

Fresno County Employees' Retirement Association

Governmental Accounting Standard (GAS) 68

Actuarial Valuation Based on June 30, 2019
Measurement Date for Employer Reporting as of
June 30, 2020



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, unless expressly authorized by Segal. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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May 5, 2020

Board of Retirement
Fresno County Employees' Retirement Association
7772 N Palm Ave
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Dear Board Members:

We are pleased to submit this Governmental Accounting Standards (GAS) 68 Actuarial Valuation based on June 30, 2019 measurement date for employer reporting as of June 30, 2020. It contains various 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; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law.

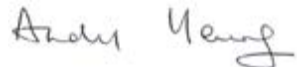
The actuarial calculations were completed under the supervision of Andy Yeung, ASA, MAAA, FCA, EA. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the 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 the Plan.


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

Sincerely,

Segal

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

Purpose

This report has been prepared by Segal to present certain disclosure information required by Governmental Accounting Standards (GAS) 68 for employer reporting as of June 30, 2020. 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, 2019. This valuation is based on:

- The benefit provisions of FCERA, as administered by the Board;
- The characteristics of covered active members, inactive vested members, and retired members and beneficiaries as of June 30, 2018, provided by FCERA;
- The assets of the Plan as of June 30, 2019, provided by FCERA;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the June 30, 2019 valuation; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc., adopted by the Board for the June 30, 2019 valuation.

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 actual pension funding purposes. Employers and plans 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.

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- For this report, the reporting dates for the employer are June 30, 2020 and June 30, 2019. The NPL was measured as of June 30, 2019 and June 30, 2018, respectively, and determined based upon rolling forward the TPL from actuarial valuations as of June 30, 2018 and June 30, 2017. The Plan's Fiduciary Net Positions (plan assets) was valued as of the measurement dates. In addition, any changes in actuarial assumptions or plan provisions that occurred between the valuation date and the measurement date have been reflected. Consistent with the provisions of GAS 68, the assets and liabilities measured as of June 30, 2019 and June 30, 2018 are not adjusted or rolled forward to the June 30, 2020 and June 30, 2019 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 decreased slightly from \$1,182.0 million as of June 30, 2018 to \$1,129.9 million as of June 30, 2019 primarily due to the changes in actuarial assumptions, offset to some extent by the return on market value of assets during 2018-2019 that was lower than assumed rate of 7.00%. The \$1,129.9 million was measured using the new actuarial assumptions and the NPL would have been higher by about \$67.9 million if measured using the old assumptions. Changes in these values during the last two fiscal years ending June 30, 2019 and June 30, 2018 can be found in Exhibit 5.
- There was an increase in the total employer pension expense calculated this year of \$256.3 million from last year of \$162.3 million. The primary cause of the increase was due to the full recognition of \$92.3 million in credit from a liability gain and asset gain that were identified in the June 30, 2014 valuation in developing last year's pension expense. A breakdown of the pension expenses for this year and last year can be found in Exhibit 8.
- The discount rate used to determine the TPL and NPL as of both June 30, 2019 and 2018 was 7.00% following the same assumption used by FCERA in the pension funding valuations as of the same dates. The detailed calculations of the discount rate of 7.00% used in calculation of the TPL and NPL as of June 30, 2019 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 2018-2019 and 2017-2018, so all of the NPLs for Safety as of both June 30, 2019 and June 30, 2018 are allocated to the County.

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

For General membership, the NPLs as of June 30, 2019 and June 30, 2018 are allocated based on the actual employer contributions within the General membership class made during 2018-2019 and 2017-2018, respectively. The steps we used are as follows:

- 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. 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	6/30/2020⁽¹⁾	6/30/2019⁽²⁾
Measurement Date for Employer under GAS 68	6/30/2019	6/30/2018
Disclosure elements for fiscal year ending June 30:		
1. Service cost ⁽³⁾⁽⁴⁾	\$108,089,840	\$108,233,884
2. Total Pension Liability	6,064,374,653	5,881,850,685
3. Plan Fiduciary Net Position	4,934,507,078	4,699,871,406
4. Net Pension Liability	1,129,867,575	1,181,979,279
5. Pension expense	256,282,954	162,318,921
Schedule of contributions for fiscal year ending June 30:		
6. Actuarially determined contributions	\$225,492,000	\$210,535,000
7. Actual contributions	225,492,000	210,535,000
8. Contribution deficiency (excess) (6) – (7)	0	0
Demographic data for plan year ending June 30: ⁽⁵⁾		
9. Number of retired members and beneficiaries	7,651	7,445
10. Number of inactive vested members	3,873	3,627
11. Number of active members	7,676	7,458
Key assumptions as of June 30:		
12. Investment rate of return	7.00%	7.00%
13. Inflation rate	2.75%	3.00%
14. Projected salary increases ⁽⁶⁾	General: 4.35% to 11.75% and Safety: 4.75% to 11.75%	General: 4.50% to 11.50% and Safety: 4.90% to 11.50%

⁽¹⁾ The reporting date and measurement date for the plan are June 30, 2019.

⁽²⁾ The reporting date and measurement date for the plan are June 30, 2018.

⁽³⁾ The service cost is based on the previous year's valuation, meaning the 2019 and 2018 measurement date values are based on the valuations as of June 30, 2018 and June 30, 2017, respectively. Both of the service costs have been calculated using the assumptions shown in the 2018 measurement date column as there were no changes in the actuarial assumptions between the June 30, 2018 and June 30, 2017 valuations.

⁽⁴⁾ Excludes administrative expense load.

⁽⁵⁾ Data as of June 30, 2018 is used in the measurement of the TPL as of June 30, 2019.

⁽⁶⁾ Includes inflation at 2.75% plus real across-the-board salary increases of 0.50% plus merit and promotion increases for the June 30, 2019 valuation and includes inflation at 3.00% plus real across-the-board salary increases of 0.50% plus merit and promotion increases for the June 30, 2018 valuation.

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 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 measurement 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 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 Fresno 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 defined 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 one alternate. 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 are elected by the General members; one active member is 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, 2019, pension plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	7,651
Inactive vested members entitled to, but not yet receiving benefits ⁽¹⁾	3,873
Active members	<u>7,676</u>
Total	19,200

⁽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:

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<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

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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 2019 is equal to \$124,180 for those enrolled in Social Security (\$149,016 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, 2019 for 2018-2019 (based on the June 30, 2017 valuation) was 53.30% 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, 2019 for 2018-2019 (based on the June 30, 2017 valuation) was 9.56% of compensation.

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EXHIBIT 2

Net Pension Liability

Reporting Date for Employer under GAS 68	June 30, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
The components of the Net Pension Liability as follows:		
Total Pension Liability	\$6,064,374,653	\$5,881,850,685
Plan Fiduciary Net Position	<u>4,934,507,078</u>	<u>4,699,871,406</u>
Net Pension Liability	\$1,129,867,575	\$1,181,979,279
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	81.37%	79.90%

The Net Pension Liability (NPL) was measured as of June 30, 2019 and 2018. 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, 2018 and 2017, respectively.

Plan provisions. The plan provisions used in the measurement of the NPL as of June 30, 2019 and 2018 are the same as those used in the FCERA actuarial valuations as of June 30, 2019 and 2018, respectively.

Actuarial assumptions. The TPL as of June 30, 2019 was remeasured by (1) revaluing the TPL as of June 30, 2018 (before the roll forward) to include the following actuarial assumptions that the Retirement Board has adopted for use in the pension funding valuation as of June 30, 2019 and (2) using this revalued TPL in rolling forward the results from June 30, 2018 to June 30, 2019. In particular, the following actuarial assumptions were applied to all periods included in the June 30, 2019 measurement:

Inflation	2.75%
Salary increases	General: 4.35% to 11.75% and Safety: 4.75% to 11.75%, vary by service, including inflation
Investment rate of return	7.00%, net of pension plan investment expense, including inflation
Administrative expenses	1.20% 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	Same as those used in June 30, 2019 funding valuation

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EXHIBIT 2 (continued)

Net Pension Liability

The TPL as of June 30, 2018 was measured as of June 30, 2017 using the same actuarial assumptions in the pension funding valuation as of June 30, 2018 and rolled forward using the results from June 30, 2017 to June 30, 2018. In particular, the following actuarial assumptions were applied to all periods included in the June 30, 2018 measurement:

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	Same as those used in June 30, 2018 funding valuation

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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 as of June 30, 2019 is summarized in the following table. This information will change every three years based on the actuarial experience study.

June 30, 2019		
Asset Class	Target Allocation	Long-Term Expected Arithmetic Real Rate of Return
Large Cap Equity	20%	5.44%
Small Cap Equity	5%	6.18%
Developed International Large Cap Equity	15%	6.54%
Developed International Small Cap Equity	3%	6.64%
Emerging Market Equity	6%	8.73%
Core Bonds	4%	1.42%
High Yield Bonds	3%	3.64%
Global Sovereign	7%	0.16%
Bank Loan	3%	3.45%
TIPS	3%	1.20%
Local Emerging Market Debt	3%	4.72%
Real Estate	3%	4.51%
Value Add Real Estate	1%	8.80%
Opportunistic Real Estate	1%	12.00%
Infrastructure	3%	7.90%
Hedge Funds	6%	3.20%
Private Equity	6%	9.90%
Private Credit	<u>8%</u>	5.80%
Total	100%	

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EXHIBIT 3 (continued)

Target Asset Allocation

Discount rate: The discount rate used to measure the TPL was 7.00% for both June 30, 2019 and June 30, 2018. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rates 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's 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, 2019 and 2018.

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EXHIBIT 4
Discount Rate Sensitivity

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the NPL of FCERA as of June 30, 2019, calculated using the discount rate of 7.00%, as well as what the 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:

Net Pension Liability	1% Decrease (6.00%)	Current Discount Rate (7.00%)	1% Increase (8.00%)
County of Fresno	\$1,835,552,714	\$1,054,509,800	\$415,943,070
Fresno-Madera Area Agency on Aging	5,522,532	3,172,649	1,251,426
Clovis Veterans Memorial District	1,606,176	922,735	363,966
Fresno Mosquito and Vector Control District	2,505,441	1,439,355	567,742
Superior Court County of Fresno	<u>121,538,807</u>	<u>69,823,036</u>	<u>27,541,146</u>
Total for all Employers	\$1,966,725,670	\$1,129,867,575	\$445,667,350

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EXHIBIT 5

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

Reporting Date for Employer under GAS 68	June 30, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Total Pension Liability		
1. Service cost	\$108,089,840	\$108,233,884
2. Interest	410,338,790	393,404,348
3. Change of benefit terms	0	0
4. Differences between expected and actual experience	12,058,315	(70,094,731)
5. Changes of assumptions	(67,930,738)	0
6. Benefit payments, including refunds of member contributions	<u>(280,032,239)</u>	<u>(263,231,547)</u>
7. Net change in Total Pension Liability	\$182,523,968	\$168,311,954
8. Total Pension Liability – beginning	<u>5,881,850,685</u>	<u>5,713,538,731</u>
9. Total Pension Liability – ending	<u>\$6,064,374,653</u>	<u>\$5,881,850,685</u>
Plan's Fiduciary Net Position		
10. Contributions – employer ⁽¹⁾	\$225,491,692	\$210,534,894
11. Contributions – employee ⁽¹⁾	40,463,120	38,467,001
12. Net investment income	254,693,657	312,556,013
13. Benefit payments, including refunds of member contributions	(280,032,239)	(263,231,547)
14. Administrative expense	(5,980,558)	(5,676,721)
15. Other	<u>0</u>	<u>0</u>
16. Net change in Plan's Fiduciary Net Position	\$234,635,672	\$292,649,640
17. Plan's Fiduciary Net Position – beginning	<u>4,699,871,406</u>	<u>4,407,221,766</u>
18. Plan's Fiduciary Net Position – ending	\$4,934,507,078	\$4,699,871,406
19. Net Pension Liability – ending (9) – (18)	<u>\$1,129,867,575</u>	<u>\$1,181,979,279</u>
20. Plan's Fiduciary Net Position as a percentage of the Total Pension Liability	81.37%	79.90%
21. Covered payroll ⁽²⁾	\$423,092,000	\$403,018,000
22. Plan's Net Pension Liability as percentage of covered employee payroll	267.05%	293.28%

⁽¹⁾ See footnote (2) under Exhibit 6 on next page.

⁽²⁾ Covered payroll represents payroll on which contributions to the pension plan are based.

Notes to Schedule:

Benefit changes: None

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

EXHIBIT 6

Schedule of Employer 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⁾	Contributions as a Percentage of Covered Payroll
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%
2017	198,472,000	198,472,000	0	386,345,000	51.37%
2018	210,535,000	210,535,000	0	403,018,000	52.24%
2019	225,492,000	225,492,000	0	423,092,000	53.30%

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 payroll on which contributions to the pension plan are based.

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 (3.50% 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, 2017 valuation which set the rates for the 2018-2019 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.
Actuarial assumptions:	
June 30, 2017 valuation (for year ended 2019 ADC)	
<i>Investment rate of return</i>	7.00%, net of pension plan investment expense, including inflation
<i>Inflation rate</i>	3.00%
<i>Administrative expenses</i>	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.
<i>Projected salary increases⁽²⁾</i>	General: 4.50% to 11.50% and Safety: 4.90% to 11.50%, varying 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, 2017 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 3.00% plus real across-the-board salary increases of 0.50% plus merit and promotion 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, 2017 to June 30, 2018**

Employer	General	General Percentage⁽¹⁾	Safety	Safety Percentage	Total Contributions	Total Percentage
County of Fresno	\$148,384,077	91.119%	\$47,688,810	100.000%	\$196,072,887	93.131%
Fresno-Madera Area Agency on Aging	533,425	0.328%	0	0.000%	533,425	0.253%
Clovis Veterans Memorial District	184,873	0.113%	0	0.000%	184,873	0.088%
Fresno Mosquito and Vector Control District	283,573	0.174%	0	0.000%	283,573	0.135%
Superior Court County of Fresno	<u>13,460,136</u>	<u>8.266%</u>	<u>0</u>	<u>0.000%</u>	<u>13,460,136</u>	<u>6.393%</u>
Total for all Employers	\$162,846,084	100.000%	\$47,688,810	100.000%	\$210,534,894	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, 2018 Net Pension Liability

Employer	General	General Percentage	Safety	Safety Percentage	Total NPL	Total Percentage
County of Fresno	\$831,268,485	91.119%	\$269,692,595	100.000%	\$1,100,961,080	93.145%
Fresno-Madera Area Agency on Aging	2,988,322	0.328%	0	0.000%	2,988,322	0.253%
Clovis Veterans Memorial District	1,035,685	0.113%	0	0.000%	1,035,685	0.088%
Fresno Mosquito and Vector Control District	1,588,616	0.174%	0	0.000%	1,588,616	0.134%
Superior Court County of Fresno	<u>75,405,576</u>	<u>8.266%</u>	<u>0</u>	<u>0.000%</u>	<u>75,405,576</u>	<u>6.380%</u>
Total for all Employers	\$912,286,684	100.000%	\$269,692,595	100.000%	\$1,181,979,279	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, 2017 through June 30, 2018 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's Fiduciary Net Position (plan assets). The TPL for each membership class is obtained from internal valuation results. The Plan's 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's 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 2017-2018, 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, 2018 to June 30, 2019						
Employer	General	General Percentage⁽¹⁾	Safety	Safety Percentage	Total Contributions	Total Percentage
County of Fresno	\$158,229,614	91.457%	\$52,482,246	100.000%	\$210,711,860	93.446%
Fresno-Madera Area Agency on Aging	622,248	0.360%	0	0.000%	622,248	0.276%
Clovis Veterans Memorial District	180,975	0.105%	0	0.000%	180,975	0.080%
Fresno Mosquito and Vector Control District	282,299	0.163%	0	0.000%	282,299	0.125%
Superior Court County of Fresno	<u>13,694,310</u>	<u>7.915%</u>	<u>0</u>	<u>0.000%</u>	<u>13,694,310</u>	<u>6.073%</u>
Total for all Employers	\$173,009,446	100.000%	\$52,482,246	100.000%	\$225,491,692	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, 2019 Net Pension Liability						
Employer	General	General Percentage	Safety	Safety Percentage	Total NPL	Total Percentage
County of Fresno	\$806,763,681	91.457%	\$247,746,119	100.000%	\$1,054,509,800	93.330%
Fresno-Madera Area Agency on Aging	3,172,649	0.360%	0	0.000%	3,172,649	0.281%
Clovis Veterans Memorial District	922,735	0.105%	0	0.000%	922,735	0.082%
Fresno Mosquito and Vector Control District	1,439,355	0.163%	0	0.000%	1,439,355	0.127%
Superior Court County of Fresno	<u>69,823,036</u>	<u>7.915%</u>	<u>0</u>	<u>0.000%</u>	<u>69,823,036</u>	<u>6.180%</u>
Total for all Employers	\$882,121,456	100.000%	\$247,746,119	100.000%	\$1,129,867,575	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, 2018 through June 30, 2019 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's Fiduciary Net Position (plan assets). The TPL for each membership class is obtained from internal valuation results. The Plan's 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's 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 2018-2019, 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, 2020. The reporting date and measurement date for the plan under GAS 67 are assumed to be June 30, 2019. Consistent with the provision of GAS 68, the assets and liabilities measured as of June 30, 2019 are not adjusted or "rolled forward" to June 30, 2020. 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) Expensed portion of current-period changes of assumptions or other inputs
- 7) Member contributions
- 8) Projected earnings on plan investments
- 9) Expensed portion of current-period differences between actual and projected earnings on plan investments
- 10) Administrative expense
- 11) Recognition of beginning of year deferred outflows of resources as pension expense
- 12) 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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Components of Pension Expense		
1. Service cost	\$108,089,840	\$108,233,884
2. Interest on the Total Pension Liability	410,338,790	393,404,348
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	2,667,769	(15,507,684)
6. Expensed portion of current-period changes of assumptions or other inputs	(15,028,924)	0
7. Member contributions	(40,463,120)	(38,467,001)
8. Projected earnings on plan investments	(328,288,969)	(307,808,801)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	14,719,062	(949,442)
10. Administrative expense	5,980,558	5,676,721
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	173,520,370	171,669,695
13. Recognition of beginning of year deferred inflows of resources as pension expense	(75,252,422)	(153,932,799)
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	\$256,282,954	\$162,318,921

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Components of Pension Expense		
1. Service cost	\$100,968,922	\$100,816,549
2. Interest on the Total Pension Liability	382,660,352	365,775,473
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	659,074	831,229
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	2,369,340	(14,414,672)
6. Expensed portion of current-period changes of assumptions or other inputs	(14,118,667)	0
7. Member contributions	(37,791,901)	(35,804,043)
8. Projected earnings on plan investments	(306,061,796)	(286,108,916)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	13,784,071	(700,770)
10. Administrative expense	5,588,135	5,286,308
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	162,124,075	159,822,509
13. Recognition of beginning of year deferred inflows of resources as pension expense	(70,208,939)	(143,170,612)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>203,943</u>	<u>46,429</u>
Pension Expense	\$240,176,609	\$152,379,484

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Components of Pension Expense		
1. Service cost	\$299,801	\$273,586
2. Interest on the Total Pension Liability	1,165,294	1,019,079
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	62,588	(4,649)
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	12,564	(40,315)
6. Expensed portion of current-period changes of assumptions or other inputs	(38,323)	0
7. Member contributions	(112,462)	(98,222)
8. Projected earnings on plan investments	(935,790)	(800,391)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	39,364	(9,172)
10. Administrative expense	16,521	14,400
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	479,797	436,978
13. Recognition of beginning of year deferred inflows of resources as pension expense	(212,336)	(396,959)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(128,843)</u>	<u>(157,579)</u>
Pension Expense	\$648,175	\$236,756

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Components of Pension Expense		
1. Service cost	\$87,193	\$94,817
2. Interest on the Total Pension Liability	338,915	353,190
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(17,398)	(5,811)
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	3,654	(13,972)
6. Expensed portion of current-period changes of assumptions or other inputs	(11,146)	0
7. Member contributions	(32,708)	(34,041)
8. Projected earnings on plan investments	(272,166)	(277,397)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	11,449	(3,179)
10. Administrative expense	4,805	4,991
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	139,545	151,447
13. Recognition of beginning of year deferred inflows of resources as pension expense	(61,756)	(137,577)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>3,472</u>	<u>(1,451)</u>
Pension Expense	\$193,859	\$131,017

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Components of Pension Expense		
1. Service cost	\$136,011	\$145,440
2. Interest on the Total Pension Liability	528,666	541,751
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(21,383)	2,785
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	5,700	(21,432)
6. Expensed portion of current-period changes of assumptions or other inputs	(17,386)	0
7. Member contributions	(51,021)	(52,216)
8. Projected earnings on plan investments	(424,545)	(425,494)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	17,859	(4,876)
10. Administrative expense	7,495	7,655
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	217,672	232,301
13. Recognition of beginning of year deferred inflows of resources as pension expense	(96,332)	(211,026)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>69,296</u>	<u>104,160</u>
Pension Expense	\$372,032	\$319,048

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Components of Pension Expense		
1. Service cost	\$6,597,913	\$6,903,492
2. Interest on the Total Pension Liability	25,645,563	25,714,855
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(682,881)	(823,554)
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	276,511	(1,017,293)
6. Expensed portion of current-period changes of assumptions or other inputs	(843,402)	0
7. Member contributions	(2,475,028)	(2,478,479)
8. Projected earnings on plan investments	(20,594,672)	(20,196,603)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	866,319	(231,445)
10. Administrative expense	363,602	363,367
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	10,559,281	11,026,460
13. Recognition of beginning of year deferred inflows of resources as pension expense	(4,673,059)	(10,016,625)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(147,868)</u>	<u>8,441</u>
Pension Expense	\$14,892,279	\$9,252,616

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$5,880,824	\$5,618,905
2. Changes of assumptions or other inputs	19,422,484	73,373,819
3. Net excess of projected over actual earnings on pension plan investments (if any)	60,170,860	90,536,580
4. Difference between expected and actual experience in the Total Pension Liability	<u>12,296,590</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$97,770,758	\$169,529,304
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$5,880,824	\$5,618,905
7. Changes of assumptions or other inputs	52,901,814	0
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>68,971,144</u>	<u>110,990,457</u>
10. Total Deferred Inflows of Resources	\$127,753,782	\$116,609,362

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:		
2020	N/A	\$98,267,948
2021	\$17,945,546	15,587,639
2022	(49,564,299)	(51,922,206)
2023	(6,655,532)	(9,013,439)
2024	8,291,261	0
Thereafter	0	0

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

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$4,414,635	\$3,249,544
2. Changes of assumptions or other inputs	18,203,554	68,586,780
3. Net excess of projected over actual earnings on pension plan investments (if any)	57,022,492	85,098,625
4. Difference between expected and actual experience in the Total Pension Liability	<u>11,246,118</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$90,886,799	\$156,934,949
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$1,100,269	\$2,051,172
7. Changes of assumptions or other inputs	49,697,712	0
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>64,631,244</u>	<u>103,510,173</u>
10. Total Deferred Inflows of Resources	\$115,429,225	\$105,561,345

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:		
2020	N/A	\$91,867,732
2021	\$17,537,217	14,811,299
2022	(44,995,340)	(47,541,266)
2023	(5,101,437)	(7,764,161)
2024	8,017,134	0
Thereafter	0	0

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

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$220,312	\$0
2. Changes of assumptions or other inputs	51,318	176,568
3. Net excess of projected over actual earnings on pension plan investments (if any)	132,550	200,577
4. Difference between expected and actual experience in the Total Pension Liability	<u>44,226</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$448,406	\$377,145
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$106,490	\$235,333
7. Changes of assumptions or other inputs	134,896	0
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>182,715</u>	<u>275,907</u>
10. Total Deferred Inflows of Resources	\$424,101	\$511,240

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:		
2020	N/A	\$114,749
2021	\$37,698	(41,543)
2022	(112,596)	(174,746)
2023	40,685	(32,555)
2024	58,518	0
Thereafter	0	0

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

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$5,722	\$43,293
2. Changes of assumptions or other inputs	14,925	61,194
3. Net excess of projected over actual earnings on pension plan investments (if any)	38,551	69,515
4. Difference between expected and actual experience in the Total Pension Liability	<u>12,863</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$72,061	\$174,002
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$118,597	\$91,456
7. Changes of assumptions or other inputs	39,233	0
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>53,141</u>	<u>95,623</u>
10. Total Deferred Inflows of Resources	\$210,971	\$187,079

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:		
2020	N/A	\$87,895
2021	\$(31,883)	(17,595)
2022	(79,449)	(69,912)
2023	(26,085)	(13,465)
2024	(1,493)	0
Thereafter	0	0

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

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$80,102	\$152,464
2. Changes of assumptions or other inputs	23,282	93,865
3. Net excess of projected over actual earnings on pension plan investments (if any)	60,135	106,628
4. Difference between expected and actual experience in the Total Pension Liability	<u>20,064</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$183,583	\$352,957
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$76,370	\$4,168
7. Changes of assumptions or other inputs	61,199	0
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>82,893</u>	<u>146,674</u>
10. Total Deferred Inflows of Resources	\$220,462	\$150,842

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:		
2020	N/A	\$198,791
2021	\$50,368	66,620
2022	(59,136)	(48,724)
2023	(28,774)	(14,572)
2024	663	0
Thereafter	0	0

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

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$1,160,053	\$2,173,604
2. Changes of assumptions or other inputs	1,129,405	4,455,412
3. Net excess of projected over actual earnings on pension plan investments (if any)	2,917,132	5,061,235
4. Difference between expected and actual experience in the Total Pension Liability	<u>973,319</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$6,179,909	\$11,690,251
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$4,479,098	\$3,236,776
7. Changes of assumptions or other inputs	2,968,774	0
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>4,021,151</u>	<u>6,962,080</u>
10. Total Deferred Inflows of Resources	\$11,469,023	\$10,198,856

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:		
2020	N/A	\$5,998,781
2021	\$352,146	768,858
2022	(4,317,778)	(4,087,558)
2023	(1,539,921)	(1,188,686)
2024	216,439	0
Thereafter	0	0

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

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, 2019. 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., 2018-2019) is recognized over the average of the expected remaining service lives of all employees that are provided with pensions through FCERA which is 4.52 years determined as of June 30, 2018 (the beginning of the measurement period ending June 30, 2019). 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, 2019 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⁾	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%
2018	100.000%	1,306,316,965	386,345,262	338.12%	77.14%
2019	100.000%	1,181,979,279	403,018,382	293.28%	79.90%
2020	100.000%	1,129,867,575	423,092,385	267.05%	81.37%

⁽¹⁾ Covered payroll represents payroll on which contributions to the pension plan are based.

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⁾	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%
2018	92.747%	1,211,571,877	357,537,552	338.87%	77.11%
2019	93.145%	1,100,961,080	373,991,976	294.38%	79.87%
2020	93.330%	1,054,509,800	393,996,969	267.64%	81.35%

⁽¹⁾ Covered payroll represents payroll on which contributions to the pension plan are based.

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⁾	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%
2018	0.258%	3,364,621	1,058,746	317.79%	77.46%
2019	0.253%	2,988,322	1,111,415	268.88%	80.36%
2020	0.281%	3,172,649	1,300,919	243.88%	81.58%

⁽¹⁾ Covered payroll represents payroll on which contributions to the pension plan are based.

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⁾	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%
2018	0.091%	1,187,091	443,055	267.93%	77.46%
2019	0.088%	1,035,685	468,880	220.88%	80.36%
2020	0.082%	922,735	429,925	214.63%	81.58%

⁽¹⁾ Covered payroll represents payroll on which contributions to the pension plan are based.

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⁾	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%
2018	0.135%	1,762,384	538,972	326.99%	77.46%
2019	0.134%	1,588,616	593,152	267.83%	80.36%
2020	0.127%	1,439,355	601,002	239.49%	81.58%

⁽¹⁾ Covered payroll represents payroll on which contributions to the pension plan are based.

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⁾	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%
2018	6.769%	88,430,992	26,766,936	330.37%	77.46%
2019	6.380%	75,405,576	26,852,960	280.81%	80.36%
2020	6.180%	69,823,036	26,763,571	260.89%	81.58%

⁽¹⁾ Covered payroll represents payroll on which contributions to the pension plan are based.

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,181,979,279	\$1,306,316,965
2. Pension Expense	256,282,954	162,318,921
3. Employer Contributions	(225,491,692)	(210,534,894)
4. New Net Deferred Inflows/Outflows	15,364,982	(58,384,817)
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	(98,267,948)	(17,736,896)
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$1,129,867,575	\$1,181,979,279

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,100,961,080	\$1,211,571,877
2. Pension Expense	240,176,609	152,379,484
3. Employer Contributions	(210,711,860)	(196,072,887)
4. New Net Deferred Inflows/Outflows	13,778,653	(53,542,724)
5. Change in Allocation of Prior Deferred Inflows/Outflows	104,460	397,729
6. New Net Deferred Flows Due to Change in Proportion	2,319,937	2,925,927
7. Recognition of Prior Deferred Inflows/Outflows	(91,915,136)	(16,651,897)
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>(203,943)</u>	<u>(46,429)</u>
9. Ending Net Pension Liability	\$1,054,509,800	\$1,100,961,080

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$2,988,322	\$3,364,621
2. Pension Expense	648,175	236,756
3. Employer Contributions	(622,248)	(533,425)
4. New Net Deferred Inflows/Outflows	66,786	(178,599)
5. Change in Allocation of Prior Deferred Inflows/Outflows	9,920	(2,225)
6. New Net Deferred Flows Due to Change in Proportion	220,312	(16,366)
7. Recognition of Prior Deferred Inflows/Outflows	(267,461)	(40,019)
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>128,843</u>	<u>157,579</u>
9. Ending Net Pension Liability	\$3,172,649	\$2,988,322

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,035,685	\$1,187,091
2. Pension Expense	193,859	131,017
3. Employer Contributions	(180,975)	(184,873)
4. New Net Deferred Inflows/Outflows	19,424	(61,898)
5. Change in Allocation of Prior Deferred Inflows/Outflows	(2,757)	(2,780)
6. New Net Deferred Flows Due to Change in Proportion	(61,240)	(20,453)
7. Recognition of Prior Deferred Inflows/Outflows	(77,789)	(13,870)
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>(3,472)</u>	<u>1,451</u>
9. Ending Net Pension Liability	\$922,735	\$1,035,685

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,588,616	\$1,762,384
2. Pension Expense	372,032	319,048
3. Employer Contributions	(282,299)	(283,573)
4. New Net Deferred Inflows/Outflows	30,299	(94,944)
5. Change in Allocation of Prior Deferred Inflows/Outflows	(3,389)	1,333
6. New Net Deferred Flows Due to Change in Proportion	(75,268)	9,803
7. Recognition of Prior Deferred Inflows/Outflows	(121,340)	(21,275)
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>(69,296)</u>	<u>(104,160)</u>
9. Ending Net Pension Liability	\$1,439,355	\$1,588,616

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, 2020	June 30, 2019
Measurement Date for Employer under GAS 68	June 30, 2019	June 30, 2018
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$75,405,576	\$88,430,992
2. Pension Expense	14,892,279	9,252,616
3. Employer Contributions	(13,694,310)	(13,460,136)
4. New Net Deferred Inflows/Outflows	1,469,820	(4,506,652)
5. Change in Allocation of Prior Deferred Inflows/Outflows	(108,234)	(394,057)
6. New Net Deferred Flows Due to Change in Proportion	(2,403,741)	(2,898,911)
7. Recognition of Prior Deferred Inflows/Outflows	(5,886,222)	(1,009,835)
8. Recognition of Prior Deferred Flows Due to Change in Proportion	<u>147,868</u>	<u>(8,441)</u>
9. Ending Net Pension Liability	\$69,823,036	\$75,405,576

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 (Dollars in \$000s)

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	\$(146,397)	4.87	\$(30,061)	\$(30,061)	\$(30,061)	\$(30,061)	\$(26,153)	\$0	\$0
2016	(39,742)	4.47	N/A	(8,891)	(8,891)	(8,891)	(8,891)	(4,179)	0
2017	(42,179)	4.36	N/A	N/A	(9,674)	(9,674)	(9,674)	(9,674)	(3,483)
2018	(70,198)	4.51	N/A	N/A	N/A	(15,565)	(15,565)	(15,565)	(15,565)
2019	(70,095)	4.52	N/A	N/A	N/A	N/A	(15,508)	(15,508)	(15,508)
2020	12,058	4.52	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>2,668</u>	<u>2,668</u>
Net increase (decrease) in pension expense			\$(30,061)	\$(38,952)	\$(48,626)	\$(64,191)	\$(75,791)	\$(42,258)	\$(31,888)

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Differences between Expected and Actual Experience on Total Pension Liability (Dollars in \$000s)

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:						
			2022	2023	2024	2025	2026	2027	Thereafter
2015	\$(146,397)	4.87	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2016	(39,742)	4.47	0	0	0	0	0	0	0
2017	(42,179)	4.36	0	0	0	0	0	0	0
2018	(70,198)	4.51	(7,938)	0	0	0	0	0	0
2019	(70,095)	4.52	(15,508)	(8,064)	0	0	0	0	0
2020	12,058	4.52	<u>2,668</u>	<u>2,668</u>	<u>1,387</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Net increase (decrease) in pension expense			\$(20,778)	\$(5,396)	\$1,387	\$0	\$0	\$0	\$0

Note: Results may not total due to rounding.

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, 2018 (the beginning of the measurement period ending June 30, 2019) is 4.52 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

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Assumption Changes (Dollars in \$000s)

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	235,228	4.36	N/A	N/A	53,951	53,951	53,951	53,951	19,422
2018	0	4.51	N/A	N/A	N/A	0	0	0	0
2019	0	4.52	N/A	N/A	N/A	N/A	0	0	0
2020	(67,931)	4.52	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>(15,029)</u>	<u>(15,029)</u>
Net increase (decrease) in pension expense			\$0	\$0	\$53,951	\$53,951	\$53,951	\$38,922	\$4,394

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Assumption Changes (Dollars in \$000s)

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:						Thereafter
			2022	2023	2024	2025	2026	2027	
2015	\$0	4.87	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2016	0	4.47	0	0	0	0	0	0	0
2017	235,228	4.36	0	0	0	0	0	0	0
2018	0	4.51	0	0	0	0	0	0	0
2019	0	4.52	0	0	0	0	0	0	0
2020	(67,931)	4.52	<u>(15,029)</u>	<u>(15,029)</u>	<u>(7,815)</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Net increase (decrease) in pension expense			\$(15,029)	\$(15,029)	\$(7,815)	\$0	\$0	\$0	\$0

Note: Results may not total due to rounding.

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, 2018 (the beginning of the measurement period ending June 30, 2019) is 4.52 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

Increase (Decrease) in Pension Expense Arising from the Recognition of Differences between Projected and Actual Earnings on Pension Plan Investments (Dollars in \$000s)

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)	5.00	\$(66,123)	\$(66,123)	\$(66,123)	\$(66,123)	\$(66,123)	\$0	\$0
2016	292,608	5.00	N/A	58,522	58,522	58,522	58,522	58,522	0
2017	295,984	5.00	N/A	N/A	59,197	59,197	59,197	59,197	59,197
2018	(137,635)	5.00	N/A	N/A	N/A	(27,527)	(27,527)	(27,527)	(27,527)
2019	(4,747)	5.00	N/A	N/A	N/A	N/A	(949)	(949)	(949)
2020	73,595	5.00	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>14,719</u>	<u>14,719</u>
Net increase (decrease) in pension expense			\$(66,123)	\$(7,602)	\$51,595	\$24,068	\$23,119	\$103,961	\$45,440

Increase (Decrease) in Pension Expense Arising from the Recognition of Differences between Projected and Actual Earnings on Pension Plan Investments (Dollars in \$000s)

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:						
			2022	2023	2024	2025	2026	2027	Thereafter
2015	\$(330,615)	5.00	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2016	292,608	5.00	0	0	0	0	0	0	0
2017	295,984	5.00	0	0	0	0	0	0	0
2018	(137,635)	5.00	(27,527)	0	0	0	0	0	0
2019	(4,747)	5.00	(949)	(949)	0	0	0	0	0
2020	73,595	5.00	<u>14,719</u>	<u>14,719</u>	<u>14,719</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Net increase (decrease) in pension expense			\$(13,757)	\$13,770	\$14,719	\$0	\$0	\$0	\$0

Note: Results may not total due to rounding.

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

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

Total Increase (Decrease) in Pension Expense (Dollars in \$000s)

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	\$(477,012)	\$(96,184)	\$(96,184)	\$(96,184)	\$(96,184)	\$(92,276)	\$0	\$0
2016	252,866	N/A	49,631	49,631	49,631	49,631	54,343	0
2017	489,033	N/A	N/A	103,474	103,474	103,474	103,474	75,137
2018	(207,833)	N/A	N/A	N/A	(43,092)	(43,092)	(43,092)	(43,092)
2019	(74,842)	N/A	N/A	N/A	N/A	(16,457)	(16,457)	(16,457)
2020	17,723	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>2,358</u>	<u>2,358</u>
Net increase (decrease) in pension expense		\$(96,184)	\$(46,553)	\$56,921	\$13,829	\$1,280	\$100,626	\$17,946

Total Increase (Decrease) in Pension Expense (Dollars in \$000s)

Reporting Date for Employer under GAS 68 Year Ended June 30	Total Differences	Reporting Date for Employer under GAS 68 Year Ended June 30:						
		2022	2023	2024	2025	2026	2027	Thereafter
2015	\$(477,012)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2016	252,866	0	0	0	0	0	0	0
2017	489,033	0	0	0	0	0	0	0
2018	(207,833)	(35,465)	0	0	0	0	0	0
2019	(74,842)	(16,457)	(9,013)	0	0	0	0	0
2020	17,723	<u>2,358</u>	<u>2,358</u>	<u>8,291</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Net increase (decrease) in pension expense		\$(49,564)	\$(6,656)	\$8,291	\$0	\$0	\$0	\$0

Note: Results may not total due to rounding.

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, 2019. 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, 2019

	Total Change to be Recognized	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:				
			2020	2021	2022	2023	2024
County of Fresno	\$2,979,011	4.52	\$659,074	\$659,074	\$659,074	\$659,074	\$342,715
Fresno-Madera Area Agency on Aging	282,900	4.52	62,588	62,588	62,588	62,588	32,548
Clovis Veterans Memorial District	(78,638)	4.52	(17,398)	(17,398)	(17,398)	(17,398)	(9,046)
Fresno Mosquito and Vector Control District	(96,651)	4.52	(21,383)	(21,383)	(21,383)	(21,383)	(11,119)
Superior Court County of Fresno	<u>(3,086,622)</u>	4.52	<u>(682,881)</u>	<u>(682,881)</u>	<u>(682,881)</u>	<u>(682,881)</u>	<u>(355,098)</u>
Total for all Employers	\$0		\$0	\$0	\$0	\$0	\$0

The amounts as of June 30, 2018 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, 2018

	Total Change to be Recognized	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:				
			2019	2020	2021	2022	2023
County of Fresno	\$3,757,156	4.52	\$831,229	\$831,229	\$831,229	\$831,229	\$432,240
Fresno-Madera Area Agency on Aging	(21,015)	4.52	(4,649)	(4,649)	(4,649)	(4,649)	(2,419)
Clovis Veterans Memorial District	(26,264)	4.52	(5,811)	(5,811)	(5,811)	(5,811)	(3,020)
Fresno Mosquito and Vector Control District	12,588	4.52	2,785	2,785	2,785	2,785	1,448
Superior Court County of Fresno	<u>(3,722,465)</u>	4.52	<u>(823,554)</u>	<u>(823,554)</u>	<u>(823,554)</u>	<u>(823,554)</u>	<u>(428,249)</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, 2019 Measurement Date and Employer Reporting as of June 30, 2020

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, 2015 through June 30, 2018 Actuarial Experience Study dated April 9, 2019. Unless otherwise noted, all actuarial assumptions and methods shown below apply to members for all tiers. These assumptions were adopted by the Board.

Economic Assumptions

Net Investment Return:

7.00%, net of investment expenses.

Based on the Actuarial Experience Study reference above, expected investment expenses represent about 0.60% of the Actuarial Value of Assets.

Administrative Expenses:

1.20% of payroll, 1.04% 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

**Member Contribution
Crediting Rate:**

2.75%, compounded semi-annually. (The difference between the 7.00% net investment return assumption and 2.75% is credited to the other valuation reserves.)

Consumer Price Index:

Increase of 2.75% 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.

For member that have COLA banks, we have reflected those amounts in projecting their future COLAs.

Payroll Growth:

Inflation of 2.75% per year plus “across the board” real salary increases of 0.50% per year.

**Increase in Internal Revenue
Code Section 401(a)(17)
Compensation Limit:**

Increase of 2.75% per year from the valuation date.

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

**Increase in Section 7522.10
Compensation Limit:**

Increase of 2.75% per year from the valuation date.

Salary Increases:

Annual Rate of Compensation Increase

Inflation: 2.75%; plus “across the board” salary increases of 0.50% per year; plus the following merit and promotion increases.

<u>Years of Service</u>	<u>General</u>	<u>Safety</u>
Less than 1	8.50%	8.50%
1-2	7.50%	7.75%
2-3	6.50%	6.50%
3-4	5.25%	5.50%
4-5	4.75%	4.75%
5-6	3.75%	3.75%
6-7	3.00%	3.50%
7-8	2.00%	2.50%
8-9	1.50%	1.70%
9-10	1.25%	1.60%
10 & Over	1.10%	1.50%

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: Pub-2010 General Healthy Retiree Amount-Weighted Above Median Mortality Table (separate tables for males and females) times 110%, projected generationally with the two-dimensional mortality improvement scale MP-2018.

For Safety Members: Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2018.

Disabled:

For General Members: Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2018.

For Safety Members: Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP 2018.

The Pub-2010 mortality tables and adjustments as shown above reasonably reflect the mortality experience as of the measurement date. These mortality tables were adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

*Mortality Rates for
Member Contributions:*

For General Members: Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) times 110%, projected 30 years with the two-dimensional mortality improvement scale MP-2018, weighted 35% male and 65% female.

For Safety Members: Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected 30 years with the two-dimensional mortality improvement scale MP-2018, weighted 80% male and 20% 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 Members: Pub-2010 General Employee Amount-Weighted Above Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2018.

For Safety Members: Pub-2010 Safety Employee Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2018

Age	Rate (%) Mortality			
	General ⁽¹⁾		Safety ⁽¹⁾	
	Male	Female	Male	Female
25	0.02	0.01	0.03	0.02
30	0.03	0.01	0.04	0.02
35	0.04	0.02	0.04	0.03
40	0.06	0.03	0.05	0.04
45	0.09	0.05	0.07	0.06
50	0.13	0.08	0.10	0.08
55	0.19	0.11	0.15	0.11
60	0.28	0.17	0.23	0.14
65	0.41	0.27	0.35	0.20
70	0.61	0.44	0.66	0.39

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

⁽¹⁾ *Generational projections beyond the base year (2010) are not reflected in the above mortality rates.*

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⁾
20	0.01	0.05
25	0.01	0.11
30	0.02	0.24
35	0.04	0.42
40	0.11	0.65
45	0.21	0.90
50	0.28	1.30
55	0.33	1.80
60	0.44	2.60
65	0.65	3.00
70	0.75	3.00

⁽¹⁾ 50% of General disabilities are assumed to be service connected disabilities (duty) and the other 50% are assumed to be non-service connected (ordinary) disabilities.

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

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

Termination Rates Before Retirement (continued):

Years of Service	Rate (%)	
	Total Termination	
	General	Safety
Less than 1	18.00	13.00
1-2	11.00	8.00
2-3	9.00	7.00
3-4	8.00	4.00
4-5	7.50	3.50
5-6	6.00	3.25
6-7	5.50	3.00
7-8	5.00	2.75
8-9	4.75	2.50
9-10	4.00	2.25
10-11	4.00	2.00
11-12	4.00	1.90
12-13	3.75	1.80
13-14	3.75	1.70
14-15	3.75	1.60
15-16	3.50	1.50
16-17	2.75	1.40
17-18	2.75	1.30
18-19	2.75	1.20
19-20	2.50	1.10
20 & Over	2.25	1.00

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	50.00	50.00
5-9	30.00	70.00
10-14	25.00	75.00
15-19	15.00	85.00
20 & Over	10.00	90.00

No termination is assumed after a member is first assumed to retire.

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

Retirement Rates:

Rate (%)						
General						
Age	Tier 1 (Less than 30 Years of Service)	Tier 1 (30 or More Years of Service)	Tier 2	Tier 3	Tier 4	Tier 5
50	5.00	15.00	3.00	3.60	2.00	0.00
51	3.75	11.25	3.00	3.60	2.00	0.00
52	3.50	10.50	3.60	4.20	2.50	4.50
53	3.50	10.50	3.60	4.20	2.50	2.00
54	5.00	15.00	4.20	5.00	3.00	2.50
55	8.00	16.00	8.40	10.00	4.00	3.50
56	10.00	20.00	10.00	12.00	5.00	4.50
57	13.00	26.00	10.00	12.00	6.00	5.50
58	14.00	28.00	10.00	12.00	7.00	6.50
59	15.00	30.00	10.00	14.00	8.00	7.50
60	16.00	24.00	15.00	16.00	9.00	8.50
61	18.00	27.00	15.00	16.00	10.00	9.50
62	26.50	31.50	25.00	30.00	16.00	15.00
63	21.00	31.50	24.00	22.00	16.00	15.00
64	25.00	37.50	24.00	22.00	19.00	18.00
65	40.00	60.00	35.00	35.00	23.00	22.00
66	40.00	60.00	34.00	30.00	20.00	20.00
67	40.00	60.00	34.00	30.00	20.00	20.00
68	35.00	52.50	35.00	35.00	25.00	25.00
69	35.00	52.50	35.00	40.00	30.00	30.00
70	35.00	52.50	70.00	60.00	60.00	60.00
71	50.00	75.00	70.00	60.00	60.00	60.00
72	50.00	75.00	70.00	60.00	60.00	60.00
73	50.00	75.00	70.00	60.00	60.00	60.00
74	50.00	75.00	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
45	10.00	1.00	0.00
46	2.00	1.00	0.00
47	2.00	1.00	0.00
48	2.00	1.00	0.00
49	3.00	2.00	0.00
50	5.00	4.00	4.00
51	6.00	4.00	4.00
52	10.00	5.00	5.00
53	12.00	6.00	6.00
54	30.00	11.00	11.00
55	40.00	18.00	18.00
56	25.00	18.00	18.00
57	25.00	20.00	22.00
58	20.00	20.00	20.00
59	20.00	23.00	23.00
60	30.00	40.00	40.00
61	30.00	40.00	40.00
62	35.00	40.00	40.00
63	35.00	40.00	40.00
64	35.00	40.00	40.00
65	100.00	100.00	100.00

Retirement rate for Safety Tier 1 and Safety Tier 2 is 100% after a member accrues a benefit of 100% of final average earnings.

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

Retirement Age and Benefit for Deferred Vested Members:

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

General Retirement Age: 59
Safety Retirement Age: 54

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, 30% of General and 50% of Safety will continue to work for a reciprocal employer.

For reciprocals, 4.35% and 4.75% compensation increases are assumed per annum for General and Safety, respectively.

Future Benefit Accruals:

1.0 year of service per year of employment.

Unknown Data for Members:

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

Definition of Active Members:

First day of pay period following employment.

Form of Payment

All active and inactive members are assumed to elect the unmodified option at retirement.

Percent Married:

For all active and inactive members, 70% of male members and 50% of female members are assumed to be married at pre-retirement death or retirement.

Age and Gender of Spouse:

For all active and inactive members, male members are assumed to have a female spouse who is 3 years younger than the member and female members are assumed to have a male spouse who is 2 years older than the member.

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

Annual Leave Conversion: Eligibility for annual leave plans is determined based on hire date along with other factors. The following assumptions for the 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: 25 hours per year of service.

Vacation/Sick Leave Plans: 35 hours per year of service for General and 45 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.

Actuarial Methods

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.

Changed Actuarial Assumptions The following assumptions have been changed since the prior valuation. Rationale for these changes are presented in the July 1, 2015 through June 30, 2018 Actuarial Experience Study.

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

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

Changed Actuarial Assumption (continued):

Member 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

Increase in Section 7522.10

Compensation Limit: Increase of 3.00% per year from the valuation date.

Salary Increases:

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

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

Changed Actuarial Assumption (continued):

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, to reflect 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

Changed Actuarial Assumption (continued):

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

Changed Actuarial Assumption (continued):

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

Changed Actuarial Assumption (continued):

Termination Rates Before Retirement (continued):

Rate (%)		
Total Termination (< 5 Years of Service)		
Years of Service	General	Safety
Less than 1	17.00	14.00
1-2	9.50	7.50
2-3	8.00	6.00
3-4	7.00	5.00
4 & Over	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

Changed Actuarial Assumption (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	60.00	40.00
5-9	30.00	70.00
10-14	25.00	75.00
15-19	15.00	85.00
20 & Over	10.00	90.00

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

Changed Actuarial Assumption (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	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

Changed Actuarial Assumption (continued):

Retirement Rates:

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

Changed Actuarial Assumption (continued):

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

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

General Retirement Age: 58
Safety Retirement Age: 54

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, 35% of General and 55% of Safety will continue to work for a reciprocal employer.

For reciprocals, 4.50% and 4.90% compensation increases per annum for General and Safety members, respectively.

Percent Married:

For all active and inactive members, 75% of male members and 50% of female members are assumed to be married at pre-retirement death or retirement.

Annual Leave Conversion:

Eligibility for annual leave plans is determined based on hire date along with other factors. 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.

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, 2019
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)
2018	\$4,700	\$266	\$280	\$6	\$255	\$4,935
2019	4,935	295	302	5	344	5,267
2020	5,267	273	318	4	366	5,584
2021	5,584	255	334	4	387	5,888
2022	5,888	237	350	4	407	6,177
2023	6,177	228	366	4	426	6,462
2024	6,462	205	382	4	445	6,726
2025	6,726	158	399	4	461	6,942
2026	6,942	153	416	4	475	7,150
2027	7,150	160	434	4	489	7,361
2035	8,303	43	576	2	560	8,328
2036	8,328	41	591	2	561	8,337
2037	8,337	38	605	2	561	8,329
2053	6,546	5	649	0 *	433	6,334
2054	6,334	4	643	0 *	419	6,114
2055	6,114	3	635	0 *	403	5,886
2082	585	0	121	0	36	501
2083	501	0	106	0	31	426
2084	426	0	92	0	26	360
2104	10	0	2	0	1	9
2105	9	0	2	0	1	7
2106	7	0	2	0	0 *	6
2133	1	0	0 *	0	0 *	1
2134	1					
2134	Discounted Value:	0 **				

* Less than \$1 million, when rounded.

** \$1 million when discounted with interest at the rate of 7.00% per annum has a value of less than \$1 million as of June 30, 2018.

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, 2019
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, 2018 row are actual amounts, based on the financial statements provided by FCERA.
- (3) Years 2028-2034, 2038-2052, 2056-2081, 2085-2103, and 2107-2132 have been omitted from this table.
- (4) Column (a): Except for the "discounted value" shown for 2134, 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, 2018); 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, 2018. The projected benefit payments reflect the cost of living increase assumptions used in the June 30, 2019 valuation report.
- (7) Column (d): Projected administrative expenses are assumed to be 1.20% 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 Appendix, 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, 2019 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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