	\$143,148,223	100.000%	\$41,065,012	100.000%	\$184,213,235	100.000%

⁽¹⁾ The unrounded percentages are used in the allocation of the Net Pension Liability (NPL) amongst the General employers.

Allocation of June 30, 2015 Net Pension Liability						
Employer	General	General Percentage	Safety	Safety Percentage	Total NPL	Total Percentage
County of Fresno	\$775,776,354	91.172%	\$234,232,013	100.000%	\$1,010,008,367	93.078%
Fresno-Madera Area Agency on Aging	3,199,297	0.376%	0	0.000%	3,199,297	0.295%
Clovis Veterans Memorial District	1,042,901	0.123%	0	0.000%	1,042,901	0.096%
Fresno Mosquito and Vector Control District	1,281,908	0.151%	0	0.000%	1,281,908	0.118%
Superior Court County of Fresno	<u>69,589,394</u>	<u>8.178%</u>	<u>0</u>	<u>0.000%</u>	<u>69,589,394</u>	<u>6.413%</u>
Total for all Employers	\$850,889,854	100.000%	\$234,232,013	100.000%	\$1,085,121,867	100.000%

Note: Results may not total due to rounding.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

Notes:

Based on the July 1, 2014 through June 30, 2015 employer contributions as provided by FCERA. Upon further discussion with FCERA, it is our understanding that the employer contributions reported by FCERA do not include any employer-paid member contributions.

The Net Pension Liability (NPL) for each membership class is the Total Pension Liability (TPL) minus the Plan Fiduciary Net Position (plan assets). The TPL for each membership class is obtained from internal valuation results. The Plan Fiduciary Net Position for each membership class was estimated by adjusting the Valuation Value of Assets (VVA) for each membership class by the ratio of the total FCERA Plan Fiduciary Net Position to total FCERA VVA.

The Safety membership class has only one employer (i.e., County of Fresno) that was making contributions in 2014/2015, so all of the NPL for Safety is allocated to the County.

For General, the NPL is allocated based on the actual employer contributions within the General membership class.

- Calculate ratio of employer's contributions to the total contributions for the membership class.
- Multiply this ratio by the NPL for the membership class to determine the employer's proportionate share of the NPL for the membership class.

If the employer is in both membership classes (i.e., County of Fresno), the employer's total allocated NPL is the sum of its allocated NPL from each membership class. Proportionate share of total plan NPL is then the ratio of the employer's total allocated NPL to the total NPL of all employers.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

**Actual Employer Contributions by Employer and Membership Class
June 30, 2015 to June 30, 2016**

Employer	General	General Percentage⁽¹⁾	Safety	Safety Percentage	Total Contributions	Total Percentage
County of Fresno	\$135,115,212	91.033%	\$43,104,808	100.000%	\$178,220,020	93.051%
Fresno-Madera Area Agency on Aging	527,523	0.356%	0	0.000%	527,523	0.275%
Clovis Veterans Memorial District	193,182	0.130%	0	0.000%	193,182	0.101%
Fresno Mosquito and Vector Control District	221,436	0.149%	0	0.000%	221,436	0.116%
Superior Court County of Fresno	<u>12,367,078</u>	<u>8.332%</u>	<u>0</u>	<u>0.000%</u>	<u>12,367,078</u>	<u>6.457%</u>
Total for all Employers	\$148,424,431	100.000%	\$43,104,808	100.000%	\$191,529,239	100.000%

⁽¹⁾ The unrounded percentages are used in the allocation of the Net Pension Liability (NPL) amongst the General employers.

Allocation of June 30, 2016 Net Pension Liability

Employer	General	General Percentage	Safety	Safety Percentage	Total NPL	Total Percentage
County of Fresno	\$1,090,739,407	91.033%	\$334,830,192	100.000%	\$1,425,569,599	92.991%
Fresno-Madera Area Agency on Aging	4,258,515	0.356%	0	0.000%	4,258,515	0.278%
Clovis Veterans Memorial District	1,559,493	0.130%	0	0.000%	1,559,493	0.102%
Fresno Mosquito and Vector Control District	1,787,578	0.149%	0	0.000%	1,787,578	0.117%
Superior Court County of Fresno	<u>99,835,238</u>	<u>8.332%</u>	<u>0</u>	<u>0.000%</u>	<u>99,835,238</u>	<u>6.512%</u>
Total for all Employers	\$1,198,180,231	100.000%	\$334,830,192	100.000%	\$1,533,010,423	100.000%

Note: Results may not total due to rounding.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

Notes:

Based on the July 1, 2015 through June 30, 2016 employer contributions as provided by FCERA. Upon further discussion with FCERA, it is our understanding that the employer contributions reported by FCERA do not include any employer-paid member contributions.

The Net Pension Liability (NPL) for each membership class is the Total Pension Liability (TPL) minus the Plan Fiduciary Net Position (plan assets). The TPL for each membership class is obtained from internal valuation results. The Plan Fiduciary Net Position for each membership class was estimated by adjusting the Valuation Value of Assets (VVA) for each membership class by the ratio of the total FCERA Plan Fiduciary Net Position to total FCERA VVA.

The Safety membership class has only one employer (i.e., County of Fresno) that was making contributions in 2015/2016, so all of the NPL for Safety is allocated to the County.

For General, the NPL is allocated based on the actual employer contributions within the General membership class.

- Calculate ratio of employer's contributions to the total contributions for the membership class.
- Multiply this ratio by the NPL for the membership class to determine the employer's proportionate share of the NPL for the membership class.

If the employer is in both membership classes (i.e., County of Fresno), the employer's total allocated NPL is the sum of its allocated NPL from each membership class. Proportionate share of total plan NPL is then the ratio of the employer's total allocated NPL to the total NPL of all employers.

For purposes of developing the above results, the reporting date for the employer under GAS 68 is June 30, 2017. The reporting date and measurement date for the plan under GAS 67 are assumed to be June 30, 2016. Consistent with the provision of GAS 68, the assets and liabilities measured as of June 30, 2016 and are not adjusted or "rolled forward" to June 30, 2017. Other results, such as the total deferred inflows and outflows would also be allocated based on the same proportionate shares determined above.

The following items are allocated based on the corresponding proportionate share within each membership class:

- 1) Net Pension Liability
- 2) Service cost
- 3) Interest on the Total Pension Liability
- 4) Expensed portion of current-period benefit changes
- 5) Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability
- 6) Member contributions
- 7) Projected earnings on plan investments
- 8) Expensed portion of current-period differences between actual and projected earnings on plan investments
- 9) Administrative expense
- 10) Recognition of beginning of year deferred outflows of resources as pension expense
- 11) Recognition of beginning of year deferred inflows of resources as pension expense

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 8

Pension Expense – Total for all Employers

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Components of Pension Expense		
1. Service cost	\$105,592,251	\$104,671,060
2. Interest on the Total Pension Liability	366,855,100	355,525,811
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	0
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(9,674,010)	(8,890,855)
6. Expensed portion of current-period changes of assumptions or other inputs	53,951,335	0
7. Member contributions	(35,211,756)	(33,109,947)
8. Projected earnings on plan investments	(291,665,120)	(292,968,421)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	59,196,835	58,521,525
10. Administrative expense	4,814,003	4,297,090
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(46,553,265)	(96,183,935)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>0</u>
Pension Expense	<u>\$207,305,373</u>	<u>\$91,862,328</u>

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense – County of Fresno

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Components of Pension Expense		
1. Service cost	\$98,191,903	\$97,469,006
2. Interest on the Total Pension Liability	340,637,329	330,499,446
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(291,827)	688,541
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(9,051,033)	(8,378,927)
6. Expensed portion of current-period changes of assumptions or other inputs	50,397,280	0
7. Member contributions	(32,723,254)	(30,791,197)
8. Projected earnings on plan investments	(270,756,463)	(272,244,424)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	54,973,857	54,401,398
10. Administrative expense	4,478,598	4,001,380
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(43,290,864)	(89,364,035)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>1,043,472</u>	<u>354,931</u>
Pension Expense	<u>\$193,608,998</u>	<u>\$86,636,119</u>

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense – Fresno-Madera Area Agency on Aging

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Components of Pension Expense		
1. Service cost	\$293,319	\$306,756
2. Interest on the Total Pension Liability	1,039,165	1,065,944
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(43,094)	(60,868)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(24,692)	(21,804)
6. Expensed portion of current-period changes of assumptions or other inputs	140,868	0
7. Member contributions	(98,634)	(98,762)
8. Projected earnings on plan investments	(828,734)	(882,694)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	167,382	175,488
10. Administrative expense	13,294	12,595
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(129,308)	(290,479)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(62,163)</u>	<u>(1,295)</u>
Pension Expense	<u>\$467,403</u>	<u>\$204,881</u>

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense – Clovis Veterans Memorial District

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Components of Pension Expense		
1. Service cost	\$107,417	\$99,995
2. Interest on the Total Pension Liability	380,548	347,475
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	15,892	46,129
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(9,042)	(7,108)
6. Expensed portion of current-period changes of assumptions or other inputs	51,587	0
7. Member contributions	(36,121)	(32,194)
8. Projected earnings on plan investments	(303,487)	(287,739)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	61,296	57,205
10. Administrative expense	4,868	4,106
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(47,353)	(94,690)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>5,689</u>	<u>(40,440)</u>
Pension Expense	<u>\$231,294</u>	<u>\$92,739</u>

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense – Fresno Mosquito and Vector Control District

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Components of Pension Expense		
1. Service cost	\$123,126	\$122,912
2. Interest on the Total Pension Liability	436,206	427,107
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(3,066)	45,059
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(10,365)	(8,737)
6. Expensed portion of current-period changes of assumptions or other inputs	59,132	0
7. Member contributions	(41,403)	(39,572)
8. Projected earnings on plan investments	(347,874)	(353,682)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	70,261	70,315
10. Administrative expense	5,580	5,047
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(54,279)	(116,390)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>60,883</u>	<u>15,824</u>
Pension Expense	<u>\$298,201</u>	<u>\$167,883</u>

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense – Superior Court County of Fresno

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Components of Pension Expense		
1. Service cost	\$6,876,486	\$6,672,391
2. Interest on the Total Pension Liability	24,361,852	23,185,839
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	322,095	(718,861)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(578,878)	(474,279)
6. Expensed portion of current-period changes of assumptions or other inputs	3,302,468	0
7. Member contributions	(2,312,344)	(2,148,222)
8. Projected earnings on plan investments	(19,428,562)	(19,199,882)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	3,924,039	3,817,119
10. Administrative expense	311,663	273,962
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(3,031,461)	(6,318,341)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(1,047,881)</u>	<u>(329,020)</u>
Pension Expense	<u>\$12,699,477</u>	<u>\$4,760,706</u>

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 9

Deferred Outflows of Resources and Deferred Inflows of Resources – Total for all Employers

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$3,754,885	\$3,769,730
2. Changes of assumptions or other inputs	181,276,489	0
3. Net excess of projected over actual earnings on pension plan investments (if any) ⁽²⁾	280,105,847	234,086,100
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$465,137,221	\$237,855,830
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$3,754,885	\$3,769,730
7. Changes of assumptions or other inputs	0	0
8. Net excess of actual over projected earnings on pension plan investments (if any) ⁽²⁾	0	198,369,101
9. Difference between expected and actual experience in the Total Pension Liability	<u>110,678,970</u>	<u>117,126,055</u>
10. Total Deferred Inflows of Resources	\$114,433,855	\$319,264,886

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:		
2017	N/A	\$(46,553,265)
2018	\$56,920,895	(46,553,265)
2019	60,828,808	(42,645,352)
2020	157,816,986	54,342,826
2021	75,136,677	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

⁽²⁾ For the June 30, 2017 reporting date, we have combined the values in 3. and 8. and reported the net amount as a deferred outflow.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources – County of Fresno

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$2,364,421	\$3,407,893
2. Changes of assumptions or other inputs	169,334,867	0
3. Net excess of projected over actual earnings on pension plan investments (if any) ⁽²⁾	260,271,746	217,605,588
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$431,971,034	\$221,013,481
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$980,544	\$0
7. Changes of assumptions or other inputs	0	0
8. Net excess of actual over projected earnings on pension plan investments (if any) ⁽²⁾	0	184,173,221
9. Difference between expected and actual experience in the Total Pension Liability	<u>103,335,257</u>	<u>109,357,280</u>
10. Total Deferred Inflows of Resources	\$104,315,801	\$293,530,501

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:		
2017	N/A	\$(42,298,094)
2018	\$52,997,284	(42,298,094)
2019	56,628,168	(38,707,753)
2020	146,720,074	50,786,921
2021	71,309,707	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

⁽²⁾ For the June 30, 2017 reporting date, we have combined the values in 3. and 8. and reported the net amount as a deferred outflow.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources – Fresno-Madera Area Agency on Aging

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	473,317	0
3. Net excess of projected over actual earnings on pension plan investments (if any) ⁽²⁾	786,143	701,952
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$1,259,460	\$701,952
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$297,561	\$214,929
7. Changes of assumptions or other inputs	0	0
8. Net excess of actual over projected earnings on pension plan investments (if any) ⁽²⁾	0	604,643
9. Difference between expected and actual experience in the Total Pension Liability	<u>291,075</u>	<u>330,894</u>
10. Total Deferred Inflows of Resources	\$588,636	\$1,150,466

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:		
2017	N/A	\$(198,958)
2018	\$48,992	(198,958)
2019	60,089	(187,228)
2020	368,050	136,630
2021	193,693	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

⁽²⁾ For the June 30, 2017 reporting date, we have combined the values in 3. and 8. and reported the net amount as a deferred outflow.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources – Clovis Veterans Memorial District

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$167,335	\$160,066
2. Changes of assumptions or other inputs	173,331	0
3. Net excess of projected over actual earnings on pension plan investments (if any) ⁽²⁾	287,890	228,821
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$628,556	\$388,887
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$75,624	\$116,064
7. Changes of assumptions or other inputs	0	0
8. Net excess of actual over projected earnings on pension plan investments (if any) ⁽²⁾	0	197,100
9. Difference between expected and actual experience in the Total Pension Liability	<u>106,593</u>	<u>107,864</u>
10. Total Deferred Inflows of Resources	\$182,217	\$421,028

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:		
2017	N/A	\$(38,903)
2018	\$78,068	(38,903)
2019	87,326	(29,879)
2020	198,611	75,544
2021	82,334	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

⁽²⁾ For the June 30, 2017 reporting date, we have combined the values in 3. and 8. and reported the net amount as a deferred outflow.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources – Fresno Mosquito and Vector Control District

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$140,888	\$201,771
2. Changes of assumptions or other inputs	198,682	0
3. Net excess of projected over actual earnings on pension plan investments (if any) ⁽²⁾	329,996	281,261
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$669,566	\$483,032
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$10,300	\$0
7. Changes of assumptions or other inputs	0	0
8. Net excess of actual over projected earnings on pension plan investments (if any) ⁽²⁾	0	242,271
9. Difference between expected and actual experience in the Total Pension Liability	<u>122,183</u>	<u>132,584</u>
10. Total Deferred Inflows of Resources	\$132,483	\$374,855

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:		
2017	N/A	\$6,071
2018	\$122,566	6,071
2019	125,097	8,648
2020	202,705	87,387
2021	86,715	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

⁽²⁾ For the June 30, 2017 reporting date, we have combined the values in 3. and 8. and reported the net amount as a deferred outflow.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources – Superior Court County of Fresno

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$1,082,241	\$0
2. Changes of assumptions or other inputs	11,096,292	0
3. Net excess of projected over actual earnings on pension plan investments (if any) ⁽²⁾	18,430,072	15,268,478
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$30,608,605	\$15,268,478
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$2,390,856	\$3,438,737
7. Changes of assumptions or other inputs	0	0
8. Net excess of actual over projected earnings on pension plan investments (if any) ⁽²⁾	0	13,151,866
9. Difference between expected and actual experience in the Total Pension Liability	<u>6,823,862</u>	<u>7,197,433</u>
10. Total Deferred Inflows of Resources	\$9,214,718	\$23,788,036

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68		
Year Ended June 30:		
2017	N/A	\$(4,023,381)
2018	\$3,673,985	(4,023,381)
2019	3,928,128	(3,729,140)
2020	10,327,546	3,256,344
2021	3,464,228	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

⁽²⁾ For the June 30, 2017 reporting date, we have combined the values in 3. and 8. and reported the net amount as a deferred outflow.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources

There are changes in each employer's proportionate share of the total Net Pension Liability (NPL) during the measurement period ended June 30, 2016. The net effect of the change on the employer's proportionate share of the collective NPL and collective deferred outflows of resources and deferred inflows of resources for the current period (i.e., 2015/2016) is recognized over the average of the expected remaining service lives of all employees that are provided with pensions through FCERA which is 4.36 years determined as of June 30, 2015 (the beginning of the measurement period ending June 30, 2016). This is described in Paragraph 33a. of GAS 68.

In addition, the difference between the actual employer contributions and the proportionate share of the employer contributions during the measurement period ended June 30, 2016 is recognized over the same period.

The net effects of the change on the employer's proportionate share of the collective NPL and collective deferred outflows of resources and deferred inflows of resources for prior periods are continued to be recognized based on the expected remaining service lives of all employees calculated as of those prior measurement dates.

The average of the expected service lives of all employees is determined by:

- Calculating each active employee's expected remaining service life as the present value of \$1 per year of future service at zero percent interest.
- Setting the remaining service life to zero for each nonactive or retired member.
- Dividing the sum of the above amounts by the total number of active employee, nonactive and retired members.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 10

Schedule of Proportionate Share of the Net Pension Liability – Total for all Employers

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾⁽²⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	100.000%	\$1,350,830,222	\$346,808,063	389.50%	72.15%
2015	100.000%	878,054,003	350,326,471	250.64%	82.18%
2016	100.000%	1,085,121,867	351,109,181	309.06%	78.79%
2017	100.000%	1,533,010,423	370,318,316	413.97%	72.34%

- ⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would go into the determination of retirement benefits are included.
- ⁽²⁾ As directed by FCERA and based on input from FCERA's outside auditor, we have used the pensionable salaries in preparing this report in lieu of the total (pensionable and non-pensionable) salaries used in preparing last year's report pursuant to GAS Statement 82.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability – County of Fresno

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾⁽²⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	92.708%	\$1,252,321,370	\$319,904,770	391.47%	72.11%
2015	92.930%	815,975,668	324,102,475	251.76%	82.14%
2016	93.078%	1,010,008,367	325,382,476	310.41%	78.77%
2017	92.992%	1,425,569,599	343,434,550	415.09%	72.31%

- ⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would go into the determination of retirement benefits are included.
- ⁽²⁾ As directed by FCERA and based on input from FCERA's outside auditor, we have used the pensionable salaries in preparing this report in lieu of the total (pensionable and non-pensionable) salaries used in preparing last year's report pursuant to GAS Statement 82.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability – Fresno-Madera Area Agency on Aging

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾⁽²⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.317%	\$4,279,994	\$1,174,125	364.53%	72.64%
2015	0.312%	2,741,295	1,223,759	224.01%	82.71%
2016	0.295%	3,199,297	1,056,905	302.70%	79.14%
2017	0.278%	4,258,515	1,158,908	367.46%	72.77%

- ⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would go into the determination of retirement benefits are included.
- ⁽²⁾ As directed by FCERA and based on input from FCERA's outside auditor, we have used the pensionable salaries in preparing this report in lieu of the total (pensionable and non-pensionable) salaries used in preparing last year's report pursuant to GAS Statement 82.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability – Clovis Veterans Memorial District

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾⁽²⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.094%	\$1,273,120	\$359,610	354.03%	72.64%
2015	0.079%	690,297	301,313	229.10%	82.71%
2016	0.096%	1,042,901	364,020	286.50%	79.14%
2017	0.102%	1,559,493	394,517	395.29%	72.77%

- ⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would go into the determination of retirement benefits are included.
- ⁽²⁾ As directed by FCERA and based on input from FCERA's outside auditor, we have used the pensionable salaries in preparing this report in lieu of the total (pensionable and non-pensionable) salaries used in preparing last year's report pursuant to GAS Statement 82.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability – Fresno Mosquito and Vector Control District

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾⁽²⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.096%	\$1,301,673	\$351,468	370.35%	72.64%
2015	0.101%	884,371	405,365	218.17%	82.71%
2016	0.118%	1,281,908	403,071	318.04%	79.14%
2017	0.117%	1,787,578	469,250	380.94%	72.77%

- ⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would go into the determination of retirement benefits are included.
- ⁽²⁾ As directed by FCERA and based on input from FCERA's outside auditor, we have used the pensionable salaries in preparing this report in lieu of the total (pensionable and non-pensionable) salaries used in preparing last year's report pursuant to GAS Statement 82.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability – Superior Court County of Fresno

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾⁽²⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	6.785%	\$91,654,065	\$25,018,090	366.35%	72.64%
2015	6.578%	57,762,372	24,293,559	237.77%	82.71%
2016	6.413%	69,589,394	23,902,709	291.14%	79.14%
2017	6.512%	99,835,238	24,861,091	401.57%	72.77%

- ⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would go into the determination of retirement benefits are included.
- ⁽²⁾ As directed by FCERA and based on input from FCERA's outside auditor, we have used the pensionable salaries in preparing this report in lieu of the total (pensionable and non-pensionable) salaries used in preparing last year's report pursuant to GAS Statement 82.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 11

Schedule of Reconciliation of Net Pension Liability – Total for all Employers

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,085,121,867	\$878,054,003
2. Pension Expense	207,305,373	91,862,328
3. Employer Contributions	(191,529,239)	(184,213,235)
4. New Net Deferred Inflows/Outflows	385,559,157	203,234,836
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	0
6. New Net Deferred Flows Due to Change in Proportion	0	0
7. Recognition of Prior Deferred Inflows/Outflows	46,553,265	96,183,935
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$1,533,010,423	\$1,085,121,867

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability – County of Fresno

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,010,008,367	\$815,975,668
2. Pension Expense	193,608,998	86,636,119
3. Employer Contributions	(178,220,020)	(171,576,624)
4. New Net Deferred Inflows/Outflows	358,818,829	188,530,712
5. Change in Allocation of Prior Deferred Inflows/Outflows	86,577	(955,852)
6. New Net Deferred Flows Due to Change in Proportion	(980,544)	2,389,240
7. Recognition of Prior Deferred Inflows/Outflows	43,290,864	89,364,035
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>(1,043,472)</u>	<u>(354,931)</u>
9. Ending Net Pension Liability	\$1,425,569,599	\$1,010,008,367

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability – Fresno-Madera Area Agency on Aging

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$3,199,297	\$2,741,295
2. Pension Expense	467,403	204,881
3. Employer Contributions	(527,523)	(538,229)
4. New Net Deferred Inflows/Outflows	1,059,877	626,290
5. Change in Allocation of Prior Deferred Inflows/Outflows	12,785	84,499
6. New Net Deferred Flows Due to Change in Proportion	(144,795)	(211,213)
7. Recognition of Prior Deferred Inflows/Outflows	129,308	290,479
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>62,163</u>	<u>1,295</u>
9. Ending Net Pension Liability	\$4,258,515	\$3,199,297

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability – Clovis Veterans Memorial District

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,042,901	\$690,297
2. Pension Expense	231,294	92,739
3. Employer Contributions	(193,182)	(175,451)
4. New Net Deferred Inflows/Outflows	388,133	204,157
5. Change in Allocation of Prior Deferred Inflows/Outflows	(4,715)	(64,037)
6. New Net Deferred Flows Due to Change in Proportion	53,398	160,066
7. Recognition of Prior Deferred Inflows/Outflows	47,353	94,690
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>(5,689)</u>	<u>40,440</u>
9. Ending Net Pension Liability	\$1,559,493	\$1,042,901

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability – Fresno Mosquito and Vector Control District

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,281,908	\$884,371
2. Pension Expense	298,201	167,883
3. Employer Contributions	(221,436)	(215,660)
4. New Net Deferred Inflows/Outflows	444,900	250,945
5. Change in Allocation of Prior Deferred Inflows/Outflows	909	(62,552)
6. New Net Deferred Flows Due to Change in Proportion	(10,300)	156,355
7. Recognition of Prior Deferred Inflows/Outflows	54,279	116,390
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>(60,883)</u>	<u>(15,824)</u>
9. Ending Net Pension Liability	\$1,787,578	\$1,281,908

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability – Superior Court County of Fresno

Reporting Date for Employer under GAS 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$69,589,394	\$57,762,372
2. Pension Expense	12,699,477	4,760,706
3. Employer Contributions	(12,367,078)	(11,707,271)
4. New Net Deferred Inflows/Outflows	24,847,418	13,622,732
5. Change in Allocation of Prior Deferred Inflows/Outflows	(95,556)	997,942
6. New Net Deferred Flows Due to Change in Proportion	1,082,241	(2,494,448)
7. Recognition of Prior Deferred Inflows/Outflows	3,031,461	6,318,341
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>1,047,881</u>	<u>329,020</u>
9. Ending Net Pension Liability	\$99,835,238	\$69,589,394

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 12

Schedule of Recognition of Changes in Total Net Pension Liability

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Differences between Expected and Actual Experience on Total Pension Liability

Reporting Date for Employer under GAS 68 Year Ended June 30	Differences between Expected and Actual Experience	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:						
			2015	2016	2017	2018	2019	2020	2021
2015	\$(146,396,595)	4.87	\$(30,060,902)	\$(30,060,902)	\$(30,060,902)	\$(30,060,902)	\$(26,152,987)	\$0	\$0
2016	(39,742,119)	4.47	N/A	(8,890,855)	(8,890,855)	(8,890,855)	(8,890,855)	(4,178,699)	0
2017	(42,178,682)	4.36	<u>N/A</u>	<u>N/A</u>	<u>(9,674,010)</u>	<u>(9,674,010)</u>	<u>(9,674,010)</u>	<u>(9,674,010)</u>	<u>(3,482,642)</u>
Net increase (decrease) in pension expense			\$(30,060,902)	\$(38,951,757)	\$(48,625,767)	\$(48,625,767)	\$(44,717,852)	\$(13,852,709)	\$(3,482,642)

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Assumption Changes

Reporting Date for Employer under GAS 68 Year Ended June 30	Effects of Assumption Changes	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:						
			2015	2016	2017	2018	2019	2020	2021
2015	\$0	4.87	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2016	0	4.47	N/A	0	0	0	0	0	0
2017	235,227,824	4.36	<u>N/A</u>	<u>N/A</u>	<u>53,951,335</u>	<u>53,951,335</u>	<u>53,951,335</u>	<u>53,951,335</u>	<u>19,422,484</u>
Net increase (decrease) in pension expense			\$0	\$0	\$53,951,335	\$53,951,335	\$53,951,335	\$53,951,335	\$19,422,484

As described in Exhibit 9, for the current period, the average of the expected remaining service lives of all employees that are provided with pensions through FCERA (active and inactive employees) determined as of June 30, 2015 (the beginning of the measurement period ending June 30, 2016) is 4.36 years.

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 12 (continued)

Schedule of Recognition of Changes in Total Net Pension Liability (in \$000)

Increase (Decrease) in Pension Expense Arising from the Recognition of Differences between Projected and Actual Earnings on Pension Plan Investments

Reporting Date for Employer under GAS 68 Year Ended June 30	Differences between Projected and Actual Earnings	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:						
			2015	2016	2017	2018	2019	2020	2021
2015	\$(330,615,167)	5.00	\$(66,123,033)	\$(66,123,033)	\$(66,123,033)	\$(66,123,033)	\$(66,123,035)	\$0	\$0
2016	292,607,625	5.00	N/A	58,521,525	58,521,525	58,521,525	58,521,525	58,521,525	0
2017	295,984,175	5.00	<u>N/A</u>	<u>N/A</u>	<u>59,196,835</u>	<u>59,196,835</u>	<u>59,196,835</u>	<u>59,196,835</u>	<u>59,196,835</u>
Net increase (decrease) in pension expense			\$(66,123,033)	\$(7,601,508)	\$51,595,327	\$51,595,327	\$51,595,325	\$117,718,360	\$59,196,835

The differences between projected and actual earnings on pension plan investments are recognized over a five-year period per Paragraph 33b. of GAS 68.

Total Increase (Decrease) in Pension Expense

Reporting Date for Employer under GAS 68 Year Ended June 30	Total Differences	Reporting Date for Employer under GAS 68 Year Ended June 30:						
		2015	2016	2017	2018	2019	2020	2021
2015	\$(477,011,762)	\$(96,183,935)	\$(96,183,935)	\$(96,183,935)	\$(96,183,935)	\$(92,276,022)	\$0	\$0
2016	252,865,506	N/A	49,630,670	49,630,670	49,630,670	49,630,670	54,342,826	0
2017	489,033,317	<u>N/A</u>	<u>N/A</u>	<u>103,474,160</u>	<u>103,474,160</u>	<u>103,474,160</u>	<u>103,474,160</u>	<u>75,136,677</u>
Net increase (decrease) in pension expense		\$(96,183,935)	\$(46,553,265)	\$56,920,895	\$56,920,895	\$60,828,808	\$157,816,986	\$75,136,677

SECTION 2: GAS 68 Information for the Fresno County Employees' Retirement Association

EXHIBIT 13

Allocation of Changes in Total Net Pension Liability

In addition to the amounts shown in Exhibit 12, there are changes in each employer's proportionate share of the total NPL during the measurement period ending on June 30, 2016. The net effect of the change on the employer's proportionate share of the collective NPL and collective deferred outflows of resources and deferred inflows of resources is also recognized over the average of the expected remaining service lives of all employees shown above. These amounts are shown below. While these amounts are different for each employer, they sum to zero over the entire FCERA.

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of the Change in Proportion and Change in Employer and Member Contributions for the Year Ended June 30, 2016

	Total Change to be Recognized	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:				
			2017	2018	2019	2020	2021
County of Fresno	\$(1,272,371)	4.36	\$(291,827)	\$(291,827)	\$(291,827)	\$(291,827)	\$(105,063)
Fresno-Madera Area Agency on Aging	(187,889)	4.36	(43,094)	(43,094)	(43,094)	(43,094)	(15,513)
Clovis Veterans Memorial District	69,290	4.36	15,892	15,892	15,892	15,892	5,722
Fresno Mosquito and Vector Control District	(13,366)	4.36	(3,066)	(3,066)	(3,066)	(3,066)	(1,102)
Superior Court County of Fresno	<u>1,404,336</u>	4.36	<u>322,095</u>	<u>322,095</u>	<u>322,095</u>	<u>322,095</u>	<u>115,956</u>
Total for all Employers	\$0		\$0	\$0	\$0	\$0	\$0

The amounts as of June 30, 2015 are as follows:

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of the Change in Proportion and Change in Employer and Member Contributions for the Year Ended June 30, 2015

	Total Change to be Recognized	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:				
			2016	2017	2018	2019	2020
County of Fresno	\$3,077,781	4.47	\$688,541	\$688,541	\$688,541	\$688,541	\$323,617
Fresno-Madera Area Agency on Aging	(272,081)	4.47	(60,868)	(60,868)	(60,868)	(60,868)	(28,609)
Clovis Veterans Memorial District	206,195	4.47	46,129	46,129	46,129	46,129	21,679
Fresno Mosquito and Vector Control District	201,414	4.47	45,059	45,059	45,059	45,059	21,178
Superior Court County of Fresno	<u>(3,213,309)</u>	4.47	<u>(718,861)</u>	<u>(718,861)</u>	<u>(718,861)</u>	<u>(718,861)</u>	<u>(337,865)</u>
Total for all Employers	\$0		\$0	\$0	\$0	\$0	\$0

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

Actuarial Assumptions and Methods

For June 30, 2016 Measurement Date and Employer Reporting as of June 30, 2017

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

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

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.

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

Disabled:

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 3: Actuarial Assumptions and Methods and Appendices 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 3: Actuarial Assumptions and Methods and Appendices 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 3: Actuarial Assumptions and Methods and Appendices 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 3: Actuarial Assumptions and Methods and Appendices 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 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

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	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 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

Retirement Rates (Continued):

Rate (%)			
Safety			
Age	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 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

Retirement Age and Benefit for Deferred Vested Members:

For deferred vested members, we make the following retirement assumption:

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.

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.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

Age of Spouse:

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

Individual Salary Increases:

Annual Rate of Compensation Increase

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.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

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.
- Expected Remaining Service Lives:** The average of the expected service lives of all employees is determined by:
- Calculating each active employee's expected remaining service life as the present value of \$1 per year of future service at zero percent interest.
 - Setting the remaining service life to zero for each nonactive or retired member.
 - Dividing the sum of the above amounts by the total number of active employee, nonactive and retired members.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

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:

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 3: Actuarial Assumptions and Methods and Appendices 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 3: Actuarial Assumptions and Methods and Appendices 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 3: Actuarial Assumptions and Methods and Appendices 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 3: Actuarial Assumptions and Methods and Appendices 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 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)

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	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 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)

Retirement Rates (Continued):

Rate (%)			
Safety			
Age	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 3: Actuarial Assumptions and Methods and Appendices 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 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

Changes in Actuarial Assumptions and Methods (continued)

Individual Salary Increases:

Annual Rate of Compensation Increase

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 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

APPENDIX A

**Calculation of Discount Rate as of June 30, 2016
Projection of Pension Plan Fiduciary Net Position (\$ in millions)**

Year Beginning July 1,	Projected Beginning Plan Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Plan Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
2015	\$4,032	\$227	\$240	\$5	-\$4	\$4,009
2016	4,009	256	263	4	279	4,278
2017	4,278	260	277	4	298	4,556
2018	4,556	268	292	4	317	4,845
2019	4,845	301	307	3	338	5,173
2020	5,173	283	323	3	359	5,489
2021	5,489	267	339	3	380	5,794
2022	5,794	249	356	3	400	6,085
2023	6,085	239	373	3	420	6,368
2024	6,368	218	390	3	438	6,630
2032	7,906	115	538	2	537	8,019
2033	8,019	70	555	2	542	8,074
2034	8,074	47	571	2	545	8,092
2050	6,152	3	637	0	406	5,925
2051	5,925	2	627	0	391	5,691
2052	5,691	2	616	0	375	5,451
2079	394	0	84	0	24	334
2080	334	0	70	0	21	285
2081	285	0	58	0	18	244
2101	246	0	0	0	17	263
2102	263	0	0	0	18	281
2103	281	0	0	0	20	301
2120	888	0	0	0	62	950
2121	950					
2121	Discounted Value:	1 *				

* \$950 million when discounted with interest at the rate of 7.00% per annum has a value of about \$1 million as of June 30, 2015.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

APPENDIX A (continued)

Calculation of Discount Rate as of June 30, 2016 Projection of Pension Plan Fiduciary Net Position (\$ in millions)

Notes:

- (1) Amounts may not total exactly due to rounding.
- (2) Amounts shown in the year beginning July 1, 2015 row are actual amounts, based on the financial statements provided by FCERA.
- (3) Years 2025-2031, 2035-2049, 2053-2078, 2082-2100, and 2104-2119 have been omitted from this table.
- (4) Column (a): Except for the "discounted value" shown for 2121, all of the projected beginning Plan Fiduciary Net Position amounts shown have not been adjusted for the time value of money.
- (5) Column (b): Projected total contributions include member and employer normal cost contributions based on closed group projections (based on covered active members as of June 30, 2015); plus employer contributions to the unfunded actuarial accrued liability; plus employee and employer contributions to fund each year's annual administrative expenses. Contributions are assumed to occur halfway through the year, on average.
- (6) Column (c): Projected benefit payments have been determined in accordance with paragraph 39 of GASB Statement No. 67, and are based on the closed group of active, inactive vested, retired members, and beneficiaries as of June 30, 2015. The projected benefit payments reflect the cost of living increase assumptions used in the June 30, 2016.
- (7) Column (d): Projected administrative expenses are assumed to be 1.10% of closed group projected payroll and are assumed to occur halfway through the year, on average.
- (8) Column (e): Projected investment earnings are based on the assumed investment rate of return of 7.00% per annum.
- (9) As illustrated in this Exhibit, the Plan Fiduciary Net Position was projected to be available to make all projected future benefit payments for current Plan members. In other words, there is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 7.00% per annum was applied to all periods of projected benefit payments to determine the Total Pension Liability as of June 30, 2016 shown earlier in this report, pursuant to paragraph 44 of GASB Statement No. 67.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

**APPENDIX B
GLOSSARY**

Definitions of certain terms *as they are used in Statement 68*; the terms may have different meanings in other contexts.

Active employees

Individuals employed at the end of the reporting or measurement period, as applicable.

Actual contributions

Cash contributions recognized as additions to a pension plan fiduciary net position.

Actuarial present value of projected benefit payments

Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.

Actuarial valuation

The determination, as of a point in time (the actuarial valuation date), of the service cost, Total Pension Liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.

Actuarial valuation date

The date as of which an actuarial valuation is performed.

Actuarially determined contribution

A target or recommended contribution to a defined benefit pension plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

Ad hoc cost-of-living adjustments (ad hoc COLAs)

Cost-of-living adjustments that require a decision to grant by the authority responsible for making such decisions.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

APPENDIX B (continued)

GLOSSARY

Automatic cost-of-living adjustments (automatic COLAs)

Cost-of-living adjustments that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).

Closed period

A specific number of years that is counted from one date and declines to zero with the passage of time. For example, if the recognition period initially is five years on a closed basis, four years remain after the first year, three years after the second year, and so forth.

Collective deferred outflows of resources and deferred inflows of resources related to pensions

Deferred outflows of resources and deferred inflows of resources related to pensions arising from certain changes in the collective Net Pension Liability.

Collective Net Pension Liability

The Net Pension Liability for benefits provided through (1) a cost-sharing pension plan or (2) a single-employer or agent pension plan in circumstances in which there is a special funding situation.

Collective pension expense

Pension expense arising from certain changes in the collective Net Pension Liability.

Contributions

Additions to a Pension Plan Fiduciary Net Position for amounts from employers, nonemployer contributing entities (for example, state government contributions to a local government pension plan), or employees. Contributions can result from cash receipts by the pension plan or from recognition by the pension plan of a receivable from one of these sources.

Cost-of-living adjustments

Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.

Cost-sharing employer

An employer whose employees are provided with pensions through a cost-sharing multiple-employer defined benefit pension plan.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

APPENDIX B (continued)

GLOSSARY

Cost-sharing multiple-employer defined benefit pension plan (cost-sharing pension plan)

A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.

Covered payroll

The payroll of employees that are provided with pensions through the pension plan.

Defined benefit pension plans

Pension plans that are used to provide defined benefit pensions.

Defined benefit pensions

Pensions for which the income or other benefits that the employee will receive at or after separation from employment are defined by the benefit terms. The pensions may be stated as a specified dollar amount or as an amount that is calculated based on one or more factors such as age, years of service, and compensation. (A pension that does not meet the criteria of a defined contribution pension is classified as a defined benefit pension for purposes of Statement 68.)

Defined contribution pension plans

Pension plans that are used to provide defined contribution pensions.

Defined contribution pensions

Pensions having terms that (1) provide an individual account for each employee; (2) define the contributions that an employer is required to make (or the credits that it is required to provide) to an active employee's account for periods in which that employee renders service; and (3) provide that the pensions an employee will receive will depend only on the contributions (or credits) to the employee's account, actual earnings on investments of those contributions (or credits), and the effects of forfeitures of contributions (or credits) made for other employees, as well as pension plan administrative costs, that are allocated to the employee's account.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

APPENDIX B (continued)

GLOSSARY

Discount rate

The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following:

1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the pension plan fiduciary net position is projected (under the requirements of Statement 68) to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments.
2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.

Entry age actuarial cost method

A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the *normal cost*. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the *actuarial accrued liability*.

Inactive employees

Terminated individuals that have accumulated benefits but are not yet receiving them, and retirees or their beneficiaries currently receiving benefits.

Measurement period

The period between the prior and the current measurement dates.

Multiple-employer defined benefit pension plan

A defined benefit pension plan that is used to provide pensions to the employees of more than one employer.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

APPENDIX B (continued)

GLOSSARY

Net Pension Liability

The liability of employers and nonemployer contributing entities to employees for benefits provided through a defined benefit pension plan.

Pension plans

Arrangements through which pensions are determined, assets dedicated for pensions are accumulated and managed, and benefits are paid as they come due.

Pensions

Retirement income and, if provided through a pension plan, postemployment benefits other than retirement income (such as death benefits, life insurance, and disability benefits). Pensions do not include postemployment healthcare benefits and termination benefits.

Plan members

Individuals that are covered under the terms of a pension plan. Plan members generally include (1) employees in active service (active plan members) and (2) terminated employees who have accumulated benefits but are not yet receiving them and retirees or their beneficiaries currently receiving benefits (inactive plan members).

Postemployment

The period after employment.

Postemployment benefit changes

Adjustments to the pension of an inactive employee.

Projected benefit payments

All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and their expected future service.

Public employee retirement system

A special-purpose government that administers one or more pension plans; also may administer other types of employee benefit plans, including postemployment healthcare plans and deferred compensation plans.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Fresno County Employees' Retirement Association

APPENDIX B (continued)

GLOSSARY

Real rate of return

The rate of return on an investment after adjustment to eliminate inflation.

Service costs

The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.

Termination benefits

Inducements offered by employers to active employees to hasten the termination of services, or payments made in consequence of the early termination of services. Termination benefits include early-retirement incentives, severance benefits, and other termination-related benefits.

Total Pension Liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of Statement 68.

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