Board of Retirement Regular Meeting

Sacramento County Employees' Retirement System

Agenda Item 12

MEETING DATE: **November 5, 2018**

SUBJECT: **Actuarial Valuation and Review and GASB 67 Report as of June 30, 2018**

SUBMITTED FOR: **___ Consent** **_X_ Deliberation and Action** **___ Receive and File**

RECOMMENDATION

Staff recommends the Board:

1) Receive and file the Actuarial Valuation and Review as of June 30, 2018 as prepared by Segal Consulting;
2) Adopt the 2019-20 fiscal year employer and employee contribution rates recommended by Segal in their report;
3) Consider any other recommendations made in the Segal report; and
4) Receive and file the Governmental Accounting Standards Board Statement 67 Actuarial Valuation as of June 30, 2018.

PURPOSE

This item supports the 2018-19 Strategic Management Plan by maintaining prudent and effective funding policies and practices that assist in producing low contribution rate volatility and plan sustainability.

DISCUSSION

The Actuarial Valuation and Review as of June 30, 2018, prepared by Segal Consulting is attached. The discussion that follows highlights key components of the report. Segal will attend the Board Meeting to present the report and answer any questions.

Investment Return for 2017-18 - Through fiscal year 2017-18, the annual investment return assumption for the plan is 7.00%. For 2017-18, the annual return for valuation purposes was 6.93% (as determined using the seven-year asset smoothing), which was slightly lower than the 7.00% annual investment return assumption. However, SCERS has experienced significant investment gains over the last two years that are being smoothed in over the next several years to moderate contribution rates.

As a result of higher-than-assumed investment returns on a market value basis, SCERS went from having net deferred losses of $81.0 million as of June 30, 2017 to having net deferred gains of $128.9 million as of June 30, 2018. If SCERS meets its investment return assumption going forward, and all other actuarial assumptions are met, the $128.9 million net deferred gains recognized over the next six years will put moderate downward pressure on the employer contribution rate. SCERS also has $77.5 million in the Contingency Reserve available to help mitigate future losses. [See pages iii and 6 of the valuation]

Funded Status – SCERS' funded status on a market value basis increased from 80.4% as of June 30, 2017 to 82.5% as of June 30, 2018. SCERS' funding status on an actuarial value of assets basis (using seven-year asset smoothing) increased from 81.1% as of June 30, 2017 to 81.4% as of June 30, 2018. [See pages ii, vi, 6-7, 9-11, and 23 of the valuation]

Funded Status
Dollar Amounts in Thousands

Year Ending June 30	(1) Actuarial Accrued Liability	(2) Market Value of Assets	(3) Market Value of Assets as a % of Actuarial Accrued Liability (2)/(1)	(4) Actuarial Value of Assets	(5) Actuarial Value of Assets as a % of Actuarial Accrued Liability (4)/(1)
2018	$11,213,263	$9,251,937	82.5%	$9,123,004	81.4%
2017	$10,680,998	$8,584,225	80.4%	$8,665,226	81.1%

The Unfunded Actuarial Accrued Liability (UAAL) decreased from $2.10 billion as of June 30, 2017 to $1.96 billion as of June 30, 2018, on a market value basis. On an actuarial value basis, the UAAL increased from $2.02 billion as of June 30, 2017 to $2.09 billion as of June 30, 2018.

Changes in Actuarial Assumptions – In May 2017, the Board approved changes in actuarial assumptions as recommended by the plan actuary. When implementing changes in actuarial assumptions that result in material increases in contributions, it has been the practice at SCERS to phase-in the cost impact on the employer contribution rate over a multi-year period (phase-in). In May 2017, the Board approved a plan to recognize the full impact of the assumption changes on member and employer normal cost immediately, and to phase-in the impact on the employer UAAL amortization rate over three years, so that the full cost impact of the assumption changes would be recognized before the next triennial experience study is conducted.

Impact on Employer Contribution Rates - Contribution rates are expressed as a percentage of members' pension-eligible compensation, also known as a "percentage of payroll."

The table below summarizes the impact on the aggregate total employer contribution rate due to the phased-in changes in the actuarial assumptions. [See page 21 of the valuation]

Aggregate Total Employer Contribution Rate (June 30, 2017 Valuation)	**24.46%**
Effect of phase-in of change in employer's UAAL contribution rate impact due to changes in actuarial assumptions over three years	3.90%
Aggregate Total Employer Contribution Rate (June 30, 2017 Valuation) Before Reflecting Three-Year Phase-In	**28.36%**
Effect of investment losses	0.04%
Effect of actual experience different from expected	0.46%
Effect of members picking up the normal cost (County)	(0.06%)
Effect of recognizing one-third of phase-in of change in employer's UAAL contribution rate impact	(1.95%)
Aggregate Total Employer Contribution Rate before 3-year phase-in (June 30, 2018 valuation)	**26.85%**

Below are the aggregate total employer contribution rates by employer. [See pages ii, vi, and 16-19 of the valuation]

Aggregate Total Employer Contribution Rate			
Employer	**FY 2019-20**	**FY 2018-19**	**Change**
County of Sacramento	26.83%	24.38%	2.45%
Superior Court	24.38%	22.51%	1.87%
Special Districts, others	31.32%	29.81%	1.51%
All Employers Combined	26.85%	24.46%	2.39%

Please note that the cited aggregate total employer contribution rates are a combination of the normal cost rate and the UAAL amortization rate across all member categories and benefit tiers. The higher employer contribution rate for District employers is attributable to a higher UAAL amortization payment as, unlike the County and the Superior Court, District employers did not provide UAAL funding from pension obligation bonds in 2004 when benefit formulas were enhanced. Information regarding the UAAL amortization layers and amortization periods can be found on page 82 of the valuation.

Impact on Member Contribution Rates - The aggregate member contribution rate across all member categories and benefit tiers remains stable and will increase from 11.75% of payroll to 11.77% of payroll, an increase of 0.02% of payroll, to reflect minor changes in member demographics. [See pages ii and 22 of the valuation] Information regarding the base (unadjusted) employee contribution rates by tier can be found on pages 76-81 of the valuation.

Changes in Member Contribution Rate Rates			
Benefit Tier	**FY 2019-20**	**FY 2018-19**	**Change**
Miscellaneous Tier 1	5.91%	5.95%	(0.04%)
Miscellaneous Tier 2	3.87%	3.87%	0.00%
Miscellaneous Tier 3	5.54%	5.55%	(0.01%)
Miscellaneous Tier 4	8.37%	8.37%	0.00%
Miscellaneous Tier 5	9.45%	9.37%	0.08%
Safety Tier 1	19.49%	19.20%	0.29%
Safety Tier 2	14.77%	14.75%	0.02%
Safety Tier 3	14.33%	14.33%	0.00%
Safety Tier 4	15.09%	15.05%	0.04%

Effects of Pension Reform – The impact of the County's and the state's pension reform measures are already being seen in the SCERS member workforce, and significant cost reduction resulting from these measures are projected to be realized over the next 5-10 years.

Normal Cost Impact - The PEPRA benefit tiers became operative on January 1, 2013. Miscellaneous Tier 5 and Safety Tier 4 continue to have the lowest employer normal costs. The lower employer cost for these tiers is primarily attributable to lower benefit formulas than in the legacy tiers, pension-eligible compensation is limited to base salary (i.e., no differentials or allowances), an annual cap on the compensation that is pension-eligible, and employees must pay half of the normal cost of the benefits. PEPRA also established a mechanism for moving legacy tier members toward paying 50% of the normal cost to fund their benefits. As of July 2019, all County employees will be paying 50% toward normal cost with the inclusion of the last two bargaining groups, Rep Units 016 and 025.

Before the adoption of PEPRA, the County had implemented new lower employer cost tiers for Miscellaneous members (Tier 4) and Safety members (Tier 3). The lower employer cost of these tiers relative to the legacy tiers is primarily attributable to lower benefit formulas and the members paying a larger share of normal cost.

Below is the summary of the impact on the County's employer normal cost under the pension reform tiers (Miscellaneous Tiers 4 & 5 and Safety Tiers 3 & 4) and increased legacy member normal cost sharing (Miscellaneous Tiers 1, 2 & 3 and Safety Tiers 1 & 2). [See pages 16 and 17 of the valuation]

Changes in Employer Normal Costs			
Plan/Tier	**Before Normal Cost Sharing**	**After Normal Cost Sharing**	**Decrease**
Miscellaneous Tier 1	13.90%	10.66%	(3.24%)
Miscellaneous Tier 2	12.55%	8.21%	(4.34%)
Miscellaneous Tier 3	15.91%	10.90%	(5.01%)
Miscellaneous Tier 4	12.06%	10.39%	(1.67%)
Miscellaneous Tier 5	N/A	9.45%	N/A
Safety Tier 1	26.40%	25.92%	(0.48%)
Safety Tier 2	23.89%	19.55%	(4.34%)
Safety Tier 3	22.62%	18.64%	(3.98%)
Safety Tier 4	N/A	15.09%	N/A

Participation Levels - Equally important to the lower cost of the new tiers is the transition of the workforce from participation levels in the legacy tiers versus participation levels in the pension reform tiers.

Changes in Active Membership			
Plan/Tier	**As of June 30, 2018**	**As of June 30, 2017**	**Change**
Miscellaneous Tier 1	46	65	(29.2%)
Miscellaneous Tier 2	52	57	(8.8%)
Miscellaneous Tier 3	6,701	7,206	(7.0%)
Miscellaneous Tier 4	350	362	(3.3%)
Miscellaneous Tier 5	3,437	2,887	19.1%
Safety Tier 1	125	166	(24.7%)
Safety Tier 2	1,214	1,285	(5.5%)
Safety Tier 3	118	112	5.4%
Safety Tier 4	634	447	41.8%

This transition has taken place in just the last five years. Currently, 36% of the membership is in the new tiers. It is projected that within five years, 50% or more of the membership will be in the new tiers. Pension reform will continue to have a positive impact on employer normal cost for the next decade and beyond.

Ratio of Retired to Active Participants - As noted in previous valuation reports, the downsizing of the County workforce following the Great Financial Crisis, combined with an increased number of retirees and beneficiaries (primarily due to the Baby Boomer demographic) has impacted the ratio of non-active participants to active participants. Compared to 2008, when there were considerably more active participants than non-active participants, there are now 1.21 retired (non-active) participants for every active participant. [See page 1 of the valuation] While a steady increase in retirees and beneficiaries is expected to continue for the next 5-8 years [See page 2 of the valuation], there continues to be a small increase in the number of active SCERS members. However, the gap continues to widen between members drawing from the fund and those paying into it. This creates sensitivity to our cash-flow needs, which Staff continues to monitor. This dynamic also adds volatility to contribution rates should the fund experience a loss.

Asset Volatility and Liability Volatility Ratios [See page 25 of the valuation]

The Asset Volatility Ratio (AVR), which is calculated by dividing the market value of assets by the total active member payroll, indicates the potential for retirement contribution volatility for any given level of investment return volatility. At June 30, 2018, SCERS' AVR is 9.2, meaning that a 1% asset gain/loss relative to the assumed investment return would impact contributions by 9.2% of annual covered payroll.

The Liability Volatility Ratio (LVR), which is calculated by dividing the Actuarial Accrued Liability (AAL) by the total payroll, indicates the longer-term potential for retirement contribution volatility for any given level of investment return volatility because, over an extended period of time, the plan's assets should track the plan's liabilities. The LVR also indicates how volatile contributions will be in response to changes in the AAL. At June 30, 2018, SCERS' LVR is 11.1, indicating that contribution volatility is expected to increase over the long-term as liabilities grow each year, even as the plan becomes better funded.

While it is certainly important to understand how contribution rates are likely to change based on changes in the level of assets and/or liabilities, some observations are in order regarding the AVR and LVR data in the valuation:

- The higher the level of benefits provided by a plan, the more volatile the costs of the plan will be. This is reflected in the higher volatility associated with the higher Safety benefits versus the lower Miscellaneous benefits.
- Because both the AVR and LVR are tied to the level of the active member payroll, significant changes in the payroll will have a material impact on the ratios.

Paying Down Unfunded Liability

Segal added new charts to the June 30, 2018 valuation that project future balances and payment of the UAAL, based on SCERS' funding plan. [See pages 84-85] The charts project that the UAAL will be eliminated by 2036, holding all assumptions constant. Employer contributions should gradually increase through 2034 before dropping significantly as amortization tiers are paid off.

BACKGROUND

SCERS is governed by and administered in accordance with the requirements of the County Employees Retirement Law (CERL) and with the provisions of Article XVI, Section 17 of the California Constitution. Under the law, the SCERS Board has plenary authority and fiduciary responsibility for the administration of the retirement system. While Section 31453 of the CERL requires an actuarial valuation at intervals not to exceed three years, the Board's policy is to conduct a valuation annually.

The annual actuarial valuation measures the current and projected assets and liabilities of the retirement system, as well as the system's funded status. This information forms the basis for establishing the actuary's recommendations for the employer and employee contribution rates for the upcoming fiscal year. The Board then uses the actuary's recommendations in adopting the appropriate contribution rates, which are conveyed to the Board of Supervisors for implementation.

In measuring the assets and liabilities, and determining the plan's funded status, the actuary uses investment and actuarial experience to-date, plus various assumptions about the projected future growth in assets and liabilities. The actuarial assumptions include both economic and demographic assumptions which are long term in nature, as opposed to the experience that might be anticipated in the next few years.

In each valuation, the previous year experience is compared to the actuarial assumptions, and to the extent there are differences, the contribution rates are adjusted. This is referred to as the 'experience reconciliation' or 'annual experience adjustment' and can result in either an upward or downward adjustment in the next year's contribution rate depending on whether the experience produced an 'actuarial gain' or 'actuarial loss.'

The review of demographic and economic assumptions is done as part of the triennial experience study. As the name suggests, in such a study the actuary analyzes the investment and actuarial experience over a three-year period for the purposes of determining whether the experience is consistent with the actuarial assumptions. In certain instances, however, experience or trends may call into question the continued reasonableness of an assumption, and in such a case, the actuary will recommend a change in the assumption itself. An assumption change typically has a greater effect on contribution rates than the reconciliation in the annual experience adjustment, however the use of realistic assumptions is important to maintain adequate funding and an equitable distribution of the cost of the retirement system across generations. As with experience adjustments, an assumption change can result in either an upward or downward adjustment in future cost.

The last triennial experience study prepared by Segal Consulting covered the period July 1, 2013 through June 30, 2016 and was presented for the Board's consideration in May 2017. At that time, the Board approved various actuarial assumptions which have been used in preparing the valuation as of June 30, 2018. The next experience study will cover the period of July 1, 2016 through June 30, 2019 and will be presented to the Board in 2020.

In determining appropriate contribution rates, the overall goal is to establish employer and employee contribution rates which, together with investment earnings, will provide sufficient funding to pay the benefits earned by SCERS members. To accomplish this, the actuary identifies two cost components.

First, the actuary determines the contribution rate necessary to cover the 'normal cost' of the retirement benefits. This is the amount which, when applied to the projected future compensation of the member, along with projected future investment earnings, will be sufficient to provide for the payment of the prospective benefits for the member as established by the relevant provisions of the CERL and PEPRA. The normal cost is shared by the employer and employee, with the specific cost-sharing formula established either by statute or pursuant to collective bargaining or other labor agreements. With certain limitations, the cost-sharing burden can be modified by changes in those agreements.

Second, the actuary determines the contribution rate necessary to fund the portion of the ultimate benefit liability that has not been covered by previous normal cost contributions and investment returns. This cost component is referred to as the unfunded accrued actuarial liability (UAAL) amortization rate and arises from several factors including actuarial losses, assumption changes, and investment under-performance.

GASB 67 ACTUARIAL VALUATION REPORT

Also attached is the GASB 67 Actuarial Valuation as of June 30, 2018, which has been prepared by Segal Consulting.

GASB 67 redefined pension liability and expense for financial reporting purposes. 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 SCERS uses for funding. As a result, the Total Pension Liability measure for financial reporting purposes is determined on the same basis as SCERS' Actuarial Accrued Liability measure for funding, and as a result, the amounts are the same ($11,213,263,000).

The GASB 67 Valuation Report provides additional information related to pension liability, the changes in pension liability, the discount rate used in determining the pension liability, the sensitivity of net pension liability to changes in the discount rate, as well as other note disclosures as required.

The information in this report will be incorporated into SCERS' Comprehensive Annual Financial Report (CAFR) as required, which will be presented to the Board in December.

ATTACHMENTS

- Actuarial Valuation and Review as of June 30, 2018
- Governmental Accounting Standards Board Statement 67
  Actuarial Valuation as of June 30, 2018

Prepared by:

/S/

Kathryn T. Regalia
Chief Operations Officer

Reviewed by:

/S/

Eric Stern
Chief Executive Officer

Sacramento County Employees' Retirement System

Actuarial Valuation and Review as of June 30, 2018

Segal Consulting

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

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October 30, 2018

Board of Retirement
Sacramento County Employees' Retirement System
980 9th Street, Suite 1900
Sacramento, CA 95814

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2018. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2019/2020 and analyzes the preceding year's experience.

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

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

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

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

Sincerely,

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

By:

Paul Angelo, FSA, EA, MAAA, FCA	*Andy Yeung, ASA, EA, MAAA, FCA*	*Molly Calcagno, ASA, MAAA*
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JAC/jl

SECTION 1

VALUATION SUMMARY

SECTION 2

VALUATION RESULTS

SECTION 3

SUPPLEMENTAL INFORMATION

SECTION 4

REPORTING INFORMATION

Purpose

This report has been prepared by Segal Consulting to present a valuation of the Sacramento County Employees' Retirement System as of June 30, 2018. The valuation was performed to determine whether the asset and contribution levels will be sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

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

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2019 through June 30, 2020.

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

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

Reference: Pg. 82

The contribution requirements are determined as a percentage of payroll. The System's employer rates provide for both Normal Cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have applied the funding policy adopted by the Board on June 19, 2013 to (1) continue to amortize the unfunded actuarial accrued liability (UAAL) established as a result of the 2010 Early Retirement Incentive Program for the Sacramento County Law Enforcement Managers Association (LEMA) members over a 10-year period beginning June 30, 2010 and (2) to amortize the System's remaining outstanding balance of the June 30, 2012 UAAL over a declining 23-year period (17 years as of June 30, 2018). Effective with the June 30, 2013 valuation, the Board of Retirement's funding policy is to amortize any change in UAAL that arises due to actuarial gains or losses or from changes in actuarial assumptions or methods at each valuation over its own declining 20-year period. Any change in UAAL that arises due to plan amendments will be amortized over its own declining 15-year period and any change in UAAL due to retirement incentive programs will be amortized over its own declining period of up to 5 years.

Significant Issues in Valuation Year

Reference: Pg. 16

- The Board adopted a three-year phase-in of the cost impact of the changes in actuarial assumptions calculated in the June 30, 2017 valuation on the employer's UAAL rate only. The employer should be aware that their contributions for 2020/2021 (that will be established in the June 30, 2019 valuation) will increase again due to the further recognition of the cost impact of these changes in actuarial assumptions, including the interest cost associated with the phase-in. We have shown the rates for 2018/2019 and 2019/2020 both before and after the phase-in in this report.

Reference: Pgs. 24, 51
Reference: Pgs. 82-85

- The ratio of the actuarial value of assets to actuarial accrued liabilities increased from 81.1% to 81.4%. On a market value of assets basis, the funded ratio increased from 80.4% to 82.5%. The System's UAAL increased from $2,016 million as of June 30, 2017 to $2,090 million as of June 30, 2018. A reconciliation of the System's UAAL is provided in Section 3, Exhibit H. A schedule of the current UAAL amortization amounts is provided in Section 4, Appendix B. Note that a graphical projection of the UAAL amortization base and payments has been provided as a new Appendix C in Section 4.

Reference: Pg. 21

- The aggregate employer rate increased from 24.46% of payroll (after phase-in) to 26.85% of payroll (after phase-in). The reasons for this change in contribution rate are: (i) recognizing another one-third of the cost impact of the changes in actuarial assumptions, (ii) lower than expected returns on investments (after "smoothing"), (iii) lower than expected contributions, (iv) higher UAAL rate due to lower than expected increase in total payroll and (v) other actuarial losses, offset to some degree by (vi) lower than expected individual salary increases during 2017/2018 and (vi) Rep Units 16 and 25 members agreeing to contribute an additional portion of the Normal Cost in 2019/2020. A reconciliation of the System's aggregate employer rate is provided in Section 2, Subsection D, Chart 14.

Reference: Pg. 22

- The aggregate member rate calculated in this valuation has increased from 11.75% of payroll to 11.77% of payroll. The increase in member rate is due to Rep Units 16 and 25 members agreeing to contribute an additional portion of the Normal Cost in 2019/2020 and a reduction in the COLA offset, offset to some extent by changes in membership demographics. A reconciliation of the System's aggregate member rate is provided in Section 2, Subsection D, Chart 15.

- As of June 30, 2018, about 32% of active members are enrolled in the CalPEPRA tiers. As a result of the implementation of the CalPEPRA tiers, the aggregate Normal Cost rate is lower by about 0.7% of payroll compared to what the Normal Cost rate would have been if the active members were enrolled in the legacy tiers.

Reference: Pg. 6

- As indicated in Section 2, Subsection B, Chart 7 of this report, the total net unrecognized investment <u>gain</u> as of June 30, 2018 is $128.9 million (as compared to a net unrecognized investment <u>loss</u> of $81.0 million as of June 30, 2017). This investment gain will be recognized in the determination of the actuarial value of assets for funding purposes over the next six years. That means that even if the System earns the assumed rate of investment return of 7.00% per year on a market value basis, there will still be investment gains on the actuarial value of assets in the next few years. Therefore, if the actual market return is equal to the assumed rate of 7.00% and all the other actuarial assumptions are met, the employer contribution requirements would decrease in the next few years.

- The unrecognized investment gains represent about 1% of the market value of assets. Unless offset by future investment losses or other unfavorable experience, the recognition of the $128.9 million in past market gains is expected to have an impact on the System's future funded ratio and the aggregate employer contributions. This potential impact may be illustrated as follows:
  - If the deferred gains were recognized immediately in the actuarial value of assets, the funded percentage would increase from 81.4% to 82.5%.

    For comparison purposes, if all the deferred losses in the June 30, 2017 valuation had been recognized immediately in the June 30, 2017 valuation, the funded percentage would have decreased from 81.1% to 80.4%.
  - If the deferred gains were recognized immediately in the actuarial value of assets, the aggregate employer contribution rate would decrease from 26.85% of payroll to 25.9% of payroll. Note that both of these rates are calculated with the three-year phase-in of the UAAL rate impact from the assumption changes.

    For comparison purposes, if all the deferred losses in the June 30, 2017 valuation had been recognized immediately in the June 30, 2017 valuation, the aggregate employer contribution rate would have increased from 24.53% of payroll to 25.1% of payroll.
- The $77.5 million in the Contingency Reserve as of June 30, 2018 is available to credit interest to the valuation reserve accounts or to offset actuarial losses in future valuations at the Board's discretion. If that amount were applied in the June 30, 2018 valuation, the aggregate employer contribution rate would have decreased by about 0.5% of payroll.
- The actuarial valuation report as of June 30, 2018 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected. Declines in asset values will increase the actuarial cost of the plan, while increases will decrease the actuarial cost of the plan.
- Rio Linda Elverta Recreation and Parks District became a participating employer effective October 1, 2017. Employees are enrolled in Miscellaneous Tier 5, regardless of any reciprocity with other retirement systems. Besides paying the Normal Cost rate, the employer is only responsible for its share of the UAAL rate based on actuarial experience that only became known on or after July 1, 2017.

Impact of Future Experience on Contribution Rates

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

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

Summary of Key Valuation Results

	June 30, 2018 (After Phase-in)		June 30, 2017 (After Phase-in)	
Employer Contribution Rates (Dollar amounts in thousands):	Total Rate	Estimated Annual Amount[1]	Total Rate	Estimated Annual Amount[1]
Miscellaneous Tier 1	20.64%	$798	18.88%	$730
Miscellaneous Tier 2	18.47%	715	16.56%	641
Miscellaneous Tier 3	21.32%	116,103	19.52%	106,308
Miscellaneous Tier 4	19.92%	5,892	17.96%	5,312
Miscellaneous Tier 5	19.39%	38,420	17.39%	34,459
Safety Tier 1	54.68%	9,707	48.41%	8,593
Safety Tier 2	48.31%	70,914	44.28%	64,998
Safety Tier 3	47.40%	5,858	43.33%	5,356
Safety Tier 4	43.85%	22,261	39.72%	20,164
All Categories Combined	26.85%	$270,668	24.46%	$246,561
Aggregate Member Contribution Rates (Dollar amounts in thousands):	Total Rate	Estimated Annual Amount[1]	Total Rate	Estimated Annual Amount[1]
All Categories Combined	11.77%	$118,620	11.75%	$118,418
Individual Member Contribution Rates: (Before reflecting members in legacy tiers agreeing to contribute an additional portion of the Normal Cost)	Total Rate[2]	Per Member Annual Amount[3]	Total Rate[2]	Per Member Annual Amount[3]
Miscellaneous Tier 1	5.91%	$4,886	5.95%	$4,922
Miscellaneous Tier 2	3.87%	2,827	3.87%	2,827
Miscellaneous Tier 3	5.54%	4,426	5.55%	4,434
Miscellaneous Tier 4	8.37%	6,952	8.37%	6,958
Miscellaneous Tier 5	9.45%	5,448	9.37%	5,402
Safety Tier 1	19.49%	27,412	19.20%	27,002
Safety Tier 2	14.77%	17,655	14.75%	17,626
Safety Tier 3	14.33%	14,812	14.33%	14,812
Safety Tier 4	15.09%	12,083	15.05%	12,051

(1) *Based on June 30, 2018 projected annual compensation.*

(2) *Based on single full-rates payable by members who enter on or after January 1, 1975.*

(3) *Based on June 30, 2018 average projected annual compensation for members in each respective tier.*

Summary of Key Valuation Results – continued

	June 30, 2018	June 30, 2017
Funded Status (Dollar Amounts in thousands):		
Actuarial accrued liability[1]	$11,213,263	$10,680,998
Actuarial value of assets (AVA)[1]	9,123,004	8,665,226
Market value of assets (MVA)	9,251,937	8,584,225
Funded percentage on an AVA basis	81.4%	81.1%
Funded percentage on a MVA basis	82.5%	80.4%
Unfunded actuarial accrued liability on an AVA basis	$2,090,259	$2,015,772
Unfunded actuarial accrued liability on a MVA basis	1,961,326	2,096,773
Key Assumptions:		
Interest rate	7.00%	7.00%
Inflation rate	3.00%	3.00%
Across-the-board real salary increase	0.25%	0.25%

(1) *Includes non-valuation reserves and designations.*

Summary of Key Valuation Demographic and Financial Data

	June 30, 2018	June 30, 2017	Change from Prior Year
Active Members:			
Number of members	12,677	12,587	0.7%
Average age	45.7	46.0	-0.3
Average service	11.9	12.1	-0.2
Projected total compensation	$1,007,815,585	$980,359,126	2.8%
Average projected compensation	$79,500	$77,887	2.1%
Retired Member and Beneficiaries:			
Number of members:			
Service retired	9,547	9,103	4.9%
Disability retired	716	717	-0.1%
Beneficiaries	1,620	1,576	2.8%
Total	11,883	11,396	4.3%
Average age	69.6	69.5	0.1
Average monthly benefit	$3,381	$3,260	3.7%
Vested Terminated Members:			
Number of terminated vested members[1]	3,509	3,425	2.5%
Average age	47.4	47.4	0.0
Summary of Financial Data (dollar amounts in thousands):			
Market value of assets	$9,251,937	$8,584,225	7.8%
Return on market value of assets	9.73%	13.55%	N/A
Actuarial value of assets	$9,123,004	$8,665,226	5.3%
Return on actuarial value of assets	7.21%	6.88%	N/A
Valuation value of assets	$9,073,178	$8,641,779	5.0%
Return on valuation value of assets	6.93%	7.46%	N/A

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

Important Information about Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare an actuarial valuation, Segal Consulting ("Segal") relies on a number of input items. These include:

- **Plan of benefits** Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan description in this report to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by SCERS. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
- **Assets** This valuation is based on the market value of assets as of the valuation date, as provided by SCERS.
- **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 cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If SCERS is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal’s valuation is based on our understanding of applicable guidance in these areas and of the plan’s provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.

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

A. MEMBER DATA

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

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

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

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

CHART 1

Member Population: 2009 – 2018

Year Ended June 30	Active Members	Vested Terminated Members[1]	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
2009	14,796	2,818	7,968	0.73
2010	13,340	2,740	8,346	0.83
2011	12,434	2,710	8,821	0.93
2012	12,155	2,851	9,239	0.99
2013	12,026	3,249	9,634	1.07
2014	12,049	3,201	10,049	1.10
2015	12,072	3,261	10,541	1.14
2016	12,393	3,301	10,960	1.15
2017	12,587	3,425	11,396	1.18
2018	12,677	3,509	11,883	1.21

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

Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 12,677 active members with an average age of 45.7, average years of service of 11.9 years and average compensation of $79,500. The 12,587 active members in the prior valuation had an average age of 46.0, average service of 12.1 years and average compensation of $77,887.

Inactive Members

In this year's valuation, there were 3,509 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 3,425 in the prior valuation.

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

CHART 2

Distribution of Active Members by Age as of June 30, 2018

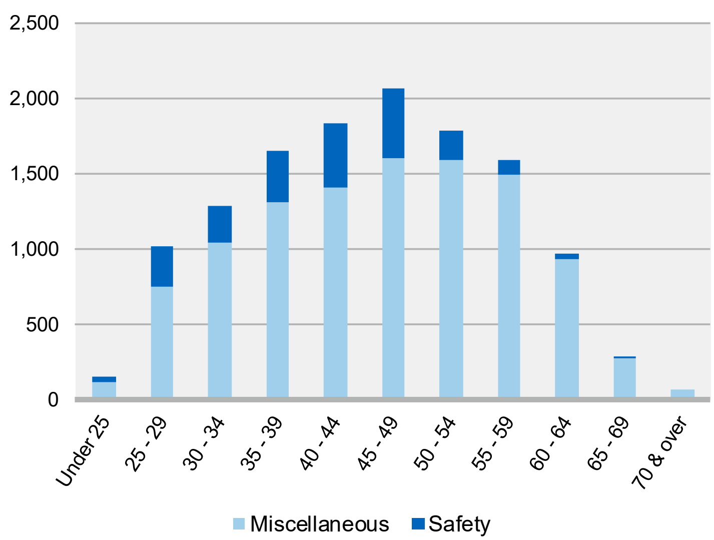
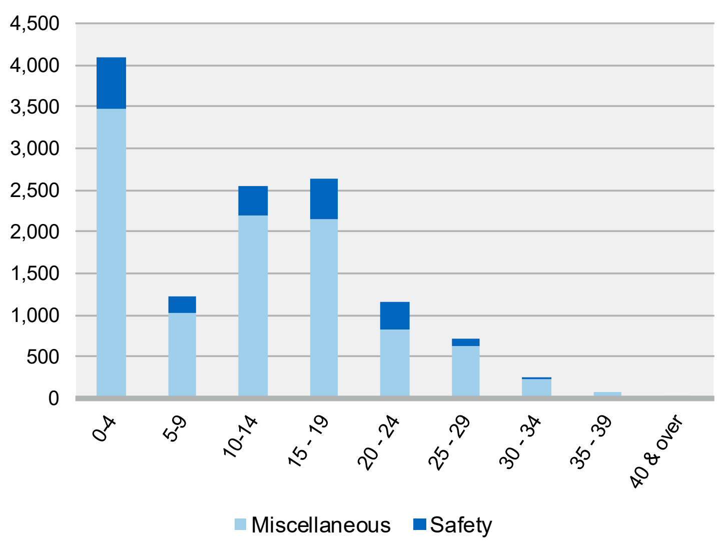


CHART 3

Distribution of Active Members by Years of Service as of June 30, 2018



Retired Members and Beneficiaries
As of June 30, 2018, 10,263 retired members and 1,620 beneficiaries were receiving total monthly benefits of $40,179,742. For comparison, in the previous valuation, there were 9,820 retired members and 1,576 beneficiaries receiving monthly benefits of $37,156,271.

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

CHART 4

Distribution of Retired Members and Beneficiaries by Type and by Monthly Amount as of June 30, 2018

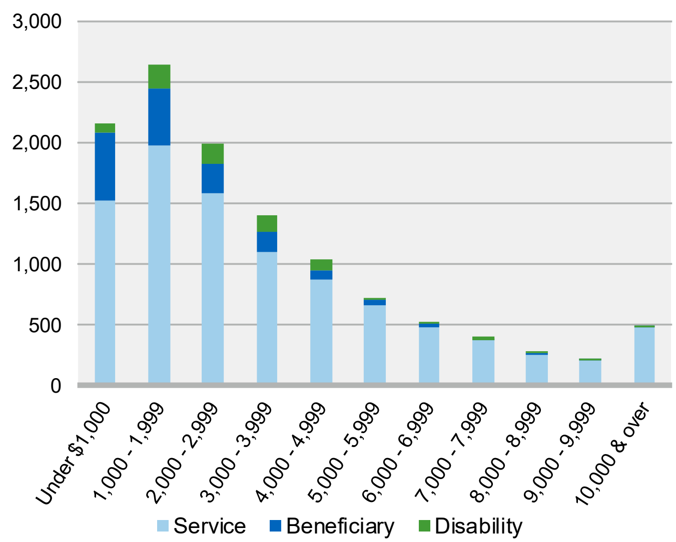
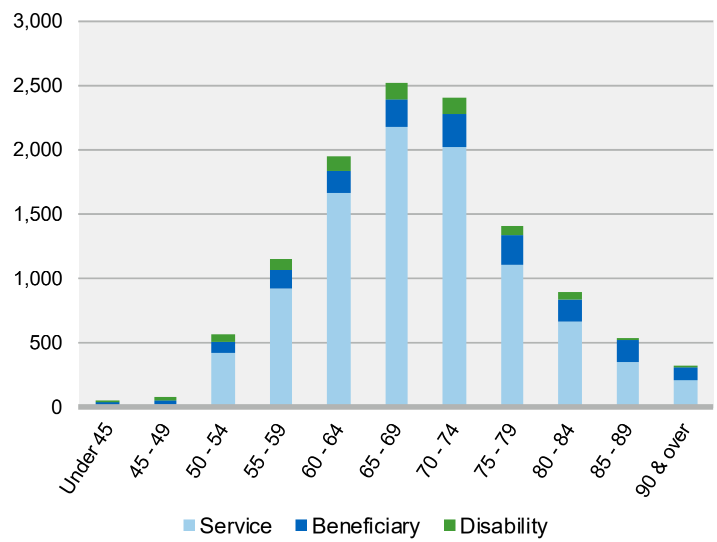


CHART 5

Distribution of Retired Members and Beneficiaries by Type and by Age as of June 30, 2018



B. FINANCIAL INFORMATION

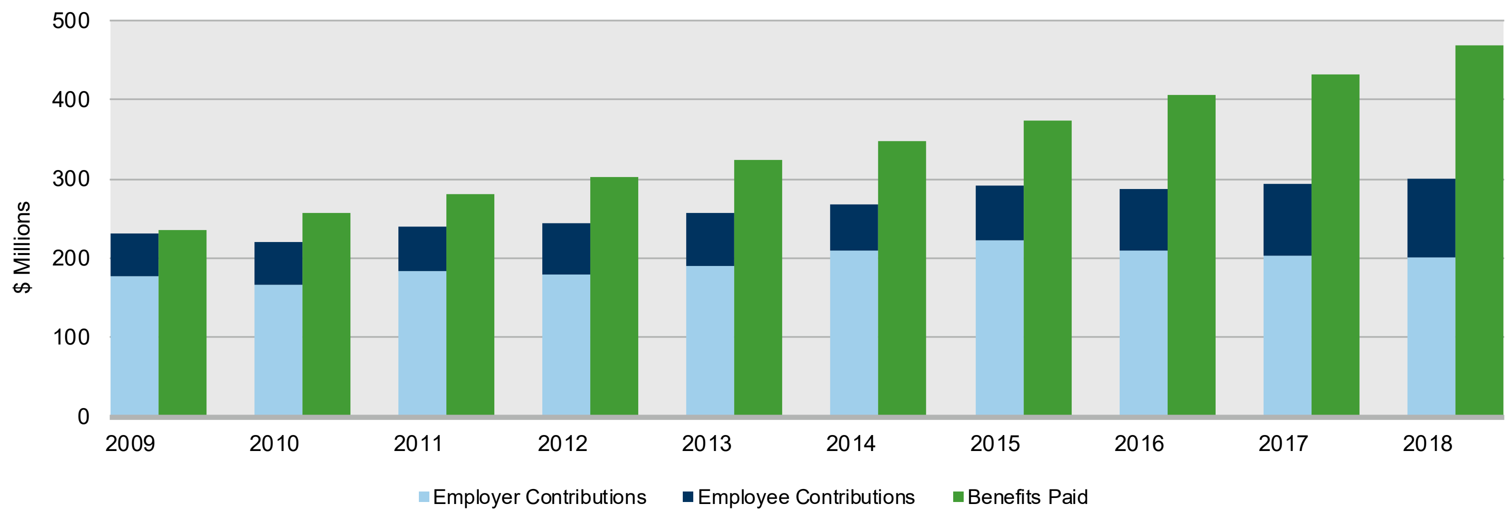
Retirement plan funding anticipates that, over the long term, both contributions and net investment earnings (less investment fees and administrative expenses) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components.

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

The chart depicts the two components of changes in the actuarial value of assets over the last ten years. The first bar represents increases in assets due to contributions during each year while the second bar details the decreases due to benefit payments.

CHART 6

Comparison of Contributions and Benefits for Years Ended June 30, 2009 – 2018



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

The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets does not have an impact on the actuarial value of assets.

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

In developing the actuarial value of assets as of June 30, 2018, we have used the investment gains/losses from the last few years starting July 1, 2008. The investment gain for the year ending June 30, 2018 was calculated by comparing the actual market return against an expected market return of 7.00% per annum used in the June 30, 2017 valuation. As adopted by the Board, any investment gains/losses established after July 1, 2008 will be recognized over a seven-year period and the deferred return will be further adjusted, if necessary, so that the actuarial value of assets will stay within 30% of the market value of assets. Deferred gains and losses as of June 30, 2013 have been combined and will be recognized in equal amounts over a period of six years starting July 1, 2013.

CHART 7 - Determination of Actuarial and Valuation Value of Assets for Year Ended June 30, 2018

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

From	To	Total Actual Market Return (net)	Expected Market Return (net)	Investment Gain/(Loss)	Deferred Factor	Deferred Return
7/2008	6/2009	$(1,324,427,572)	$457,324,168	$(1,781,751,740)		
7/2009	6/2010	611,572,322	351,387,567	260,184,755		
7/2010	6/2011	1,200,204,162	390,604,071	809,600,091	See footnote (1) below	
7/2011	6/2012	(9,702,807)	479,507,820	(489,210,627)		
7/2012	6/2013	779,729,591	459,351,206	320,378,385	0.167	$(1,626,945)
7/2013	6/2014	1,101,487,307	512,153,604	589,333,703	0.286	168,381,058
7/2014	6/2015	152,368,245	589,233,282	(436,865,037)	0.429	(187,227,873)
7/2015	6/2016	(78,760,809)	592,506,256	(671,267,065)	0.571	(383,581,180)
7/2016	6/2017	1,042,009,164	576,748,382	465,260,782	0.714	332,329,130
7/2017	6/2018	834,483,764	600,381,878	234,101,886	0.857	200,658,759

1. Total Deferred Return[2]	$128,932,950
2. Net Market Value	9,251,937,000
3. Actuarial Value of Assets (Item 2 – Item 1)	9,123,004,050
4. Actuarial Value as a Percentage of Market Value (Before Corridor: Item 3 / Item 2)	98.61%
5. Actuarial Value of Assets – Corridor Limits:	
a. Lower Limit – 70% of Net Market Value	$6,476,355,900
b. Upper Limit – 130% of Net Market Value	12,027,518,100
6. Actuarial Value of Assets (within corridor)	9,123,004,050
7. Non-valuation reserves and designations:	
a. Contingency Reserve	$77,510,868
b. Other Non-Valuation Reserves	0
c. Subtotal	$77,510,868
8. Preliminary Valuation Value of Assets (Item 6 – Item 7c)	9,045,493,182
9. Adjustment to Preliminary Valuation Value of Assets	
a. Balance of transfer to offset member COLA rate	$17,178,000
b. Surplus/(deficit) for withdrawn employer (preliminary)[3]	(44,863,118)
c. Subtotal	$(27,685,118)
10. Final Valuation Value of Assets (Item 8 – Item 9c)	$9,073,178,300

(1) *Based on action taken by the Board, the net deferred loss of $9,761,669 through June 30, 2013 as of that valuation has been recognized in six level amounts with one period of recognition remaining after the June 30, 2018 valuation.*

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

6/30/2019	$24,167,951	6/30/2021	$(58,395,633)	6/30/2023	$99,908,953
6/30/2020	$25,794,896	6/30/2022	$4,013,658	6/30/2024	$33,443,127

(3) *Based on the latest estimate available as of June 30, 2017 for Florin Fire adjusted to June 30, 2018 with interest at the assumed rate of investment return and with contributions made during 2017/2018.*

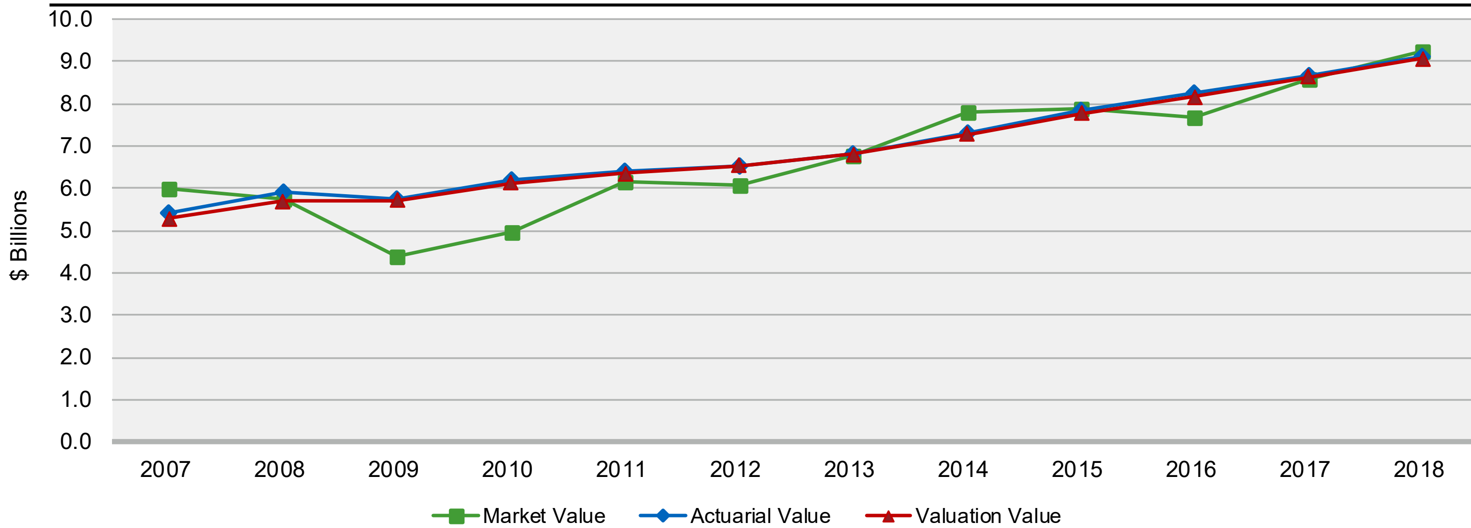
Note: Results may be slightly off due to rounding.

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

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

CHART 8

Market Value, Actuarial Value and Valuation Value of Assets as of June 30, 2007 – 2018



C. ACTUARIAL EXPERIENCE

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

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

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

The net experience loss was $90.4 million, $6.2 million loss from investments, $91.0 million loss from contribution experience and $6.8 million gain from all other sources. The net experience variation from individual sources other than investments and contributions was less than 0.1% of the actuarial accrued liability. An explanation of the experience variation is provided on page 12 and in Section 3, Exhibit H. A discussion of the major components of the actuarial experience is on the following pages.

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

CHART 9

Actuarial Experience for Year Ended June 30, 2018

1.	Net loss from investments[1]	$6,240,000
2.	Net loss from contribution experience	90,957,000
3.	Net gain from other experience[2]	(6,810,000)
4.	Net experience loss: (1) + (2) + (3)	$90,387,000

(1) *Details in Chart 10.*
(2) *Details in Section 3, Exhibit H. Does not include the effect of plan or assumption changes, if any.*

Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on SCERS' investment policy. For valuation purposes, the assumed rate of return on the valuation value of assets was 7.00% in the June 30, 2017 valuation. The actual rate of return on a valuation basis for the 2017/2018 plan year was 6.93%.

Since the actual return on the valuation value of assets for the year was less than the assumed return, SCERS experienced an actuarial loss during the year ended June 30, 2018 with regard to its investments.

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

CHART 10

Investment Experience for Year Ended June 30, 2018 – Market, Actuarial and Valuation Value of Assets

	Market Value	Actuarial Value	Valuation Value
1. Actual return	$834,484,000	$624,550,000	$598,171,000
2. Average value of assets	8,576,884,000	8,657,885,000	8,634,438,000
3. Actual rate of return: (1) ÷ (2)	9.73%	7.21%	6.93%
4. Assumed rate of return	7.00%	7.00%	7.00%
5. Expected return:	600,382,000	606,052,000	604,411,000
6. Actuarial gain/(loss): (1) – (5)	$234,102,000	$18,498,000	$(6,240,000)

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

CHART 11

Investment Return – Market Value, Actuarial Value and Valuation Value: 2009 – 2018

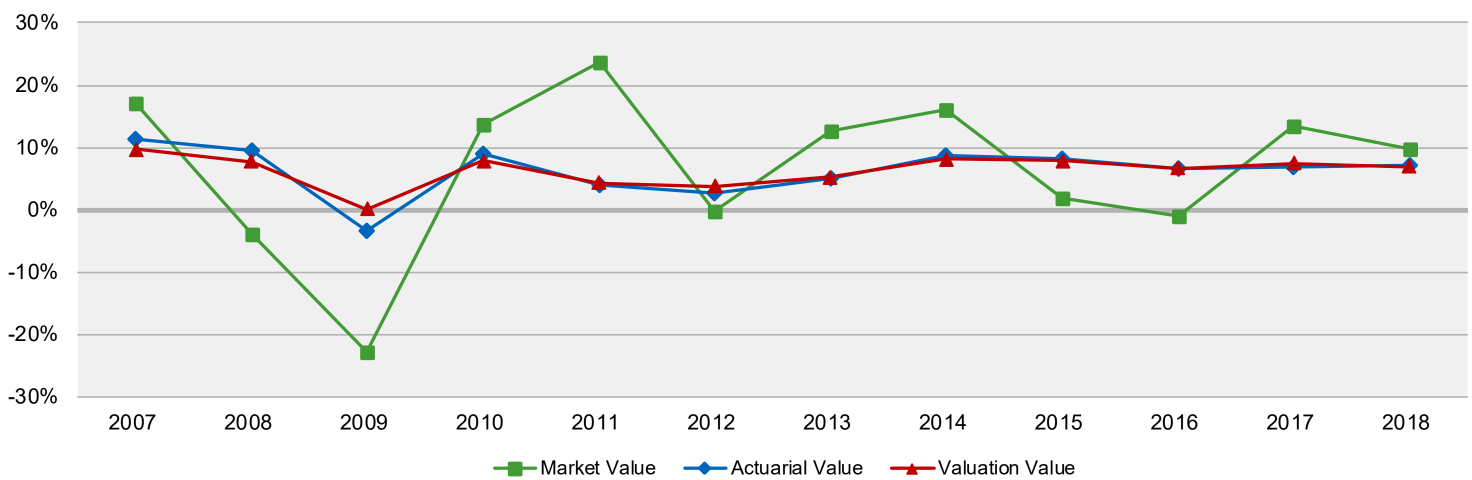
	Market Value Investment Return		Actuarial Value Investment Return		Valuation Value Investment Return	
Year Ended June 30	**Amount**	**Percent**	**Amount**	**Percent**	**Amount**	**Percent**
2009	$(1,324,428,000)	(22.81%)	$(196,500,000)	(3.27%)	$9,241,000	0.16%
2010	611,573,000	13.71%	525,248,000	9.08%	450,949,000	7.83%
2011	1,200,204,000	23.81%	244,352,000	3.89%	269,937,000	4.37%
2012	(9,702,000)	(0.16%)	166,087,000	2.57%	238,467,000	3.73%
2013	779,729,000	12.73%	333,523,000	5.07%	341,373,000	5.19%
2014	1,101,488,000	16.13%	594,718,000	8.70%	551,884,000	8.06%
2015	152,368,000	1.94%	609,387,000	8.28%	572,950,000	7.82%
2016	(78,761,000)	(1.00%)	516,765,000	6.57%	521,978,000	6.70%
2017	1,042,009,000	13.55%	567,473,000	6.88%	610,522,000	7.46%
2018	834,484,000	9.73%	624,550,000	7.21%	598,171,000	6.93%
Five-Year Geometric Average Return		7.87%		7.53%		7.39%
Ten-Year Geometric Average Return		5.97%		5.44%		5.80%

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

This chart illustrates how this leveling effect has actually worked over the years 2007 - 2018.

CHART 12

Market, Actuarial and Valuation Rates of Return for Years Ended June 30, 2007 – 2018



Other Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation.

These include:

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

The net gain from this other experience for the year ended June 30, 2018 amounted to $6.8 million which is less than 0.1% of the actuarial accrued liability. See Section 3, Exhibit H for a detailed development of the Unfunded Actuarial Accrued Liability, and the breakdown of the actuarial gain/loss from other experience.

D. EMPLOYER AND MEMBER CONTRIBUTIONS

Employer contributions consist of two components:

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

Contribution to the Unfunded Actuarial Accrued Liability (UAAL) — The annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution (or rate credit in the case of a negative unfunded actuarial accrued liability) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the System) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the annual inflation rate of 3.25% (i.e., 3.00% inflation plus 0.25% real across-the-board salary increase). The UAAL established as a result of the Early Retirement Incentive Program for LEMA members is amortized over a 10-year period beginning June 30, 2010. Effective with the June 30, 2013 valuation, the System's remaining outstanding balance of the June 30, 2012 UAAL is being amortized over a declining 23-year period (17 years as of June 30, 2018). The change in UAAL that arises due to actuarial gains or losses or from changes in actuarial assumptions or methods at each valuation is amortized over its own declining 20-year period. Any change in UAAL that arises due to plan amendments will be amortized over its own declining 15-year period and any change in UAAL due to retirement incentive programs will be amortized over its own declining period of up to 5 years.

Starting with the June 30, 2015 valuation, we have added to the Miscellaneous employer UAAL rate for the County an amount to reflect the net withdrawal liability for the Library Authority and Air Quality Districts when they terminated their affiliation with the County and became special districts.

The recommended employer contributions are provided on Chart 13.

Employer Normal Cost and UAAL contribution rates are calculated assuming payments made at the end of every pay period.

Member Contributions

Miscellaneous Tiers 1, 2, 3 & 4
Safety Tiers 1, 2, & 3

Articles 6 and 6.8 of the 1937 Act define the methodology to be used in the calculation of member basic contribution rates for Miscellaneous members and Safety members, respectively, in the legacy tiers. The basic contribution rate is determined as that percentage of compensation which if paid annually from a member's first year of membership through the prescribed retirement age would accumulate to the amount necessary to fund a prescribed annuity.

The annuity is equal to:

- 1/240 of Final Average Salary per year of service at age 55 for current Miscellaneous Tier 1, Tier 2 and Tier 3 members
- 1/120 of Final Average Salary per year of service at age 60 for current Miscellaneous Tier 4 members
- 1/100 of Final Average Salary per year of service at age 50 for current Safety Tier 1, Tier 2 and Tier 3 members

In addition to their basic contributions, members in the legacy tiers pay one-half of the total Normal Cost necessary to fund their cost-of-living benefits. The cost to provide the cost-of-living benefits is offset somewhat by the balance available in an account maintained in the valuation to offset member's COLA rates in the legacy tiers. Accumulation includes semi-annual crediting of interest at one-half of the United States 5-year Treasury rate for the last business day of the interest crediting period. For members paying half rates prior to the June 30, 2015 valuation, their rates should be exactly one-half of the rates described above. Note that effective with the June 30, 2015 valuation, all members are reported as paying at least full-rate.

Starting in 2014/2015, most County members in the legacy tiers agreed to contribute either 1/3, 1/4, or 1/5 of the difference between the employee's then current Normal Cost and 50% of the total Normal Cost rate. Those members agreed to contribute an additional 1/3, 1/4, or 1/5 of the difference in the Normal Cost rate in 2015/2016, 2016/2017 and 2017/2018.

For Rep Unit 26 Miscellaneous members, the member rates they started to contribute in 2015/2016 were 1% of payroll higher than the rates they paid in 2014/2015. In developing their rates for 2016/2017, we added an additional 2% of payroll to the rates for 2015/2016.

For Orangevale Recreation and Park District members, the member rates they started to contribute in 2015/2016 were 1/2 of the difference between the employee's then current Normal Cost and 50% of the total Normal Cost rate. Those members agreed to contribute an additional 1/2 of the difference in the Normal Cost rate in 2016/2017.

For Rep Unit 16 Miscellaneous members, the member rates effective January 1, 2018 are 1/2 of the difference between the employee's then current Normal Cost and 50% of the total Normal Cost rate. Those members have agreed to contribute an additional 1/4 of the difference in the Normal Cost rate in 2018/2019 and 2019/2020.

For Rep Unit 25 Miscellaneous members, the member rates effective January 1, 2018 are 2% of payroll higher than the employees' then current Normal Cost. These members have agreed to contribute an additional 2% of payroll in 2018/2019 and to contribute 50% of the total Normal Cost rate in 2019/2020.

Effective in 2019/2020, all of the above members who have previously agreed to contribute a higher Normal Cost rate are paying 50% of the total Normal Cost rate.

Miscellaneous Tier 5 & Safety Tier 4

Pursuant to Section 7522.30(a) of the Government Code, Miscellaneous Tier 5 and Safety Tier 4 members are required to contribute at least 50% of the Normal Cost rate. In addition, there are certain additional requirements that would have to be met such as requiring the new employees to pay the contribution rate of "similarly situated employees", if it is greater. (reference: Section 7522.30(c)). We further understand that different rules may have to be applied for collectively bargained employees, non-represented, managerial or other supervisory employees. (reference: Section 7522.30(e)). In preparing the Normal Cost rates in this report, we have assumed that exactly 50% of the Normal Cost would be paid by the new members and we have taken into account in this valuation only the requirements of Section 7522.30(c), but not requirements of Section 7522.30(e).

The member contribution rates are provided in Appendix A.

Member contributions are assumed to be made at the end of every pay period.

CHART 13

Recommended Employer Contribution Rates (Dollar Amounts in Thousands)

County Only[1]	June 30, 2018 Actuarial Valuation		June 30, 2017 Actuarial Valuation	
Miscellaneous – Tier 1 Members	Rate	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Normal Cost	10.66%	$374	10.84%	$381
UAAL	10.95%	384	10.43%	366
Total Contribution	21.61%	$758	21.27%	$747
Total Contribution after 3-Year Phase-In[3]	20.19%	$709	18.43%	$648
Miscellaneous – Tier 2 Members				
Normal Cost	8.21%	$264	8.26%	$266
UAAL	10.95%	353	10.43%	336
Total Contribution	19.16%	$617	18.69%	$602
Total Contribution after 3-Year Phase-In[3]	17.74%	$571	15.85%	$510
Miscellaneous – Tier 3 Members				
Normal Cost	10.90%	$52,630	11.03%	$53,258
UAAL	10.95%	52,872	10.43%	50,364
Total Contribution	21.85%	$105,502	21.46%	$103,622
Total Contribution after 3-Year Phase-In[3]	20.43%	$98,645	18.62%	$89,909
Miscellaneous – Tier 4 Members				
Normal Cost	10.39%	$3,073	10.37%	$3,067
UAAL	10.95%	3,239	10.43%	3,085
Total Contribution	21.34%	$6,312	20.80%	$6,152
Total Contribution after 3-Year Phase-In[3]	19.92%	$5,892	17.96%	$5,312
Miscellaneous – Tier 5 Members				
Normal Cost	9.45%	$17,084	9.37%	$16,939
UAAL	10.95%	19,795	10.43%	18,856
Total Contribution	20.40%	$36,879	19.80%	$35,795
Total Contribution after 3-Year Phase-In[3]	18.98%	$34,312	16.96%	$30,661
All Miscellaneous County Categories Combined				
Normal Cost	10.49%	$73,425	10.56%	$73,911
UAAL	10.95%	76,643	10.43%	73,007
Total Contribution	21.44%	$150,068	20.99%	$146,918
Total Contribution after 3-Year Phase-In[3]	20.02%	$140,129	18.15%	$127,040

[1] *Includes elected officials (Board of Supervisors, Sheriff, District Attorney and Assessor).*
[2] *Based on June 30, 2018 projected annual payroll, see page 20.*
[3] *The change in the UAAL rate for Miscellaneous County due to the assumption changes was 4.26% of payroll as of June 30, 2017. One-third of that amount will be phased-in for each of the three actuarial valuations as of June 30, 2017, 2018 and 2019.*

CHART 13 (continued)

Recommended Employer Contribution Rates (Dollar Amounts in Thousands)

County Only[1]	June 30, 2018 Actuarial Valuation		June 30, 2017 Actuarial Valuation	
Safety – Tier 1 Members	Rate	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Normal Cost	25.92%	$4,602	23.74%	$4,214
UAAL	32.54%	5,777	32.23%	5,721
Total Contribution	58.46%	$10,379	55.97%	$9,935
Total Contribution after 3-Year Phase-In[3]	54.68%	$9,707	48.41%	$8,593
Safety – Tier 2 Members				
Normal Cost	19.55%	$28,697	19.61%	$28,785
UAAL	32.54%	47,765	32.23%	47,310
Total Contribution	52.09%	$76,462	51.84%	$76,095
Total Contribution after 3-Year Phase-In[3]	48.31%	$70,914	44.28%	$64,998
Safety – Tier 3 Members				
Normal Cost	18.64%	$2,304	18.66%	$2,307
UAAL	32.54%	4,022	32.23%	3,983
Total Contribution	51.18%	$6,326	50.89%	$6,290
Total Contribution after 3-Year Phase-In[3]	47.40%	$5,858	43.33%	$5,356
Safety – Tier 4 Members				
Normal Cost	15.09%	$7,661	15.05%	$7,640
UAAL	32.54%	16,519	32.23%	16,362
Total Contribution	47.63%	$24,180	47.28%	$24,002
Total Contribution after 3-Year Phase-In[3]	43.85%	$22,261	39.72%	$20,164
All Safety County Categories Combined				
Normal Cost	19.00%	$43,264	18.86%	$42,946
UAAL	32.54%	74,083	32.23%	73,376
Total Contribution	51.54%	$117,347	51.09%	$116,322
Total Contribution after 3-Year Phase-In[3]	47.76%	$108,740	43.53%	$99,111
All County Categories Combined				
Normal Cost	12.58%	$116,689	12.60%	$116,857
UAAL	16.25%	150,726	15.78%	146,383
Total Contribution	28.83%	$267,415	28.38%	$263,240
Total Contribution after 3-Year Phase-In	26.83%	$248,869	24.38%	$226,151

(1) *Includes elected officials (Board of Supervisors, Sheriff, District Attorney and Assessor).*
(2) *Based on June 30, 2018 projected annual payroll, see page 20.*
(3) *The change in the UAAL rate for Safety County due to the assumption changes was 11.34% of payroll as of June 30, 2017. One-third of that amount will be phased-in for each of the three actuarial valuations as of June 30, 2017, 2018 and 2019.*

CHART 13 (continued)

Recommended Employer Contribution Rates (Dollar Amounts in Thousands)

Superior Court Only	June 30, 2018 Actuarial Valuation		June 30, 2017 Actuarial Valuation	
Miscellaneous – Tier 1 Members	Rate	Estimated Annual Amount[1]	Rate	Estimated Annual Amount[1]
Normal Cost	13.90%	$42	14.03%	$42
UAAL	10.92%	33	10.40%	31
Total Contribution	24.82%	$75	24.43%	$73
Total Contribution after 3-Year Phase-In[2]	23.40%	$71	21.59%	$65
Miscellaneous – Tier 2 Members				
Normal Cost	12.55%	$82	12.55%	$82
UAAL	10.92%	71	10.40%	68
Total Contribution	23.47%	$153	22.95%	$150
Total Contribution after 3-Year Phase-In[2]	22.05%	$144	20.11%	$131
Miscellaneous – Tier 3 Members				
Normal Cost	15.91%	$6,327	16.00%	$6,363
UAAL	10.92%	4,343	10.40%	4,136
Total Contribution	26.83%	$10,670	26.40%	$10,499
Total Contribution after 3-Year Phase-In[2]	25.41%	$10,105	23.56%	$9,370
Miscellaneous – Tier 5 Members				
Normal Cost	9.45%	$681	9.37%	$676
UAAL	10.92%	787	10.40%	750
Total Contribution	20.37%	$1,468	19.77%	$1,426
Total Contribution after 3-Year Phase-In[2]	18.95%	$1,366	16.93%	$1,221
All Superior Court Categories Combined				
Normal Cost	14.88%	$7,132	14.95%	$7,163
UAAL	10.92%	5,234	10.40%	4,985
Total Contribution	25.80%	$12,366	25.35%	$12,148
Total Contribution after 3-Year Phase-In[2]	24.38%	$11,686	22.51%	$10,787

(1) *Based on June 30, 2018 projected annual payroll, see page 20.*

(2) *The change in the UAAL rate for Superior Court due to the assumption changes was 4.26% of payroll as of June 30, 2017. One-third of that amount will be phased-in for each of the three actuarial valuations as of June 30, 2017, 2018 and 2019.*

Note: Superior Court members have not agreed to contribute any additional portion of the total Normal Cost.

CHART 13 (continued)

Recommended Employer Contribution Rates (Dollar Amounts in Thousands)

District Only	June 30, 2018 Actuarial Valuation		June 30, 2017 Actuarial Valuation	
Miscellaneous – Tier 1 Members	Rate	Estimated Annual Amount[1]	Rate	Estimated Annual Amount[1]
Normal Cost	13.90%	$8	14.03%	$8
UAAL[2],[3]	18.87%	11	18.71%	10
Total Contribution	32.77%	$19	32.74%	$18
Total Contribution after 3-Year Phase-In[4]	31.42%	$18	30.00%	$17
Miscellaneous – Tier 3 Members				
Normal Cost	15.81%	$3,488	15.89%	$3,506
UAAL[2],[3]	18.87%	4,163	18.71%	4,128
Total Contribution	34.68%	$7,651	34.60%	$7,634
Total Contribution after 3-Year Phase-In[4]	33.33%	$7,353	31.86%	$7,029
Miscellaneous – Tier 5 Members				
Normal Cost	9.45%	$961	9.37%	$953
UAAL[2],[3]	18.87%	1,919	18.71%	1,902
Total Contribution	28.32%	$2,880	28.08%	$2,855
Total Contribution after 3-Year Phase-In[4]	26.97%	$2,742	25.34%	$2,577
All District Categories Combined				
Normal Cost	13.80%	$4,457	13.84%	$4,467
UAAL[2],[3]	18.87%	6,093	18.71%	6,040
Total Contribution	32.67%	$10,550	32.55%	$10,507
Total Contribution after 3-Year Phase-In[4]	31.32%	$10,113	29.81%	$9,623
All County and District Categories Combined				
Normal Cost	12.72%	$128,278	12.74%	$128,487
UAAL	16.08%	162,053	15.62%	157,408
Total Contribution	28.80%	$290,331	28.36%	$285,895
Total Contribution after 3-Year Phase-In	26.85%	$270,668	24.46%	$246,561

(1) *Based on June 30, 2018 projected annual payroll, see page 20.*
(2) *See Appendix D for the development of additional District UAAL rates.*
(3) *See Appendix E for the detailed District UAAL rates.*
(4) *The change in the UAAL rate for the Districts due to the assumption changes was 4.12% of payroll as of June 30, 2017. One-third of that amount will be phased-in for each of the three actuarial valuations as of June 30, 2017, 2018 and 2019. Note that the phase-in does not apply to Rio Linda Elverta Recreation and Parks District.*

CHART 13 (continued)

Recommended Employer Contribution Rates (Dollar Amounts in Thousands)

June 30, 2018 projected annual payroll used in developing employer contribution rates on the four previous pages

	County[1]	Superior Court	District	Total
Miscellaneous Tier 1	$3,511	$300	$56	$3,867
Miscellaneous Tier 2	3,221	650	0	3,871
Miscellaneous Tier 3	482,848	39,768	22,062	544,678
Miscellaneous Tier 4	29,576	0	0	29,576
Miscellaneous Tier 5	180,779	7,210	10,167	198,156
Subtotal	$699,935	$47,928	$32,285	$780,148
Safety Tier 1	$17,752	$0	$0	$17,752
Safety Tier 2	146,790	0	0	146,790
Safety Tier 3	12,359	0	0	12,359
Safety Tier 4	50,766	0	0	50,766
Subtotal	$227,667	$0	$0	$227,667
Total	$927,602	$47,928	$32,285	$1,007,815

[1] *Includes elected officials (Board of Supervisors, Sheriff, District Attorney and Assessor).*

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

The contribution rates as of June 30, 2018 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

Reconciliation of Recommended Contribution Rate
The chart below details the changes in the recommended contribution from the prior valuation to the current year's valuation.

CHART 14
Reconciliation of Average Recommended Employer Contribution Rate from June 30, 2017 to June 30, 2018 (Dollar Amounts in Thousands)

	Contribution Rate	Estimated Annual Dollar Cost[1]
Average Recommended Contribution Rate as of June 30, 2017 (After Reflecting Three-Year Phase-In and Additional Normal Cost Contributions by Certain Legacy Members for 2018/2019)	24.46%	$246,561
Effect of phase-in of change in employer's UAAL contribution rate impact due to changes in actuarial assumptions over three years	3.90%	39,334
Average Recommended Contribution Rate as of June 30, 2017 (Before Reflecting Three-Year Phase-In)	28.36%	$285,895
Effect of investment losses	0.04%	403
Effect of less than expected contributions	0.64%	6,450
Effect of lower than expected individual salary increases	-0.29%	(2,923)
Effect of increase in UAAL rate from lower than expected increase in total payroll	0.07%	705
Effect of Rep Units 16 and 25 increase in 2019/2020 member contributions	-0.06%	(605)
Effect of recognizing one-third of phase-in of change employer's UAAL contribution rate impact due to changes in actuarial assumptions over three years	-1.95%	(19,663)
Effect of demographic changes and other actuarial (gains)/losses	0.04%	406
Subtotal	-1.51%	(15,227)
Average Recommended Contribution Rate as of June 30, 2018 (After Reflecting Three-Year Phase-In and Additional Normal Cost Contributions by Certain Legacy Members for 2019/2020)	26.85%	$270,668

[1] *Based on June 30, 2018 projected annual payroll of $1,007,815,000.*

The member contribution rates as of June 30, 2018 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

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

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

CHART 15

Reconciliation of Average Recommended Member Contribution Rate from June 30, 2017 to June 30, 2018 (Dollar Amounts in Thousands)

	Contribution Rate	Estimated Amount[1]
Average Recommended Contribution Rate as of June 30, 2017 (After Reflecting Additional Normal Cost Contributions by Certain Legacy Members for 2018/2019)	11.75%[2]	$118,418
Effect of reduction in COLA offset[3]	0.02%	202
Effect of Rep Units 16 and 25 increase in 2019/2020 member contributions	0.07%	705
Effect of demographic changes	-0.07%	(705)
Subtotal	0.02%	202
Average Recommended Contribution Rate as of June 30, 2018 (After Reflecting Additional Normal Cost Contributions by Certain Legacy Members for 2019/2020)	11.77%[2]	$118,620

(1) *Based on June 30, 2018 projected annual payroll of $1,007,815,000.*
(2) *Rates have been adjusted to reflect a reserve available to reduce part of the COLA contributions.*
(3) *A number of years ago, the Board allocated excess earnings to offset a portion the members' COLA contribution over their anticipating working career with SCERS' participating employers. The COLA contribution rate offset is recalculated every year to reflect the demographic profile of the members eligible to receive the offset on the valuation date.*

E. FUNDED RATIO

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

The Chart below depicts a history of the funded ratio for the Plan.

Chart 17 on the next page shows the Plan's schedule of funding progress for the last ten years.

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

CHART 16

Funded Ratio for Plan Years Ending June 30, 2017 – 2018

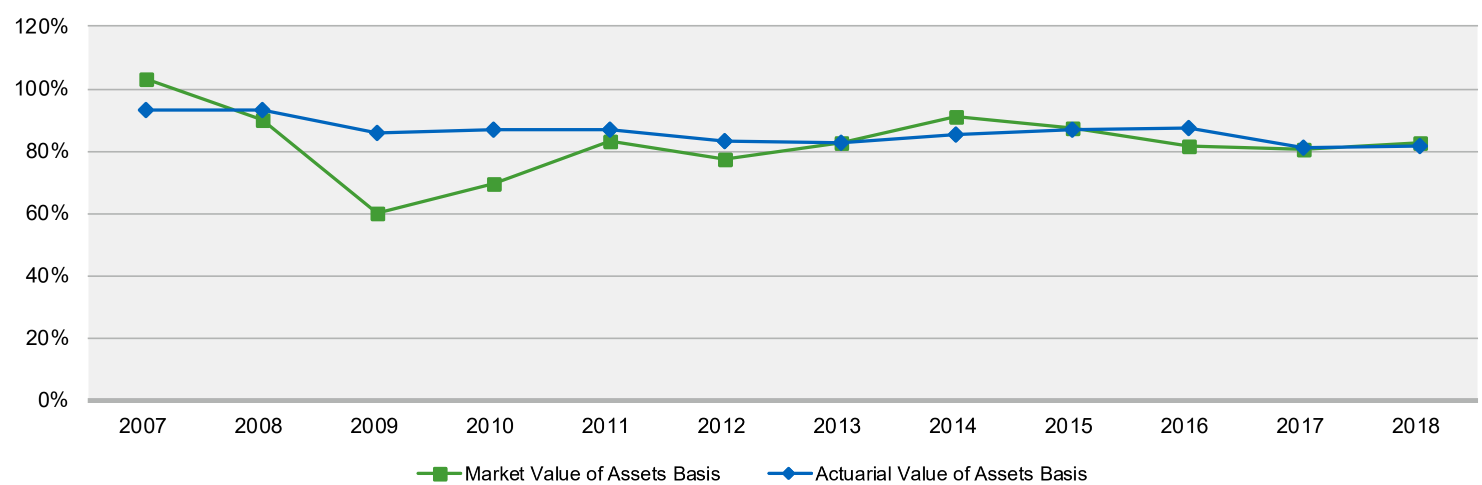


CHART 17

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets[1] (a)	Actuarial Accrued Liability (AAL)[1] (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (%) (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll (%) [(b) - (a)] / (c)
6/30/2009	$5,730,215,000	$6,661,993,000	$931,778,000	86.0	$968,130,000	96.2
6/30/2010	6,216,994,000	7,090,497,000	873,503,000	87.7	912,644,000	95.7
6/30/2011	6,420,824,000	7,382,897,000	962,073,000	87.0	880,766,000	109.2
6/30/2012	6,529,895,000	7,838,223,000	1,308,328,000	83.3	875,672,000	149.4
6/30/2013	6,797,757,000	8,210,980,000	1,413,223,000	82.8	877,657,000	161.0
6/30/2014	7,312,993,000	8,580,928,000	1,267,935,000	85.2	879,999,000	144.1
6/30/2015	7,838,825,000	9,028,679,000	1,189,854,000	86.8	897,341,000	132.6
6/30/2016	8,236,402,000	9,436,090,000	1,199,688,000	87.3	938,555,000	127.8
6/30/2017	8,665,226,000	10,680,998,000	2,015,772,000	81.1	980,359,000	205.6
6/30/2018	9,123,004,000	11,213,263,000	2,090,259,000	81.4	1,007,815,000	207.4

(1) *Includes contingency reserve and other non-valuation reserves.*

F. VOLATILITY RATIOS

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

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

For SCERS, the current AVR is 9.2. This means that a 1% asset gain/(loss) (relative to the assumed investment return) translates to 9.2% of one-year's payroll. Since SCERS amortizes actuarial gains and losses over a period of 20 years as of June 30, 2018, there would be a 0.7% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

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

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

For SCERS, the current LVR is 11.1. This is about 21% higher than the AVR. Therefore, we would expect that contribution volatility will increase over the long-term.

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

CHART 19

Volatility Ratios for Years Ended June 30, 2009 – 2018

	Asset Volatility Ratios			Liability Volatility Ratios		
Year Ended June 30	**Miscellaneous**	**Safety**	**Total**	**Miscellaneous**	**Safety**	**Total**
2009	3.8	7.4	4.6	5.7	11.3	6.9
2010	4.5	9.1	5.5	6.4	13.4	7.8
2011	5.8	11.6	7.0	6.9	14.0	8.4
2012	5.8	11.0	6.9	7.5	14.5	9.0
2013	6.6	11.7	7.7	7.9	14.6	9.4
2014	7.6	13.2	8.9	8.1	15.2	9.8
2015	7.5	13.0	8.8	8.4	15.8	10.1
2016	7.0	12.2	8.2	8.4	15.7	10.1
2017	7.4	13.5	8.8	8.9	17.8	10.9
2018	7.8	14.0	9.2	9.1	18.0	11.1

EXHIBIT A

Table of Plan Coverage

i. Miscellaneous Tier 1

Category	Year Ended June 30 2018	Year Ended June 30 2017	Change From Prior Year
Active members in valuation			
Number	46	65	-29.2%
Average age	62.3	61.4	0.9
Average service	36.3	35.3	1.0
Projected total compensation(1)	$3,867,063	$5,590,986	-30.8%
Projected average compensation	$84,067	$86,015	-2.3%
Account balances	$8,045,114	$10,926,199	-26.4%
Total active vested members	46	65	-29.2%
Vested terminated members			
Number(2)	37	45	-17.8%
Average age	66.6	65.5	1.1
Retired members			
Number in pay status	2,724	2,803	-2.8%
Average age	75.8	75.3	0.5
Average monthly benefit	$3,785	$3,623	4.5%
Disabled members			
Number in pay status	148	160	-7.5%
Average age	76.5	76.1	0.4
Average monthly benefit	$2,356	$2,281	3.3%
Beneficiaries			
Number in pay status	736	746	-1.3%
Average age	78.3	77.7	0.6
Average monthly benefit	$1,921	$1,841	4.3%

(1) *Projected compensation for the June 30, 2018 valuation was calculated by increasing the annualized compensation earned during 2017-2018 by 3.25%.*

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

EXHIBIT A

Table of Plan Coverage

ii. Miscellaneous Tier 2

Category	Year Ended June 30 2018	Year Ended June 30 2017	Change From Prior Year
Active members in valuation			
Number	52	57	-8.8%
Average age	56.9	56.1	0.8
Average service	27.3	26.3	1.0
Projected total compensation[1]	$3,871,213	$4,129,310	-6.3%
Projected average compensation	$74,446	$72,444	2.8%
Account balances	$4,766,897	$4,815,423	-1.0%
Total active vested members	52	57	-8.8%
Vested terminated members			
Number[2]	134	154	-13.0%
Average age	57.7	57.3	0.4
Retired members			
Number in pay status	363	344	5.5%
Average age	69.3	68.7	0.6
Average monthly benefit	$1,111	$1,092	19.0
Disabled members			
Number in pay status	29	29	0.0%
Average age	67.3	66.3	1.0
Average monthly benefit	$938	$938	0.0%
Beneficiaries			
Number in pay status	57	56	1.8%
Average age	71.0	70.2	0.8
Average monthly benefit	$713	$725	-1.7%

(1) *Projected compensation for the June 30, 2018 valuation was calculated by increasing the annualized compensation earned during 2017-2018 by 3.25%.*

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

EXHIBIT A

Table of Plan Coverage

iii. Miscellaneous Tier 3

Category	Year Ended June 30 2018	Year Ended June 30 2017	Change From Prior Year
Active members in valuation			
Number	6,701	7,206	-7.0%
Average age	50.8	50.4	0.4
Average service	16.8	16.0	0.8
Projected total compensation[(1),(2)]	$544,677,967	$565,997,630	-3.8%
Projected average compensation	$81,283	$78,545	3.5%
Account balances	$466,484,947	$452,670,559	3.1%
Total active vested members	6,634	7,101	-6.6%
Vested terminated members			
Number[(3)]	2,355	2,374	-0.8%
Average age	49.2	48.8	0.4
Retired members			
Number in pay status	4,708	4,305	9.4%
Average age	67.6	67.2	0.4
Average monthly benefit	$2,627	$2,502	5.0%
Disabled members			
Number in pay status	285	277	2.9%
Average age	63.9	63.4	0.5
Average monthly benefit	$1,885	$1,838	2.6%
Beneficiaries			
Number in pay status	431	401	7.5%
Average age	65.7	65.3	0.4
Average monthly benefit	$1,101	$1,070	2.9%

(1) *Projected compensation for the June 30, 2018 valuation was calculated by increasing the annualized compensation earned during 2017-2018 by 3.25%.*

(2) *For members without a salary reported for the June 30, 2018 valuation, we have assigned them an annual salary of $81,568.*

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

EXHIBIT A

Table of Plan Coverage

iv. Miscellaneous Tier 4

Category	Year Ended June 30 2018	Year Ended June 30 2017	Change From Prior Year
Active members in valuation			
Number	350	362	-3.3%
Average age	43.6	42.5	1.1
Average service	5.0	4.0	1.0
Projected total compensation(1),(2)	$29,576,014	$28,568,633	3.5%
Projected average compensation	$84,503	$78,919	7.1%
Account balances	$10,037,641	$7,733,808	29.8%
Total active vested members	220	88	150.0%
Vested terminated members			
Number(3)	87	75	16.0%
Average age	40.8	39.5	1.3
Retired members			
Number in pay status	5	4	25.0%
Average age	59.6	59.9	-0.3
Average monthly benefit	$384	$461	-16.7%
Disabled members			
Number in pay status	- -	- -	N/A
Average age	- -	- -	N/A
Average monthly benefit	- -	- -	N/A
Beneficiaries			
Number in pay status	- -	- -	N/A
Average age	- -	- -	N/A
Average monthly benefit	- -	- -	N/A

(1) *Projected compensation for the June 30, 2018 valuation was calculated by increasing the annualized compensation earned during 2017-2018 by 3.25%.*

(2) *For members without a salary reported for the June 30, 2018 valuation, we have assigned them an annual salary of $83,633.*

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

EXHIBIT A

Table of Plan Coverage

v. Miscellaneous Tier 5

Category	Year Ended June 30 2018	Year Ended June 30 2017	Change From Prior Year
Active members in valuation			
Number	3,437	2,887	19.1%
Average age	38.3	37.7	0.6
Average service	2.3	1.8	0.5
Projected total compensation[(1),(2)]	$198,155,621	$158,153,671	25.3%
Projected average compensation	$57,654	$54,781	5.2%
Account balances	$35,887,059	$22,873,487	56.9%
Total active vested members	162	16	912.5%
Vested terminated members			
Number[(3)]	463	336	37.8%
Average age	38.2	38.3	-0.1
Retired members			
Number in pay status	- -	- -	N/A
Average age	- -	- -	N/A
Average monthly benefit	- -	- -	N/A
Disabled members			
Number in pay status	- -	- -	N/A
Average age	- -	- -	N/A
Average monthly benefit	- -	- -	N/A
Beneficiaries			
Number in pay status	- -	- -	N/A
Average age	- -	- -	N/A
Average monthly benefit	- -	- -	N/A

(1) *Projected compensation for the June 30, 2018 valuation was calculated by increasing the annualized compensation earned during 2017-2018 by 3.25%.*

(2) *For members without a salary reported for the June 30, 2018 valuation, we have assigned them an annual salary of $51,625.*

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

EXHIBIT A

Table of Plan Coverage

vi. Safety Tier 1

Category	Year Ended June 30 2018	Year Ended June 30 2017	Change From Prior Year
Active members in valuation			
Number	125	166	-24.7%
Average age	51.2	50.9	0.3
Average service	24.5	24.3	0.2
Projected total compensation[(1),(2)]	$17,752,389	$22,646,147	-21.6%
Projected average compensation	$142,019	$136,423	4.1%
Account balances	$31,002,723	$36,961,796	-16.1%
Total active vested members	125	166	-24.7%
Vested terminated members			
Number[(3)]	53	61	-13.1%
Average age	53.2	52.0	1.2
Retired members			
Number in pay status	1,319	1,287	2.5%
Average age	65.8	65.3	0.5
Average monthly benefit	$7,379	$7,136	3.4%
Disabled members			
Number in pay status	189	191	-1.0%
Average age	66.4	65.7	0.7
Average monthly benefit	$4,837	$4,703	2.8%
Beneficiaries			
Number in pay status	348	332	4.8%
Average age	68.3	67.8	0.5
Average monthly benefit	$3,150	$3,009	4.7%

(1) *Projected compensation for the June 30, 2018 valuation was calculated by increasing the annualized compensation earned during 2017-2018 by 3.25%.*

(2) *For members without a salary reported for the June 30, 2018 valuation, we have assigned them an annual salary of $142,485.*

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

EXHIBIT A

Table of Plan Coverage

vii. Safety Tier 2

Category	Year Ended June 30 2018	Year Ended June 30 2017	Change From Prior Year
Active members in valuation			
Number	1,214	1,285	-5.5%
Average age	44.6	44.1	0.5
Average service	16.8	16.0	0.8
Projected total compensation(1), (2)	$146,790,318	$149,101,362	-1.5%
Projected average compensation	$120,915	$116,032	4.2%
Account balances	$176,287,747	$161,472,884	9.2%
Total active vested members	1,212	1,280	-5.3%
Vested terminated members			
Number(3)	340	347	-2.0%
Average age	43.4	42.5	0.9
Retired members			
Number in pay status	428	360	18.9%
Average age	62.6	63.6	-1.0
Average monthly benefit	$5,143	$4,878	5.4%
Disabled members			
Number in pay status	64	59	8.5%
Average age	53.7	53.6	0.1
Average monthly benefit	$3,207	$3,115	3.0%
Beneficiaries			
Number in pay status	48	41	17.1%
Average age	55.9	55.6	0.3
Average monthly benefit	$2,079	$2,104	-1.2%

(1) *Projected compensation for the June 30, 2018 valuation was calculated by increasing the annualized compensation earned during 2017-2018 by 3.25%.*

(2) *For members without a salary reported for the June 30, 2018 valuation, we have assigned them an annual salary of $120,803.*

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

EXHIBIT A

Table of Plan Coverage

viii. Safety Tier 3

Category	Year Ended June 30 2018	Year Ended June 30 2017	Change From Prior Year
Active members in valuation			
Number	118	112	5.4%
Average age	39.1	37.8	1.3
Average service	6.7	5.7	1.0
Projected total compensation[1]	$12,359,087	$11,315,008	9.2%
Projected average compensation	$104,738	$101,027	3.7%
Account balances	$7,552,038	$5,611,343	34.6%
Total active vested members	89	64	39.1%
Vested terminated members			
Number[2]	10	9	11.1%
Average age	40.2	39.9	0.3
Retired members			
Number in pay status	- -	- -	N/A
Average age	- -	- -	N/A
Average monthly benefit	- -	- -	N/A
Disabled members			
Number in pay status	1	1	0.0%
Average age	40.1	39.1	1.0
Average monthly benefit	$3,123	$3,062	2.0%
Beneficiaries			
Number in pay status	- -	- -	N/A
Average age	- -	- -	N/A
Average monthly benefit	- -	- -	N/A

(1) *Projected compensation for the June 30, 2018 valuation was calculated by increasing the annualized compensation earned during 2017-2018 by 3.25%.*

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

EXHIBIT A

Table of Plan Coverage

ix. Safety Tier 4

Category	Year Ended June 30 2018	Year Ended June 30 2017	Change From Prior Year
Active members in valuation			
Number	634	447	41.8%
Average age	33.4	33.1	0.3
Average service	2.6	2.5	0.1
Projected total compensation(1)	$50,765,913	$34,856,379	45.6%
Projected average compensation	$80,072	$77,978	2.7%
Account balances	$16,114,698	$10,224,544	57.6%
Total active vested members	59	33	78.8%
Vested terminated members			
Number(2)	30	24	25.0%
Average age	32.3	34.8	-2.5
Retired members			
Number in pay status	- -	- -	N/A
Average age	- -	- -	N/A
Average monthly benefit	- -	- -	N/A
Disabled members			
Number in pay status	- -	- -	N/A
Average age	- -	- -	N/A
Average monthly benefit	- -	- -	N/A
Beneficiaries			
Number in pay status	- -	- -	N/A
Average age	- -	- -	N/A
Average monthly benefit	- -	- -	N/A

(1) *Projected compensation for the June 30, 2018 valuation was calculated by increasing the annualized compensation earned during 2017-2018 by 3.25%.*

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

EXHIBIT B

Members in Active Service and Projected Average Compensation as of June 30, 2018
By Age and Years of Service

i. Miscellaneous Tier 1

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
30 - 34	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
35 - 39	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
40 - 44	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
45 - 49	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
50 - 54	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
55 - 59	16	--	--	--	--	--	--	1	14	1
	$76,356	--	--	--	--	--	--	$58,324	$78,077	$70,294
60 - 64	18	--	--	--	--	2	1	3	11	1
	86,997	--	--	--	--	$73,841	$71,523	120,771	84,800	51,628
65 - 69	12	--	--	1	--	1	--	--	4	6
	89,952	--	--	$176,076	--	50,196	--	--	105,667	71,748
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	46	--	--	1	--	3	1	4	29	8
	$84,067	--	--	$176,076	--	$65,959	$71,523	$105,159	$84,432	$69,051

EXHIBIT B

Members in Active Service and Projected Average Compensation as of June 30, 2018
By Age and Years of Service

ii. Miscellaneous Tier 2

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
30 - 34	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
35 - 39	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
40 - 44	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
45 - 49	4	- -	- -	- -	- -	- -	4	- -	- -	- -
	$65,033	- -	- -	- -	- -	- -	$65,033	- -	- -	- -
50 - 54	16	- -	- -	- -	2	1	11	2	- -	- -
	79,141	- -	- -	- -	$67,483	$65,523	84,263	$69,443	- -	- -
55 - 59	16	- -	- -	- -	1	1	11	3	- -	- -
	69,705	- -	- -	- -	55,375	56,358	70,404	76,367	- -	- -
60 - 64	14	- -	- -	- -	2	1	8	3	- -	- -
	77,909	- -	- -	- -	60,349	87,877	75,757	92,033	- -	- -
65 - 69	1	- -	- -	- -	- -	- -	- -	- -	1	- -
	49,094	- -	- -	- -	- -	- -	- -	- -	$49,094	- -
70 & over	1	- -	- -	- -	- -	- -	1	- -	- -	- -
	89,720	- -	- -	- -	- -	- -	89,720	- -	- -	- -
Total	52	- -	- -	- -	5	3	35	8	1	- -
	$74,446	- -	- -	- -	$62,207	$69,919	$75,921	$80,511	$49,094	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of June 30, 2018
By Age and Years of Service

iii. Miscellaneous Tier 3

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	7	- -	6	1	- -	- -	- -	- -	- -	- -
	$68,747	- -	$72,893	$43,876	- -	- -	- -	- -	- -	- -
30 - 34	208	8	69	127	4	- -	- -	- -	- -	- -
	69,901	$57,573	74,882	67,724	$77,771	- -	- -	- -	- -	- -
35 - 39	662	12	156	386	107	1	- -	- -	- -	- -
	75,392	53,045	76,752	76,795	70,989	$60,755	- -	- -	- -	- -
40 - 44	978	8	104	455	382	28	1	- -	- -	- -
	79,926	76,134	77,467	80,365	79,375	90,668	$75,381	- -	- -	- -
45 - 49	1,208	8	88	395	499	175	42	1	- -	- -
	83,890	72,738	80,243	80,198	81,682	101,088	82,167	$117,208	- -	- -
50 - 54	1,323	16	100	298	420	228	208	47	6	- -
	85,061	77,260	72,383	80,011	80,469	96,212	92,650	98,008	$101,222	- -
55 - 59	1,239	7	61	240	389	216	208	103	15	- -
	83,288	78,650	71,600	76,835	77,355	91,551	89,933	97,753	79,583	- -
60 - 64	794	6	42	194	247	123	113	53	16	- -
	79,822	71,442	76,149	75,641	72,068	85,978	90,082	99,381	78,429	- -
65 - 69	228	2	19	69	72	34	22	9	1	- -
	75,710	111,569	72,598	73,001	71,241	89,336	75,938	81,896	47,806	- -
70 & over	54	1	4	16	17	9	4	2	1	- -
	71,696	81,568	47,910	81,185	71,969	68,524	64,184	59,782	82,909	- -
Total	6,701	68	649	2,181	2,137	814	598	215	39	- -
	$81,283	$70,708	$75,610	$77,866	$78,161	$93,650	$89,649	$97,284	$81,709	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of June 30, 2018
By Age and Years of Service

iv. Miscellaneous Tier 4

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	12	2	10	- -	- -	- -	- -	- -	- -	- -
	$72,766	$78,961	$71,528	- -	- -	- -	- -	- -	- -	- -
30 - 34	70	28	42	- -	- -	- -	- -	- -	- -	- -
	79,498	73,237	83,672	- -	- -	- -	- -	- -	- -	- -
35 - 39	72	26	44	2	- -	- -	- -	- -	- -	- -
	81,748	86,810	77,723	$104,470	- -	- -	- -	- -	- -	- -
40 - 44	58	19	37	1	- -	1	- -	- -	- -	- -
	84,330	96,603	79,102	50,328	- -	$78,615	- -	- -	- -	- -
45 - 49	40	20	19	1	- -	- -	- -	- -	- -	- -
	88,673	101,582	75,309	84,403	- -	- -	- -	- -	- -	- -
50 - 54	39	16	23	- -	- -	- -	- -	- -	- -	- -
	89,302	102,050	80,434	- -	- -	- -	- -	- -	- -	- -
55 - 59	37	12	25	- -	- -	- -	- -	- -	- -	- -
	77,715	86,299	73,595	- -	- -	- -	- -	- -	- -	- -
60 - 64	16	5	11	- -	- -	- -	- -	- -	- -	- -
	108,081	139,337	93,873	- -	- -	- -	- -	- -	- -	- -
65 - 69	5	2	3	- -	- -	- -	- -	- -	- -	- -
	83,232	76,180	87,933	- -	- -	- -	- -	- -	- -	- -
70 & over	1	- -	1	- -	- -	- -	- -	- -	- -	- -
	310,336	- -	310,336	- -	- -	- -	- -	- -	- -	- -
Total	350	130	215	4	- -	1	- -	- -	- -	- -
	$84,503	$91,155	$80,482	$85,918	- -	$78,615	- -	- -	- -	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of June 30, 2018
By Age and Years of Service

v. Miscellaneous Tier 5

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	115	115	- -	- -	- -	- -	- -	- -	- -	- -
	$41,976	$41,976	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	735	723	12	- -	- -	- -	- -	- -	- -	- -
	52,409	52,227	$63,407	- -	- -	- -	- -	- -	- -	- -
30 - 34	767	734	33	- -	- -	- -	- -	- -	- -	- -
	59,283	58,689	72,494	- -	- -	- -	- -	- -	- -	- -
35 - 39	570	550	20	- -	- -	- -	- -	- -	- -	- -
	59,462	59,546	57,159	- -	- -	- -	- -	- -	- -	- -
40 - 44	371	352	19	- -	- -	- -	- -	- -	- -	- -
	59,236	59,125	61,292	- -	- -	- -	- -	- -	- -	- -
45 - 49	347	324	23	- -	- -	- -	- -	- -	- -	- -
	60,339	60,451	58,762	- -	- -	- -	- -	- -	- -	- -
50 - 54	216	204	11	1	- -	- -	- -	- -	- -	- -
	61,280	61,311	61,757	$49,687	- -	- -	- -	- -	- -	- -
55 - 59	188	169	19	- -	- -	- -	- -	- -	- -	- -
	59,168	58,001	69,551	- -	- -	- -	- -	- -	- -	- -
60 - 64	91	79	10	2	- -	- -	- -	- -	- -	- -
	63,301	63,404	62,798	61,737	- -	- -	- -	- -	- -	- -
65 - 69	30	25	5	- -	- -	- -	- -	- -	- -	- -
	64,519	60,415	85,040	- -	- -	- -	- -	- -	- -	- -
70 & over	7	7	- -	- -	- -	- -	- -	- -	- -	- -
	67,665	67,664	- -	- -	- -	- -	- -	- -	- -	- -
Total	3,437	3,282	152	3	- -	- -	- -	- -	- -	- -
	$57,654	$57,318	$64,910	$57,720	- -	- -	- -	- -	- -	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of June 30, 2018
By Age and Years of Service

vi. Safety Tier 1

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
30 - 34	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
35 - 39	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
40 - 44	3	--	--	--	--	3	--	--	--	--
	$127,817	--	--	--	--	$127,817	--	--	--	--
45 - 49	61	--	--	3	2	36	19	1	--	--
	146,199	--	--	$114,069	$130,821	148,036	$150,094	$133,199	--	--
50 - 54	38	--	--	--	4	15	14	5	--	--
	147,549	--	--	--	146,437	138,317	158,990	144,103	--	--
55 - 59	18	--	--	1	2	6	8	1	--	--
	125,227	--	--	115,219	102,673	130,541	119,905	191,036	--	--
60 - 64	3	--	--	--	--	--	2	1	--	--
	111,705	--	--	--	--	--	67,319	200,478	--	--
65 - 69	2	--	--	--	1	--	1	--	--	--
	127,360	--	--	--	129,990	--	124,730	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	125	--	--	4	9	60	44	8	--	--
	$142,019	--	--	$114,357	$131,414	$142,846	$143,097	$155,653	--	--

EXHIBIT B

Members in Active Service and Projected Average Compensation as of June 30, 2018
By Age and Years of Service

vii. Safety Tier 2

		Years of Service								
Age	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	1	- -	1	- -	- -	- -	- -	- -	- -	- -
	$112,875	- -	$112,875	- -	- -	- -	- -	- -	- -	- -
30 - 34	43	- -	16	23	4	- -	- -	- -	- -	- -
	113,424	- -	102,422	$119,028	$125,211	- -	- -	- -	- -	- -
35 - 39	238	2	27	157	50	2	- -	- -	- -	- -
	115,004	$76,080	111,761	112,635	124,169	$154,640	- -	- -	- -	- -
40 - 44	376	- -	15	93	215	53	- -	- -	- -	- -
	116,810	- -	108,165	109,361	115,855	136,199	- -	- -	- -	- -
45 - 49	363	- -	8	37	152	152	13	1	- -	- -
	128,431	- -	98,174	115,904	123,826	136,223	$141,901	$174,575	- -	- -
50 - 54	122	- -	2	16	44	47	13	- -	- -	- -
	124,926	- -	118,182	123,220	125,932	124,833	124,994	- -	- -	- -
55 - 59	48	- -	2	7	20	16	2	1	- -	- -
	117,733	- -	139,396	116,135	110,444	122,771	117,587	151,054	- -	- -
60 - 64	22	- -	7	7	5	2	1	- -	- -	- -
	131,877	- -	145,433	128,963	114,683	149,606	107,887	- -	- -	- -
65 - 69	1	- -	- -	1	- -	- -	- -	- -	- -	- -
	94,750	- -	- -	94,750	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	1,214	2	78	341	490	272	29	2	- -	- -
	$120,915	$76,080	$111,670	$113,379	$119,925	$133,692	$131,472	$162,815	- -	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of June 30, 2018
By Age and Years of Service

viii. Safety Tier 3

		Years of Service								
Age	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	5	1	4	- -	- -	- -	- -	- -	- -	- -
	$94,341	$65,336	$101,592	- -	- -	- -	- -	- -	- -	- -
30 - 34	39	5	30	4	- -	- -	- -	- -	- -	- -
	101,675	95,488	102,409	$103,904	- -	- -	- -	- -	- -	- -
35 - 39	31	10	19	2	- -	- -	- -	- -	- -	- -
	102,812	103,612	106,916	59,833	- -	- -	- -	- -	- -	- -
40 - 44	18	8	6	3	1	- -	- -	- -	- -	- -
	105,840	118,583	93,156	90,801	$125,114	- -	- -	- -	- -	- -
45 - 49	16	4	8	1	3	- -	- -	- -	- -	- -
	115,068	149,700	114,823	59,574	88,040	- -	- -	- -	- -	- -
50 - 54	5	1	2	1	- -	- -	1	- -	- -	- -
	95,673	124,574	82,171	124,606	- -	- -	$64,844	- -	- -	- -
55 - 59	3	- -	3	- -	- -	- -	- -	- -	- -	- -
	126,780	- -	126,780	- -	- -	- -	- -	- -	- -	- -
60 - 64	1	- -	1	- -	- -	- -	- -	- -	- -	- -
	129,995	- -	129,995	- -	- -	- -	- -	- -	- -	- -
65 - 69	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	118	29	73	11	4	- -	1	- -	- -	- -
	$104,738	$112,101	$104,962	$90,170	$97,309	- -	$64,844	- -	- -	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of June 30, 2018
By Age and Years of Service

ix. Safety Tier 4

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	43	43	- -	- -	- -	- -	- -	- -	- -	- -
	$74,658	$74,658	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	254	241	13	- -	- -	- -	- -	- -	- -	- -
	78,903	78,273	$90,589	- -	- -	- -	- -	- -	- -	- -
30 - 34	153	132	20	1	- -	- -	- -	- -	- -	- -
	80,804	79,256	91,144	$78,437	- -	- -	- -	- -	- -	- -
35 - 39	79	66	11	2	- -	- -	- -	- -	- -	- -
	78,049	76,525	85,164	89,185	- -	- -	- -	- -	- -	- -
40 - 44	30	27	2	- -	1	- -	- -	- -	- -	- -
	77,643	77,532	95,289	- -	$45,324	- -	- -	- -	- -	- -
45 - 49	21	18	1	2	- -	- -	- -	- -	- -	- -
	83,730	83,561	82,273	85,985	- -	- -	- -	- -	- -	- -
50 - 54	30	28	1	1	- -	- -	- -	- -	- -	- -
	89,475	90,150	97,530	62,522	- -	- -	- -	- -	- -	- -
55 - 59	20	19	1	- -	- -	- -	- -	- -	- -	- -
	91,057	90,148	108,325	- -	- -	- -	- -	- -	- -	- -
60 - 64	4	1	2	1	- -	- -	- -	- -	- -	- -
	98,078	108,325	95,379	93,227	- -	- -	- -	- -	- -	- -
65 - 69	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	634	575	51	7	1	- -	- -	- -	- -	- -
	$80,072	$79,181	$90,329	$83,504	$45,324	- -	- -	- -	- -	- -

EXHIBIT C

Reconciliation of Member Data – June 30, 2017 to June 30, 2018

	Active Members	Vested Terminated Members[1]	Pensioners	Disableds	Beneficiaries	Total
Number as of June 30, 2017	12,587	3,425	9,103	717	1,576	27,408
New members	976	80	0	0	107	1,163
Terminations – with vested rights	-331	331	0	0	0	0
Contributions refunds	-115	-78	0	0	0	-193
Retirements	-446	-189	635	0	0	0
New disabilities	-10	-5	-7	22	0	0
Return to work	27	-27	0	0	0	0
Deaths	-7	-26	-184	-23	-60	-300
Data adjustments	-4	-2	0	0	-3	-9
Number as of June 30, 2018	12,677	3,509	9,547	716	1,620	28,069

[1] *Includes terminated members due a refund of member contributions.*

EXHIBIT D

Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended June 30, 2018		Year Ended June 30, 2017	
Contribution income:				
Employer contributions	$201,631,000		$203,928,000	
Employee contributions	99,906,000		89,489,000	
Net contribution income		$301,537,000		$293,417,000
Investment income:				
Interest, dividends and other income	$195,644,000		$182,778,000	
Recognition of capital appreciation	560,757,000		475,510,000	
Less investment and administrative fees	-131,852,000		-90,815,000	
Net investment income		624,549,000		567,473,000
Total income available for benefits		$926,086,000		$860,890,000
Less benefit payments:				
Benefits paid	-$465,354,000		-$429,754,000	
Withdrawal of contributions	-2,954,000		-2,312,000	
Net benefit payments		-$468,308,000		-$432,066,000
Change in reserve for future benefits		$457,778,000		$428,824,000

Note: Results may be slightly off due to rounding.

EXHIBIT E

Summary Statement of Assets

	Year Ended June 30, 2018		Year Ended June 30, 2017	
Cash equivalents		$289,813,000		$243,462,000
Accounts receivable:				
Securities sold	$0		$42,467,000	
Accrued investment income	15,623,000		15,589,000	
Employee and employer contributions	4,101,000		4,508,000	
Investment sales and other	62,450,000		0	
Total accounts receivable		82,174,000		62,564,000
Investments:				
Equities	$4,929,908,000		$4,793,665,000	
Absolute return	889,585,000		766,986,000	
Opportunities	0		176,176,000	
Fixed income investments	1,808,451,000		1,600,309,000	
Real assets	1,462,159,000		1,060,388,000	
Securities lending collateral	365,734,000		352,234,000	
Total investments at market value		9,455,837,000		8,749,758,000
Other assets		2,923,000		501,000
Total assets		$9,830,747,000		$9,056,285,000
Less accounts payable:				
Accounts payable and other liabilities	-$12,592,000		-$28,026,000	
Investment trades and warrants payable	-200,484,000		-91,800,000	
Securities lending liability	-365,734,000		-352,234,000	
Total accounts payable		-$578,810,000		-$472,060,000
Net assets at market value		$9,251,937,000		$8,584,225,000
Net assets at actuarial value		$9,123,004,000		$8,665,226,000
Net assets at valuation value		$9,073,178,000		$8,641,779,000

Note: Results may be slightly off due to rounding.

EXHIBIT F

Actuarial Balance Sheet

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

Second, we determine how this liability will be met. These actuarial "assets" include the net amount of assets already accumulated by the Plan, the present value of future member contributions, the present value of future employer Normal Cost contributions, and the present value of future employer amortization payments.

Actuarial Balance Sheet (Dollar Amounts in Thousands)

Assets	Basic	Cola	Total
1. Total valuation assets			
a. Valuation value assets	$6,109,517	$2,963,661	$9,073,178
b. Balance of transfer to offset member COLA rate	0	17,178	17,178
c. Adjustment to 1a. for surplus/(deficit) for withdrawn employer (preliminary)[1]	-44,863	0	-44,863
d. Contingency Reserve	77,511	0	77,511
2. Present value of future contributions by members	562,841	181,425	744,266
3. Present value of future employer contributions for:			
a. Entry age Normal Cost	1,035,672	195,461	1,231,133
b. Unfunded actuarial accrued liability	1,722,274	367,985	2,090,259
4. Total current and future assets	$9,462,952	$3,725,710	$13,188,662
Liabilities			
5. Present value of retirement allowances payable to present retired members	$4,071,543	$2,403,687	$6,475,230
6. Present value of retirement allowances to be granted			
a. Active members	5,033,383	1,243,315	6,276,698
b. Inactive members with vested rights	325,378	78,708	404,086
7. Non-valuation reserves	0	0	0
8. Surplus/(deficit) for withdrawn employer (preliminary)[1]	-44,863	0	-44,863
9. Contingency Reserve	77,511	0	77,511
10. Total liabilities	$9,462,952	$3,725,710	$13,188,662

[1] *Based on the latest estimate available as of June 30, 2017 for Florin Fire adjusted to June 30, 2018 with interest at the assumed rate of investment return and with contributions made during 2017/2018.*

Note: Results may be slightly off due to rounding.

EXHIBIT G

Summary of Reported Asset Information as of June 30, 2018

Reserves	
Included in Valuation Value of Assets	
Employee reserve	$843,779,930
Employer reserve	2,826,540,136
Retiree reserve	5,358,078,050
Retiree death benefit reserve	17,095,066
Subtotal: Preliminary Valuation Value of Assets[1]	$9,045,493,182
Not Included in Valuation Value of Assets	
Contingency Reserve	$77,510,868
Subtotal: Actuarial Value of Assets	$9,123,004,050
Market stabilization reserve	128,932,950
Total Market Value of Assets	$9,251,937,000

(1) *Please note that the Final Valuation Value of Assets (i.e. $9,073,178,300) as shown on page 6 is calculated by taking the Preliminary Valuation Value of Assets and adjusting for the balance of transfer to offset member COLA rate and for the surplus/(deficit) for the withdrawn employer.*

EXHIBIT G

Summary of Reported Asset Information as of June 30, 2018 (Continued) – Change in Reserves

	Balance at 06/30/2017	Interest Credited	Contributions	Benefits	Transfers	Balance at 06/30/2018
Employee Reserve	$796,936,750	$18,851,109	$99,905,678	$(2,954,402)	$(68,959,205)	$843,779,930
Employer Reserve	2,800,542,201	197,408,849	201,631,134	(248,420)	(372,793,628)	2,826,540,136
Retiree Reserve	5,004,343,153	376,415,025	0	(464,432,961)	441,752,833	5,358,078,050
Death Benefit Reserve	16,551,611	1,216,248	0	(672,793)	0	17,095,066
Subtotal	$8,618,373,715	$593,891,231	$301,536,812	$(468,308,576)	$0	$9,045,493,182
Contingency Reserve	$46,852,270	$30,658,598	$0	$0	$0	$77,510,868
Subtotal	$46,852,270	$30,658,598	$0	$0	$0	$77,510,868
Total Allocated Reserves	$8,665,225,985	$624,549,829	$301,536,812	$(468,308,576)	$0	$9,123,004,050
Market Stabilization Reserve	$(81,000,985)	$209,933,935	$0	$0	$0	$128,932,950
Net Market Value of Assets	$8,584,225,000	$834,483,764	$301,536,812	$(468,308,576)	$0	$9,251,937,000

Note: Results may be slightly off due to rounding.

EXHIBIT G

Summary of Reported Asset Information as of June 30, 2018 (Continued) – Summary of Earnings

	Per Excess Earnings Policy
Earnings from July 1, 2017 to June 30, 2018	$834,483,764
Contingency Reserve[1]	(30,658,598)
Subtotal:	$803,825,166
Amounts Credited for:	
Market Stabilization Reserve	$(209,933,935)
Regular Interest Crediting	(593,891,231)
Subtotal	$(803,825,166)
Net Excess Earnings	$0
Amount Credited Under Excess Earnings Policy for:	
Contingency Reserve[1]	$0
Board Provided Supplemental Benefits	0
Amount Over Reserved Benefits	0
Employer Reserves	0
Member Future COLA Contribution Offset	0
Subtotal	$0
Remaining Excess Earnings	$0

(1) *As a result of interest crediting, $30,658,598 was added to the Contingency Reserve on June 30, 2018. As there was a balance of $46,852,270 in the Contingency Reserve as of June 30, 2017, the balance in that reserve as of June 30, 2018 after adding the $30,658,598 is $77,510,868.*

EXHIBIT H

Development of Unfunded/(Overfunded) Actuarial Accrued Liability for Year Ended June 30, 2018

1.	Unfunded actuarial accrued liability at beginning of year		$2,015,772,000
2.	Total Normal Cost		242,388,000
3.	Expected employer and member contributions		-394,561,000
4.	Interest		136,273,000
5.	Expected unfunded actuarial accrued liability		$1,999,872,000
6.	Actuarial (gain)/loss due to all changes:		
	(a) Investment return less than expected[1]	$6,240,000	
	(b) Actual contributions less than expected[2]	90,957,000	
	(c) Salary increases less than expected[3]	-40,404,000	
	(d) Other experience loss[3],[4]	33,594,000	
	(e) Total changes		$90,387,000
7.	Unfunded actuarial accrued liability at end of year		$2,090,259,000

(1) *Rio Linda Elverta Recreation and Parks District has only been allocated the investment experience established on or after July 1, 2017. Details in Section 4, Appendix B.*

(2) *Due to the one-year lag in implementation of the contribution rates determined in the June 30, 2017 valuation.*

(3) *The sum of 6(c) through 6(d) is equal to the net gain of $6.8 million shown in Section 2, Chart 9.*

(4) *The $33.6 million was 0.3% of the $11,213 million in total actuarial accrued liability for the entire System.*

EXHIBIT I

Section 415 Limitations

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

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

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

Benefits for members in non-CalPEPRA tiers in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m).

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

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

EXHIBIT J

Definitions of Pension Terms

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

Assumptions or Actuarial Assumptions:	The estimates on which the cost of the Plan is calculated including: (a) <u>Investment return</u> — the rate of investment yield that the Plan will earn over the long-term future; (b) <u>Mortality rates</u> — the death rates of employees and pensioners; life expectancy is based on these rates; (c) <u>Retirement rates</u> — the rate or probability of retirement at a given age; and (d) <u>Turnover rates</u> — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.
Normal Cost:	The amount of contributions required to fund the level cost allocated to the current year of service.
Actuarial Accrued Liability For Actives:	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial Accrued Liability For Pensioners:	The single sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Unfunded/(Overfunded) Actuarial Accrued Liability:	The extent to which the actuarial accrued liability of the Plan exceeds (or is exceeded by) the assets of the Plan. There is a wide range of approaches to recognizing the unfunded or overfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

Amortization of the Unfunded/ (Overfunded) Actuarial Accrued Liability: Payments made over a period of years equal in value to the Plan's unfunded or overfunded actuarial accrued liability.

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

EXHIBIT I

Summary of Actuarial Valuation Results

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

1.	Retired members as of the valuation date (including 1,620 beneficiaries in pay status)		11,883
2.	Members inactive during year ended June 30, 2018 with vested rights		3,509
3.	Members active during the year ended June 30, 2018		12,677

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

1.	Normal Cost		$246,898
2.	Present value of future benefits		13,156,014
3.	Present value of future Normal Costs		1,992,577
4.	Actuarial accrued liability[1]		11,163,437
	Retired members and beneficiaries	$6,475,230	
	Inactive members with vested rights	404,086	
	Active members	4,284,121	
5.	Valuation value of assets[1] ($9,251,937 at market value as reported by Retirement System)		$9,073,178
6.	Unfunded actuarial accrued liability		$2,090,259

[1] *Excludes non-valuation reserves and designations.*

EXHIBIT I (continued)

Summary of Actuarial Valuation Results

The determination of the recommended average employer contribution before the three-year phase-in is as follows (amounts in 000s):	Dollar Amount	% of Payroll
1. Total Normal Cost	$246,898	24.49%
2. Expected employee contributions	-118,620	-11.77%
3. Employer Normal Cost: (1) + (2)	$128,278	12.72%
4. Amortization of unfunded actuarial accrued liability	162,053	16.08%
5. Total recommended average employer contribution: (3) + (4)	$290,331	28.80%
6. Projected compensation	$1,007,815	

EXHIBIT II

Schedule of Employer Contributions

Plan Year Ended June 30	Annual Required Contributions[1]	Actual Contributions[1]	Percentage Contributed
2009	$177,011,005	$177,011,005	100.0%
2010	167,141,893	167,141,893	100.0%
2011	182,920,751	182,920,751	100.0%
2012	179,098,469	179,098,469	100.0%
2013	189,663,720	189,663,720	100.0%
2014	210,503,324	210,503,324	100.0%
2015	222,959,365	222,959,365	100.0%
2016	209,020,162	209,020,162	100.0%
2017	203,928,296	203,928,296	100.0%
2018	201,631,134	201,631,134	100.0%

(1) *Includes contributions made by Florin Fire, as applicable.*

EXHIBIT III

Actuarial Assumptions/Methods

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, 2013 through June 30, 2016 Actuarial Experience Study report dated May 8, 2017.
Economic Assumptions	
Net Investment Return:	7.00%; net of administration and investment expenses.
Employee Contribution Crediting Rate[1]:	3.00% (assumed rate of inflation); compounded semi-annually.
Cost-of-Living Adjustment for Retirees:	Miscellaneous and Safety Tier 1 benefits are assumed to increase at 3.0% per year. Miscellaneous Tier 3, Tier 4 and Tier 5 and Safety Tier 2, Tier 3 and Tier 4 benefits are assumed to increase at 2.0% per year. Miscellaneous Tier 2 receive no COLA increases.
Payroll Growth	Inflation of 3.00% per year plus real "across the board" salary increases of 0.25% per year.
Increase in Section 7522.10 Compensation Limit	Increase of 3.00% per year from the valuation date.

[1] *Current policy is to credit the member contribution account with interest up to the current 5-year Treasury rate, if such earnings are available. However, the difference in earnings between the 5-year Treasury rate and the target crediting rate will be applied to the other valuation reserves so that the overall valuation reserve target crediting rate is maintained at 7.00%.*

Salary Increases:

Annual Rate of Compensation Increase (%)

Inflation: 3.00%, plus "across the board" salary increases of 0.25% per year; plus the following merit and promotional increases.

Years of Service	Miscellaneous	Safety
0-1	5.00	7.50
1-2	4.75	7.25
2-3	4.50	6.50
3-4	4.00	5.50
4-5	3.50	5.00
5-6	2.75	4.25
6-7	2.25	3.75
7-8	2.00	3.25
8-9	1.75	3.00
9-10	1.50	2.50
10 or more	1.25	2.00

Demographic Assumptions

Post – Retirement Mortality Rates:

Healthy:	For Miscellaneous Members and Beneficiaries: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected generationally with the two-dimensional scale MP-2016 set forward one year for males and no age adjustment for females
	For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected generationally with the two-dimensional scale MP-2016 set back four years for males and females
Disabled:	For Miscellaneous Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected generationally with the two-dimensional scale MP-2016 set forward seven years for males and set forward eight years for females
	For Safety members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected generationally with the two-dimensional scale MP-2016 set forward four years for males and females
	The RP-2014 tables and adjustments as shown above reflect the mortality experience, based on a review of mortality experience in the June 30, 2016 Actuarial Experience Study. The generational projection is a provision for future mortality improvement.
Member Contribution Rates:	For Miscellaneous members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP-2016 set forward one year for males and no age adjustment for females weighted 40% male and 60% female
	For Safety members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected generationally with the two-dimensional scale MP-2016 set back four years for males and females weighted 75% male and 25% female

Termination Rates before Retirement:

	Rate (%) Mortality			
	Miscellaneous		Safety	
Age	Male	Female	Male	Female
25	0.03	0.01	0.03	0.01
30	0.03	0.01	0.03	0.01
35	0.03	0.02	0.03	0.02
40	0.04	0.02	0.04	0.02
45	0.06	0.04	0.06	0.04
50	0.10	0.06	0.10	0.06
55	0.17	0.10	0.17	0.10
60	0.28	0.15	0.28	0.15
65	0.49	0.22	0.49	0.22

Note that the generational projections are not reflected in the above mortality rates.

All Miscellaneous pre-retirement deaths are assumed to be non-duty. For Safety, 50% of pre-retirement deaths are assumed to be non-duty and the rest are assumed to be duty.

Termination Rates before Retirement (continued):

	Rate (%) Disability	
Age	Miscellaneous[1]	Safety[2]
20	0.00	0.10
25	0.01	0.10
30	0.03	0.16
35	0.05	0.32
40	0.08	0.43
45	0.13	0.51
50	0.21	0.76
55	0.34	0.96
60	0.46	1.30

(1) 30% of Miscellaneous disabilities are assumed to be duty disabilities. The other 70% are assumed to be non-duty disabilities.

(2) 90% of Safety disabilities are assumed to be duty disabilities. The other 10% are assumed to be non-duty disabilities.

Termination Rates before Retirement (continued):

Rate (%)

Withdrawal (< 5 Years of Service)[1]

Years of Service	Miscellaneous	Safety
0 – 1	13.00	6.00
1 – 2	8.00	5.00
2 – 3	7.00	4.00
3 – 4	6.00	3.00
4 – 5	5.50	3.00

Withdrawal (5+ Years of Service)[2]

Age	Miscellaneous	Safety
20	5.50	2.50
25	5.50	2.50
30	5.20	2.20
35	4.40	1.70
40	3.40	1.35
45	2.70	1.10
50	2.44	1.00
55	2.34	1.00
60	2.24	1.00
65	1.48	0.00

(1) 65% of the Miscellaneous members and 50% of the Safety members are assumed to elect a refund of contribution balance while the remaining 35% and 50% of Miscellaneous and Safety members, respectively, are assumed to elect a deferred retirement benefit. No withdrawal is assumed after a member is assumed to retire.

(2) 40% of the Miscellaneous members and 15% of the Safety members are assumed to elect a refund of contribution balance while the remaining 60% and 85% of Miscellaneous and Safety members, respectively, are assumed to elect a deferred retirement benefit. No withdrawal is assumed after a member is assumed to retire.

Retirement Rates:

Age	Rate (%) Miscellaneous Tier 1	Miscellaneous Tiers 2 & 3	Miscellaneous Tier 4	Miscellaneous Tier 5	Safety Tiers 1 & 2	Safety Tier 3	Safety Tier 4
45	0.00	0.00	0.00	0.00	2.00	1.50	0.00
46	0.00	0.00	0.00	0.00	2.00	1.50	0.00
47	0.00	0.00	0.00	0.00	2.00	1.50	0.00
48	0.00	0.00	0.00	0.00	2.00	1.50	0.00
49	0.00	0.00	0.00	0.00	5.00	4.00	0.00
50	6.00	2.00	2.00	0.00	22.00	10.00	15.00
51	4.50	2.00	2.00	0.00	16.00	12.00	10.50
52	4.50	2.00	2.00	4.00	16.00	14.00	12.00
53	4.50	3.00	2.00	1.50	20.00	16.00	14.00
54	5.50	4.00	3.00	2.50	20.00	18.00	15.50
55	12.00	6.00	4.00	3.50	20.00	50.00	40.00
56	18.00	6.00	5.00	4.50	25.00	25.00	25.00
57	18.00	8.00	6.00	5.50	25.00	25.00	25.00
58	18.00	10.00	7.00	6.50	25.00	25.00	25.00
59	20.00	12.00	8.00	7.50	30.00	30.00	25.00
60	28.00	12.00	9.00	8.50	45.00	45.00	45.00
61	35.00	14.00	10.00	9.50	55.00	55.00	55.00
62	35.00	25.00	18.00	17.00	70.00	70.00	70.00
63	35.00	25.00	16.00	15.00	70.00	70.00	70.00
64	35.00	30.00	20.00	19.00	70.00	70.00	70.00
65	35.00	35.00	25.00	24.00	100.00	100.00	100.00
66	40.00	40.00	20.00	20.00	100.00	100.00	100.00
67	40.00	40.00	20.00	20.00	100.00	100.00	100.00
68	50.00	50.00	30.00	30.00	100.00	100.00	100.00
69	60.00	60.00	40.00	40.00	100.00	100.00	100.00
70	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Retirement Age and Benefit for Deferred Vested Members:	For deferred vested members, we make the following retirement assumption: Miscellaneous Age: 59 Safety Age: 53 We assume that 35% of future Miscellaneous and 45% of future Safety deferred vested members will continue to work for a reciprocal employer. For reciprocals, we assume 4.50% and 5.25% compensation increases per annum, respectively.
Future Benefit Accruals:	1.0 year of service per year for the full-time employees. Continuation of current partial service accrual for part-time employees.
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:	All active members of SCERS as of the valuation date.
Form of Payment:	All members are assumed to elect the unmodified option at retirement.
Percent Married:	80% of male members; 55% of female members.
Age of Spouse:	Female spouses are 3 years younger than their spouses. Male spouses are 2 years older than their spouses.
Service from Unused Sick Leave Conversion:	The following assumptions for service converted from unused sick leave as a percentage of service at retirement are used: Service Retirements: Miscellaneous: 1.50% Safety: 2.25% Disability Retirements: Miscellaneous: 0.25% Safety: 0.25% Pursuant to Section 31641.01, the cost of this benefit will be charged only to employers and will not affect member contribution rates.

Actuarial Methods

Actuarial Value of Assets:	The market value of assets less unrecognized returns from the last few years starting July 1, 2008. Unrecognized return is equal to the difference between actual and expected returns on a market value basis and is recognized over a seven-year period. The deferred return is further adjusted, if necessary, so that the actuarial value of assets will stay within 30% of the market value of assets. Deferred gains and losses as of June 30, 2013 have been combined and will be recognized in equal amounts over a six-year period starting July 1, 2013.
Valuation Value of Assets:	Actuarial value of assets reduced by the value of the non-valuation reserves and designations.
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age at the member's hire date. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percentage of compensation.
Amortization Policy:	The UAAL established as a result of the Early Retirement Incentive Program for LEMA members is amortized over a 10-year period beginning June 30, 2010. The balance of the UAAL as of June 30, 2012 shall be amortized separately from any future changes in UAAL over a period of 23 years from June 30, 2012. Any new UAAL as a result of actuarial gains or losses identified in the annual valuation as of June 30 will be amortized over a period of 20 years. Any new UAAL as a result of change in actuarial assumptions or methods will be amortized over a period of 20 years. The change in UAAL as a result of any plan amendments will be amortized over a period of 15 years and the change in UAAL resulting from retirement incentive programs will be amortized over a period of up to 5 years.
Changes in Actuarial Assumptions	None.

EXHIBIT IV
Summary of Plan Provisions

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

Membership Eligibility:	Membership with SCERS usually begins with the employment by the County or member District as a permanent full-time or part-time employee as provided in the County Salary Resolution or the District's Salary Resolution.
Miscellaneous Tier 1	All Miscellaneous members hired prior to September 27, 1981.
Miscellaneous Tier 2 and Tier 3	All Miscellaneous members hired on or after September 27, 1981. Membership into Tier 2 or Tier 3 is determined by date of hire and by bargaining unit.
Miscellaneous Tier 4	All Miscellaneous members hired on or after January 1, 2012 as adopted by the County. Membership into Tier 4 is determined by date of hire.
Miscellaneous Tier 5	All Miscellaneous members hired on or after January 1, 2013.
Safety Tier 1 and Tier 2	Membership into Tier 1 or Tier 2 for Safety employee is determined by date of hire and by bargaining unit.
Safety Tier 3	All Safety members hired on or after January 1, 2012 as adopted by the County. Membership into Tier 3 is determined by date of hire.
Safety Tier 4	All Safety members hired on or after January 1, 2013.
Final Compensation for Benefit Determination:	
Miscellaneous and Safety Tier 1	Highest consecutive 1 year (12 months) of compensation earnable (§31462.1) (FAS1)
Miscellaneous Tier 2, Tier 3, and Tier 4 and Safety Tier 2 and Tier 3	Highest consecutive 3 years (36 months) of compensation earnable. (§31462) (FAS3)
Miscellaneous Tier 5 and Safety Tier 4	Highest consecutive 3 years (36 months) of pensionable compensation. (§7522.10(c), §7522.32 and §7522.34) (FAS3)

Service:	Years of service. (Yrs)
Service Retirement Eligibility:	
Miscellaneous	
Tiers 1, 2, 3 and 4	Age 50 with 10 years of service, or age 70 regardless of service, or after 30 years of service, regardless of age (§31672).
Tier 5	Age 52 with 5 years of service, or age 70 regardless of service (§7522.20(a)).
Safety	
Tiers 1, 2 and 3	Age 50 with 10 years of service, or after 20 years of Safety service, regardless of age (§31663.25).
Tier 4	Age 50 with 5 years of service, or age 70 regardless of service (§7522.25(d)).

Benefit Formula:

Miscellaneous Plans	Retirement Age	Benefit Formula
Miscellaneous Tier 1 (§31676.14)	50	(1.48%xFAS1 – 1/3x1.48%x$350x12)xYrs
	55	(1.95%xFAS1 – 1/3x1.95%x$350x12)xYrs
	60	(2.44%xFAS1 – 1/3x2.44%x$350x12)xYrs
	62	(2.61%xFAS1 – 1/3x2.61%x$350x12)xYrs
	65 or later	(2.61%xFAS1 – 1/3x2.61%x$350x12)xYrs
Miscellaneous Tier 2 and Tier 3	50	(1.48%xFAS3 – 1/3x1.48%x$350x12)xYrs
(§31676.14)	55	(1.95%xFAS3 – 1/3x1.95%x$350x12)xYrs
	60	(2.44%xFAS3 – 1/3x2.44%x$350x12)xYrs
	62	(2.61%xFAS3 – 1/3x2.61%x$350x12)xYrs
	65 or later	(2.61%xFAS3 – 1/3x2.61%x$350x12)xYrs

	Retirement Age	Benefit Formula
Miscellaneous Tier 4 (§31676.1)	50	(1.18%xFAS3 – 1/3x1.18%x$350x12)xYrs
	55	(1.49%xFAS3 – 1/3x1.49%x$350x12)xYrs
	60	(1.92%xFAS3 – 1/3x1.92%x$350x12)xYrs
	62	(2.09%xFAS3 – 1/3x2.09%x$350x12)xYrs
	65 or later	(2.43%xFAS3 – 1/3x2.43%x$350x12)xYrs
Miscellaneous Tier 5	52	1.00%xFAS3xYrs
(§7522.20(a))	55	1.30%xFAS3xYrs
	60	1.80%xFAS3xYrs
	62	2.00%xFAS3xYrs
	65	2.30%xFAS3xYrs
	67 or later	2.50%xFAS3xYrs

Safety Plans	**Retirement Age**	**Benefit Formula**
Safety Tier 1 (§31664.1)	50	(3.00%xFAS1 – 1/3x3.00%x$350x12)xYrs
	55	(3.00%xFAS1 – 1/3x3.00%.x$350x12)xYrs
	60 or later	(3.00%xFAS1 – 1/3x3.00%x.$350x12)xYrs
Safety Tier 2 (§31664.1)	50	(3.00%xFAS3 – 1/3x3.00%x$350x12)xYrs
	55	(3.00%xFAS3 – 1/3x3.00%x$350x12)xYrs
	60 or later	(3.00%xFAS3 – 1/3x3.00%x$350x12)xYrs
Safety Tier 3 (§31664.2)	50	(2.29%xFAS3 – 1/3x2.29%x$350x12)xYrs
	55	(3.00%xFAS3 – 1/3x3.00%x$350x12)xYrs
	60 or later	(3.00%xFAS3 – 1/3x3.00%x$350x12)xYrs

	Retirement Age	**Benefit Formula**
Safety Tier 4 (§7522.25(d))	50	2.00%xFAS3xYrs
	55	2.50%xFAS3xYrs
	57 or later	2.70%xFAS3xYrs

Maximum Benefit:

Miscellaneous Tier 1, Tier 2, Tier 3 and Tier 4 and Safety Tier 1, Tier 2 and Tier 3	100% of Highest Average Compensation (§31676.14, §31676.1, §31664.1, §31664.2)
Miscellaneous Tier 5 and Safety Tier 4	None

Additional Benefit Information:

- For Miscellaneous members of the following Districts, benefits accrued before June 29, 2003 will continue to be calculated using §31676.1.
  1. Fair Oaks Cemetery District
  2. Galt Arno Cemetery District

Non-duty Disability:

Miscellaneous and Safety Tier 1	
Eligibility	Five years of service (§31720).
Benefit Formula	1.5% per year of service for Miscellaneous Tier 1 and 1.8% per year of service for Safety Tier 1. If the benefit does not exceed one-third of Final Compensation, the service is projected to 65 for Miscellaneous Tier 1 and 55 for Safety Tier 1, but the total benefit cannot be more than one-third of Final Compensation (§31727 and §31727.2). The Service Retirement benefit is payable, if greater.
Miscellaneous Tier 2, Tier 3, Tier 4, and Tier 5 and Safety Tier 2, Tier 3 and Tier 4	
Eligibility	Five years of service (§31720).
Benefit Formula	20% of Final Compensation for the first five years of service plus 2% for each year of additional service for a maximum of 40% of Final Compensation (§31727.7). The Service Retirement benefit is payable, if greater.

Line-of-Duty Disability:

All Members	
Eligibility	No age or service requirements (§31720).
Benefit Formula	50% of the Final Compensation or 100% of Service Retirement benefit, if greater (§31727.4).

Pre-Retirement Death:	
All Members	
Eligibility	No age or service requirements.
Benefit	Refund of employee contributions with interest plus one month's compensation for each year of service to a maximum of six month's compensation (§31781).
Death in Line-of-Duty	50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor children (§31787).
	OR
Vested Members	
Eligibility	Five years of service.
Benefit	60% of the greater of Service or Non-Duty Disability Retirement benefit payable to surviving eligible spouse (§31765.1, §31781.1), in lieu of above.
Death in Line-of-Duty	50% of Final compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor children (§31787).
Death After Retirement:	
All Members	
Service Retirement or Non-Duty Disability	60% of member's unmodified allowance continued to eligible spouse (§31760.1). An additional $4,000 lump sum benefit is payable to member's beneficiary (§31789.3). An eligible spouse is a surviving spouse who was married to the member at least one year prior to the date of retirement (§31760.1).
Line-of-Duty Disability	100% of member's allowance continued to eligible spouse (§31786). An additional $4,000 lump sum benefit is payable to member's beneficiary (§31789.3). An eligible spouse is a surviving spouse who was married to the member at least one year prior to the date of retirement (§31760.1).

Withdrawal Benefits:	
Less than Five Years of Service	Refund of accumulated employee contributions with interest, or earned benefit at age 70 (§31628). Effective January 1, 2003, a member may also elect to leave their contributions on deposit in the retirement fund (§31629.5).
Five or More Years of Service	If contributions left on deposit, entitled to earned benefits commencing at any time after eligible to retire (§31700).
Post-retirement Cost-of-Living Benefits:	
Miscellaneous and Safety Tier 1	Future changes based on Consumer Price Index to a maximum of 4% per year, excess "banked." (§31870.3)
Miscellaneous Tier 3, Tier 4 and Tier 5 and Safety Tier 2, Tier 3 and Tier 4	Future changes based on Consumer Price Index to a maximum of 2% per year, excess "banked." (§31870)

Note: There is no cost-of-living benefit for Miscellaneous Tier 2.

Member Contributions:	Please refer to Appendix A for the specific rates.
Miscellaneous Tier 1	
Basic	Provide for an average annuity at age 55 equal to 1/240 of FAS1. (§31621.3)
Cost-of-Living	Provide for one-half of future Cost-of-Living costs.
Miscellaneous Tier 2	
Basic	Provide for an average annuity at age 55 equal to 1/240 of FAS3. (§31621.3)
Cost-of-Living	None.
Miscellaneous Tier 3	
Basic	Provide for an average annuity at age 55 equal to 1/240 of FAS3. (§31621.3)
Cost-of-Living	Provide for one-half of future Cost-of-Living costs.
Miscellaneous Tier 4	
Basic	Provide for an average annuity at age 60 equal to 1/120 of FAS3. (§31621)
Cost-of-Living	Provide for one-half of future Cost-of-Living costs.
Miscellaneous Tier 5	50% of the total Normal Cost rate.
Safety Tier 1, Tier 2 and Tier 3	
Basic	Provide for an average annuity at age 50 equal to 1/100 of FAS1 (FAS3 for Tier 2 and Tier 3). (§31639.25)
Cost-of-Living	Provide for one-half of future Cost-of-Living costs.
Safety Tier 4	50% of the total Normal Cost rate.

Notes: The above rates are known as full rates. For members paying half rates prior to the June 30, 2015 valuation, their rates should be one-half of the rates provided in this report. Note that effective with the June 30, 2015 valuation, all members are reported as paying at least full-rate. In addition, for members entering the plan on or after January 1, 1975, they pay a rate based on a single entry age (§31621.11 and §31639.26).

Starting in 2014/2015, most County members in the legacy tiers agreed to contribute either 1/3, 1/4, or 1/5 of the difference between the employee's then current Normal Cost and 50% of the total Normal Cost rate. Those members agreed to contribute an additional 1/3, 1/4, or 1/5 of the difference in the Normal Cost rate in 2015/2016, 2016/2017 and 2017/2018.

For Rep Unit 26 Miscellaneous members, the member rates they started to contribute in 2015/2016 were 1% of payroll higher than the rates they paid in 2014/2015. In developing their rates for 2016/2017, we added an additional 2% of payroll to the rates for 2015/2016.

For Orangevale Recreation and Park District members, the member rates they started to contribute in 2015/2016 were 1/2 of the difference between the employee's then current Normal Cost and 50% of the total Normal Cost rate. Those members agreed to contribute an additional 1/2 of the difference in the Normal Cost rate in 2016/2017.

For Rep Unit 16 Miscellaneous members, the member rates effective January 1, 2018 are 1/2 of the difference between the employee's then current Normal Cost and 50% of the total Normal Cost rate. Those members have agreed to contribute an additional 1/4 of the difference in the Normal Cost rate in 2018/2019 and 2019/2020.

For Rep Unit 25 Miscellaneous members, the member rates effective January 1, 2018 are 2% of payroll higher than the employees' then current Normal Cost. These members have agreed to contribute an additional 2% of payroll in 2018/2019 and to contribute 50% of the total Normal Cost rate in 2019/2020.

Effective in 2019/2020, all of the above members who have previously agreed to contribute a higher Normal Cost rate are paying 50% of the total Normal Cost rate.

Other Information: Safety Tier 1, Tier 2 and Tier 3 members with 30 or more years of service are exempt from paying member contributions. The same applies for Miscellaneous members hired on or before March 7, 1973.

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

Appendix A
Member Contribution Rates

Comparison of Member Rate[1] from June 30, 2017 and June 30, 2018 Valuation

Note: Contribution rates for most Miscellaneous County members and all Safety County members in the legacy tiers who have agreed to contribute an additional Normal Cost before and after the gross-up for the integration with Social Security can be found in Appendix F in Subsections B and C, respectively.

	June 30, 2018			June 30, 2017			
Miscellaneous	Basic	COLA	Total	Basic	COLA	Total	Increase/(Decrease) in Rate
Tier 1	4.05%	1.86%	5.91%	4.05%	1.90%	5.95%	-0.04%
Tier 2	3.87%	0.00%	3.87%	3.87%	0.00%	3.87%	0.00%
Tier 3	3.87%	1.67%	5.54%	3.87%	1.68%	5.55%	-0.01%
Tier 4	6.82%	1.55%	8.37%	6.82%	1.55%	8.37%	0.00%
Tier 5	7.80%	1.65%	9.45%	7.71%	1.66%	9.37%	0.08%

Safety	Basic	COLA	Total	Basic	COLA	Total	Increase/(Decrease) in Rate
Tier 1	11.15%	8.34%	19.49%	11.15%	8.05%	19.20%	0.29%
Tier 2	10.60%	4.17%	14.77%	10.60%	4.15%	14.75%	0.02%
Tier 3	10.60%	3.73%	14.33%	10.60%	3.73%	14.33%	0.00%
Tier 4	11.84%	3.25%	15.09%	11.80%	3.25%	15.05%	0.04%

(1) *Members who enter on or after 1/1/1975 contribute as indicated above and all others contribute the rate at their respective entry ages.*

Appendix A

Member Contribution Rates (Continued)

Miscellaneous Members' Contribution Rates from the June 30, 2018 Actuarial Valuation

	Basic Only						COLA Only						Total					
	First $350 of Monthly Salary			Salary in Excess of $350			First $350 of Monthly Salary			Salary in Excess of $350			First $350 of Monthly Salary			Salary in Excess of $350		
Entry Age	Tier 1	Tier 2 & Tier 3	Tier 4	Tier 1	Tier 2 & Tier 3	Tier 4	Tier 1	Tier 3	Tier 4	Tier 1	Tier 3	Tier 4	Tier 1	Tier 3	Tier 4	Tier 1	Tier 3	Tier 4
16	2.07%			3.10%			0.95%			1.42%			3.02%			4.52%		
17	2.10%			3.15%			0.97%			1.45%			3.07%			4.60%		
18	2.13%			3.19%			0.98%			1.47%			3.11%			4.66%		
19	2.16%			3.24%			0.99%			1.49%			3.15%			4.73%		
20	2.19%			3.28%			1.01%			1.51%			3.20%			4.79%		
21	2.22%			3.33%			1.02%			1.53%			3.24%			4.86%		
22	2.25%			3.38%			1.03%			1.55%			3.28%			4.93%		
23	2.28%			3.42%			1.05%			1.57%			3.33%			4.99%		
24	2.31%			3.47%			1.06%			1.59%			3.37%			5.06%		
25	2.35%			3.52%			1.08%			1.62%			3.43%			5.14%		
26	2.38%			3.57%			1.09%			1.64%			3.47%			5.21%		
27	2.41%			3.62%			1.11%			1.66%			3.52%			5.28%		
28	2.45%			3.67%			1.13%			1.69%			3.58%			5.36%		
29	2.48%			3.72%			1.14%			1.71%			3.62%			5.43%		
30	2.51%			3.77%			1.15%			1.73%			3.66%			5.50%		
31	2.55%			3.82%			1.17%			1.75%			3.72%			5.57%		
32	2.59%			3.88%			1.19%			1.78%			3.78%			5.66%		
33	2.62%			3.93%			1.21%			1.81%			3.83%			5.74%		
34	2.66%			3.99%			1.22%			1.83%			3.88%			5.82%		
35	2.70%	2.58%	4.55%	4.05%	3.87%	6.82%	1.24%	1.11%	1.03%	1.86%	1.67%	1.55%	3.94%	3.69%	5.58%	5.91%	5.54%	8.37%
36	2.74%			4.11%			1.26%			1.89%			4.00%			6.00%		
37	2.78%			4.17%			1.28%			1.92%			4.06%			6.09%		
38	2.82%			4.23%			1.29%			1.94%			4.11%			6.17%		
39	2.86%			4.29%			1.31%			1.97%			4.17%			6.26%		
40	2.91%			4.36%			1.33%			2.00%			4.24%			6.36%		
41	2.95%			4.42%			1.35%			2.03%			4.30%			6.45%		
42	2.99%			4.49%			1.37%			2.06%			4.36%			6.55%		
43	3.05%			4.57%			1.40%			2.10%			4.45%			6.67%		
44	3.10%			4.65%			1.43%			2.14%			4.53%			6.79%		
45	3.15%			4.72%			1.45%			2.17%			4.60%			6.89%		
46	3.19%			4.79%			1.47%			2.20%			4.66%			6.99%		
47	3.23%			4.85%			1.49%			2.23%			4.72%			7.08%		
48	3.27%			4.91%			1.51%			2.26%			4.78%			7.17%		
49	3.31%			4.96%			1.52%			2.28%			4.83%			7.24%		
50	3.32%			4.98%			1.53%			2.29%			4.85%			7.27%		
51	3.32%			4.98%			1.53%			2.29%			4.85%			7.27%		

Appendix A
Member Contribution Rates (Continued)

Miscellaneous Members' Contribution Rates from the June 30, 2018 Actuarial Valuation

	Basic Only						COLA Only						Total					
	First $350 of Monthly Salary			Salary in Excess of $350			First $350 of Monthly Salary			Salary in Excess of $350			First $350 of Monthly Salary			Salary in Excess of $350		
Entry Age	Tier 1	Tier 2 & Tier 3	Tier 4	Tier 1	Tier 2 & Tier 3	Tier 4	Tier 1	Tier 3	Tier 4	Tier 1	Tier 3	Tier 4	Tier 1	Tier 3	Tier 4	Tier 1	Tier 3	Tier 4
52	3.31%			4.97%			1.52%			2.28%			4.83%			7.25%		
53	3.30%			4.95%			1.51%			2.27%			4.81%			7.22%		
54	3.28%			4.92%			1.51%			2.26%			4.79%			7.18%		
55	3.28%			4.92%			1.51%			2.26%			4.79%			7.18%		
56	3.28%			4.92%			1.51%			2.26%			4.79%			7.18%		
57	3.28%			4.92%			1.51%			2.26%			4.79%			7.18%		
58	3.28%			4.92%			1.51%			2.26%			4.79%			7.18%		
59 & Over	3.28%			4.92%			1.51%			2.26%			4.79%			7.18%		

Members who enter prior to 1/1/1975 contribute on the basis of their actual entry age and all others contribute on the basis of a single entry age of 35.

	Tier 5		
	All Eligible Pay[(1)]		
	Basic Only	COLA Only	Total
All members	7.80%	1.65%	9.45%

[(1)] *It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2018 is equal to $121,388 (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018 (reference: Section 7522.10(d)).*

Appendix A
Member Contribution Rates (Continued)

Miscellaneous Members' Contribution Rates from the June 30, 2018 Actuarial Valuation

Assumptions used in developing member contribution rates from the June 30, 2018 actuarial valuation

Interest:	7.00% per annum	
COLA:	Tier 1:	3.00%
	Tier 2:	0.00%
	Tier 3:	2.00%
	Tier 4:	2.00%
	Tier 5:	2.00%
Mortality:	Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP-2016 set forward one year for males and no age adjustment for females weighted 40% male and 60% female	
Salary increase:	Inflation (3.00%) + Across-the-Board Increase (0.25%) + Merit (See Exhibit III).	
COLA Loading Factor:	Tier 1[2]:	45.93%
	Tier 3[2]:	43.18%
	Tier 4[2]:	22.67%
	Tier 5:	21.15%
Non-Refundability factor:	Tier 1:	100.00%
	Tier 2:	100.00%
	Tier 3:	98.75%
	Tier 4:	96.81%
	Tier 5:	93.83%

(2) *Factors have been adjusted to reflect a reserve carried by the Board to reduce part of the COLA contributions.*

Appendix A

Member Contribution Rates (Continued)

Safety Members' Contribution Rates from the June 30, 2018 Actuarial Valuation

	Basic Only				COLA Only						Total					
	First $350 of Monthly Salary		Salary in Excess of $350		First $350 of Monthly Salary			Salary in Excess of $350			First $350 of Monthly Salary			Salary in Excess of $350		
Entry Age	Tier 1	Tier 2 & Tier 3	Tier 1	Tier 2 & Tier 3	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3
18	6.65%		9.97%		4.97%			7.46%			11.62%			17.43%		
19	6.71%		10.06%		5.02%			7.53%			11.73%			17.59%		
20	6.78%		10.17%		5.07%			7.61%			11.85%			17.78%		
21	6.85%		10.27%		5.13%			7.69%			11.98%			17.96%		
22	6.91%		10.37%		5.17%			7.76%			12.08%			18.13%		
23	6.99%		10.48%		5.23%			7.84%			12.22%			18.32%		
24	7.05%		10.58%		5.28%			7.92%			12.33%			18.50%		
25	7.13%		10.69%		5.33%			8.00%			12.46%			18.69%		
26	7.20%		10.80%		5.39%			8.08%			12.59%			18.88%		
27	7.28%		10.92%		5.45%			8.17%			12.73%			19.09%		
28	7.35%		11.03%		5.50%			8.25%			12.85%			19.28%		
29	7.43%	7.07%	11.15%	10.60%	5.56%	2.78%	2.49%	8.34%	4.17%	3.73%	12.99%	9.85%	9.56%	19.49%	14.77%	14.33%
30	7.51%		11.27%		5.62%			8.43%			13.13%			19.70%		
31	7.60%		11.40%		5.69%			8.53%			13.29%			19.93%		
32	7.69%		11.53%		5.75%			8.63%			13.44%			20.16%		
33	7.78%		11.67%		5.82%			8.73%			13.60%			20.40%		
34	7.87%		11.81%		5.89%			8.84%			13.76%			20.65%		
35	7.97%		11.96%		5.97%			8.95%			13.94%			20.91%		
36	8.08%		12.12%		6.05%			9.07%			14.13%			21.19%		
37	8.19%		12.28%		6.13%			9.19%			14.32%			21.47%		
38	8.31%		12.47%		6.22%			9.33%			14.53%			21.80%		
39	8.45%		12.67%		6.32%			9.48%			14.77%			22.15%		
40	8.55%		12.83%		6.40%			9.60%			14.95%			22.43%		
41	8.63%		12.95%		6.46%			9.69%			15.09%			22.64%		
42	8.71%		13.06%		6.51%			9.77%			15.22%			22.83%		
43	8.76%		13.14%		6.55%			9.83%			15.31%			22.97%		
44	8.79%		13.18%		6.57%			9.86%			15.36%			23.04%		
45	8.77%		13.16%		6.57%			9.85%			15.34%			23.01%		
46	8.73%		13.10%		6.53%			9.80%			15.26%			22.90%		
47	8.65%		12.97%		6.47%			9.71%			15.12%			22.68%		
48	8.51%		12.77%		6.37%			9.56%			14.88%			22.33%		
49 & Over	8.37%		12.55%		6.26%			9.39%			14.63%			21.94%		

Members who enter prior to 1/1/1975 contribute on the basis of their actual entry age and all others contribute on the basis of a single entry age of 29.

Appendix A
Member Contribution Rates (Continued)

Safety Members' Contribution Rates from the June 30, 2018 Actuarial Valuation

	Tier 4		
	All Eligible Pay[1]		
	Basic Only	COLA Only	Total
All members	11.84%	3.25%	15.09%

[1] *It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2018 is equal to $121,388 (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018 (reference: Section 7522.10(d)).*

<u>Assumptions used in developing member contribution rates from the June 30, 2018 actuarial valuation</u>

Interest:	7.00% per annum	
COLA:	Tier 1:	3.00%
	Tier 2:	2.00%
	Tier 3:	2.00%
	Tier 4:	2.00%
Mortality:	Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected generationally with the two-dimensional scale MP-2016 set back four years for males and females weighted 75% male and 25% female	
Salary increase:	Inflation (3.00%) + Across-the-Board Increase (0.25%) + Merit (See Exhibit III).	
COLA Loading Factor:	Tier 1[2]:	74.83%
	Tier 2[2]:	39.36%
	Tier 3[2]:	35.22%
	Tier 4:	27.45%
Non-Refundability factor:	Tier 1:	100.00%
	Tier 2:	99.78%
	Tier 3:	99.28%
	Tier 4:	98.40%

[2] *Factors have been adjusted to reflect a reserve carried by the Board to reduce part of the COLA contributions.*

Appendix B

UAAL Amortization Schedule as of June 30, 2018
(Dollar Amounts in Thousands)

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment
Miscellaneous	June 30, 2012	Restart amortization[1]	$814,400	$814,679	17	$65,128
	June 30, 2013	Actuarial loss[1]	34,060	32,902	15	2,886
	June 30, 2014	Actuarial gain[1]	(125,182)	(122,511)	16	(10,240)
	June 30, 2014	Assumption changes[1]	(46,607)	(45,612)	16	(3,812)
	June 30, 2015	Actuarial gain[1]	(73,919)	(73,014)	17	(5,837)
	June 30, 2015	Withdrawn employers[1]	2,989	2,952	17	236
	June 30, 2016	Actuarial loss[1]	12,986	12,903	18	990
	June 30, 2017	Actuarial loss[1]	12,571	12,527	19	925
	June 30, 2017	Assumption changes[1]	466,874	465,232	19	34,355
	June 30, 2018	Actuarial loss[1],[2]	6,060	6,060	20	432
	June 30, 2018	Actuarial loss[3]	39,429	39,429	20	2,810
Subtotal				$1,145,547		$87,873
Safety	June 30, 2010	LEMA	$4,047	$1,235	2	$652
	June 30, 2012	Restart amortization	493,928	494,096	17	39,500
	June 30, 2013	Actuarial loss	53,174	51,365	15	4,506
	June 30, 2014	Actuarial gain	(40,247)	(39,388)	16	(3,292)
	June 30, 2014	Assumption changes	62,388	61,056	16	5,103
	June 30, 2015	Actuarial gain	(8,318)	(8,216)	17	(657)
	June 30, 2016	Actuarial gain	(1,139)	(1,132)	18	(87)
	June 30, 2017	Actuarial gain	(14,836)	(14,784)	19	(1,092)
	June 30, 2017	Assumption changes	356,837	355,582	19	26,258
	June 30, 2018	Actuarial loss	44,898	44,898	20	3,200
Subtotal				$944,712		$74,091

Note: Results may be slightly off due to rounding.

[1] *These amounts are spread over the payroll for all Miscellaneous employers excluding Rio Linda Elverta Recreation and Parks District.*

[2] *This amount is due to deferred investment losses that were established prior to July 1, 2017. The total amount of that loss for Miscellaneous and Safety combined is $9,275,175.*

[3] *This amount is spread over the payroll for all Miscellaneous employers including Rio Linda Elverta Recreation and Parks District.*

Appendix B

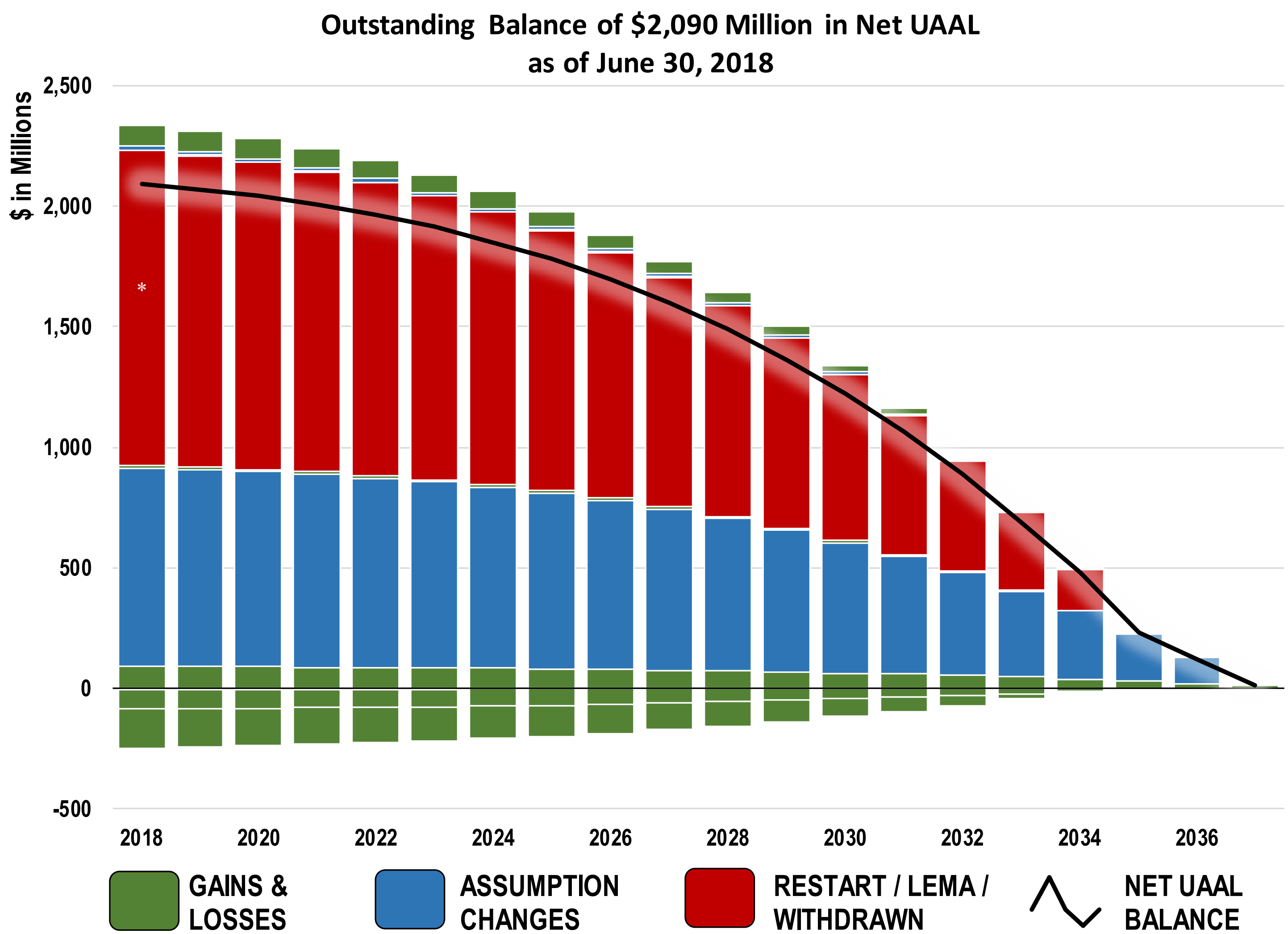
UAAL Amortization Schedule as of June 30, 2018 (continued)
(Dollar Amounts in Thousands)

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment
Miscellaneous and	June 30, 2010	LEMA	$4,047	$1,235	2	$652
Safety Combined	June 30, 2012	Restart amortization	1,308,328	1,308,775	17	104,628
	June 30, 2013	Actuarial loss	87,234	84,267	15	7,392
	June 30, 2014	Actuarial gain	(165,429)	(161,899)	16	(13,532)
	June 30, 2014	Assumption changes	15,781	15,444	16	1,291
	June 30, 2015	Actuarial gain	(82,237)	(81,230)	17	(6,494)
	June 30, 2015	Withdrawn employers	2,989	2,952	17	236
	June 30, 2016	Actuarial loss	11,847	11,771	18	903
	June 30, 2017	Actuarial gain	(2,265)	(2,257)	19	(167)
	June 30, 2017	Assumption changes	823,711	820,814	19	60,613
	June 30, 2018	Actuarial loss	90,387	90,387	20	6,442
Grand Total				$2,090,259		$161,964

Note: Results may be slightly off due to rounding.

Appendix C

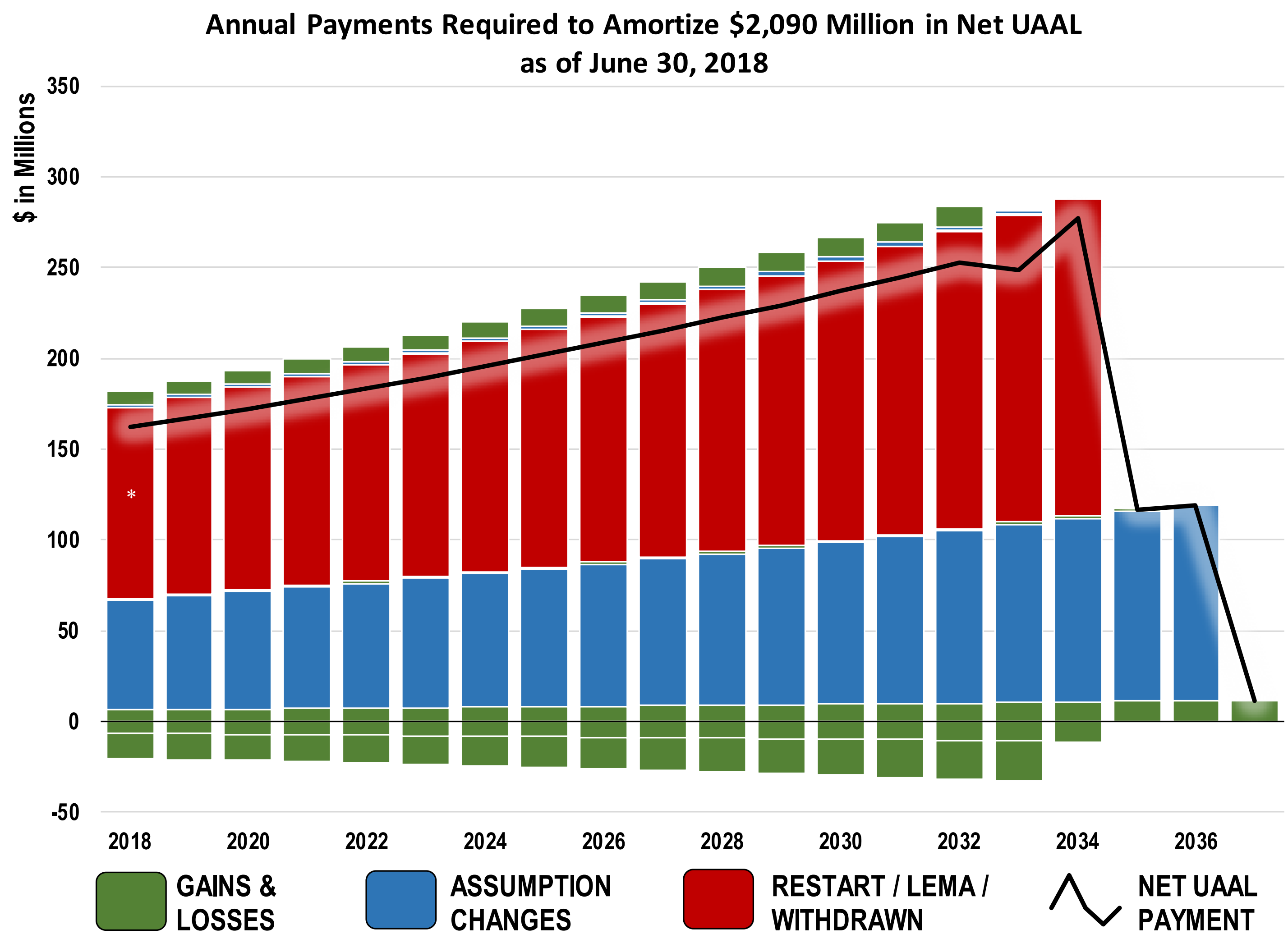
Projection of UAAL Outstanding Balances and Payments



** Restart amortization*

Appendix C

Projection of UAAL Outstanding Balances and Payments (continued)



* *Restart amortization*

Appendix D

Calculation of Additional District Rate as of June 30, 2018 for Certain District Employers

Additional contributions were made by the County to buy down the County and Superior Court UAAL contribution rate through the issuance of Pension Obligation Bonds (POB). As the other district employers did not participate in the POBs, their rates as calculated on page 19 of this report have been increased to reflect that they did not buy down their UAAL rates.

The calculation of the additional District rate as of June 30, 2018 is as follows:

1.	June 30, 2017 POB Balance	$31,745,625
2.	Additional Rate in June 30, 2017 Valuation	8.31%
3.	June 30, 2017 Projected District Payroll[(1)]	$29,316,000
4.	June 30, 2018 POB Balance[(2)]	$31,446,393
5.	17-Year Amortization	0.079943
6.	June 30, 2018 Projected District Payroll[(1)]	$31,832,000
7.	Additional Rate in June 30, 2018 Valuation[(3)]	7.90%

(1) *Excluding the payroll for Rio Linda Elverta Recreation and Parks District.*
(2) *Equal to $31,745,625 * 1.07 – 8.31% * $29,316,000 * (1+0.07/2).*
(3) *Equal to $31,446,393 * 0.079943 / $31,832,000.*

Appendix E
Detailed District Rates as of June 30, 2018

Recommended Employer Contribution Rates
After 3-Year Phase-in

District Only

For Special Districts with All Service Improvement Only

	Percent of Payroll Member Paying Full Rate			Percent of Payroll Member Paying 50:50 Rate		
	Tier 1[(1)]	Tier 3[(1)]	Tier 5	Tier 1[(2)]	Tier 3[(2)]	Tier 5[(3)]
Normal Cost	13.90%	15.91%	N/A	N/A	10.90%	9.45%
UAAL	17.77%	17.77%	N/A	N/A	17.77%	17.77%
Total	31.67%	33.68%	N/A	N/A	28.67%	27.22%

For Special Districts with Future Service Improvement Only[(4)]

	Percent of Payroll Member Paying Full Rate			Percent of Payroll Member Paying 50:50 Rate		
	Tier 1	Tier 3	Tier 5	Tier 1	Tier 3	Tier 5
Normal Cost	N/A	15.91%	N/A	N/A	N/A	9.45%
UAAL	N/A	14.43%	N/A	N/A	N/A	14.43%
Total	N/A	30.34%	N/A	N/A	N/A	23.88%

Rio Linda Elverta Recreation and Parks District

	Percent of Payroll Member Paying Full Rate			Percent of Payroll Member Paying 50:50 Rate		
	Tier 1	Tier 3	Tier 5	Tier 1	Tier 3	Tier 5
Normal Cost	N/A	N/A	N/A	N/A	N/A	9.45%
UAAL	N/A	N/A	N/A	N/A	N/A	0.36%
Total	N/A	N/A	N/A	N/A	N/A	9.81%

(1) Includes Carmichael Recreation and Park District, Elk Grove Cosumnes Cemetery District, Mission Oaks Recreation and Park District, Sacramento Employment and Training Agency (S.E.T.A.), and Sunrise Recreation and Park District.
(2) Includes Orangevale Recreation and Park District only.
(3) Includes all the employers referenced in footnotes (1) and (2).
(4) Includes Fair Oaks Cemetery District and Galt-Arno Cemetery District.

Appendix F

Normal Cost Rates with Additional Member Contributions under Cost Sharing Arrangements

The Normal Cost rates adjusted for the additional member contributions are developed in the following steps:

Step A: Calculate the Normal Cost rates for the employer and the member assuming that no members contribute an additional portion of the Normal Cost.

Step B: Calculate the Normal Cost rates for the employer and the member assuming that members pay exactly one-half of the total Normal Cost rate. In this step, we have adjusted the employer rate to account for the cost associated with the cessation of member contributions for Miscellaneous members hired on or before March 7, 1973 and after 30 years of service and for Safety Tier 1, Tier 2 and Tier 3 members after 30 years of service

Step C: Gross up the member Normal Cost rates developed in Step B for the integration with Social Security

These steps are outlined in the following pages.

Appendix F

Normal Cost Rates with Additional Member Contributions under Cost Sharing Arrangements (continued)

Total Normal Cost Contribution Rates
Employer and Member Normal Cost Rates

(A) Normal Cost (Prior to any Additional Normal Cost Contributions by the Member)

Miscellaneous

	Percent of Payroll Member Paying Full Rate			
	Tier 1[1]	Tier 2	Tier 3	Tier 4
Employer	13.90%	12.55%	15.91%	12.06%
Member	5.91%	3.87%	5.54%	8.37%
Member COLA Buydown	0.84%	0.00%	0.28%	0.28%
Total	20.65%	16.42%	21.73%	20.71%

Safety

	Percent of Payroll Member Paying Full Rate		
	Tier 1[1]	Tier 2	Tier 3
Employer	26.40%	23.89%	22.62%
Member	19.49%	14.77%	14.33%
Member COLA Buydown	1.72%	0.29%	0.29%
Total	47.61%	38.95%	37.24%

Note: Member rates shown are for annual salary in excess of $4,200 (or monthly salary of $350). For annual salary less than $4,200 (or monthly salary of $350), the rates are equal to 2/3 of the rates shown. Also, the member COLA buydown is a non-cash contribution item.

[1] These are the single entry age rates at age 35 and 29 for Miscellaneous and Safety, respectively.

Appendix F

Normal Cost Rates with Additional Member Contributions under Cost Sharing Arrangements (continued)

Total Normal Cost Contribution Rates
Employer and Member Normal Cost Rates

(B) Normal Cost (Assuming Exactly 50:50 Payment by the Employer and the Member) – Before Gross-up for the Integration with Social Security

Miscellaneous

Percent of Payroll
Member Paying Full Rate

	Tier 1	Tier 2	Tier 3	Tier 4
Employer	10.66%[1]	8.21%	10.90%	10.39%
Member[4]	9.49%	8.21%	10.62%	10.11%
Member COLA Buydown	0.84%	0.00%	0.28%	0.28%
Total	20.99%	16.42%	21.80%	20.78%

Safety

Percent of Payroll
Member Paying Full Rate

	Tier 1	Tier 2	Tier 3
Employer	25.92%[2]	19.55%[3]	18.64%
Member[4]	22.09%	19.19%	18.35%
Member COLA Buydown	1.72%	0.29%	0.29%
Total	49.73%	39.03%	37.28%

Note: Member rates shown are for annual salary in excess of $4,200 (or monthly salary of $350). For annual salary less than $4,200 (or monthly salary of $350), the rates are equal to 2/3 of the rates shown. Also, the member COLA buydown is a non-cash contribution item.

(1) The employer rate has been adjusted by 0.33% of payroll to account for the cost associated with the cessation of member contributions for those members hired on or before March 7, 1973 and after 30 years of service.

(2) The employer rate has been adjusted by 2.11% of payroll to account for the cost associated with the cessation of member contributions after 30 years of service.

(3) The employer rate has been adjusted by 0.07% of payroll to account for the cost associated with the cessation of member contributions after 30 years of service.

(4) The member rates have not been grossed up for the rate on the first $4,200 in annual salary being less (by one-third) when compared to the 50:50 total Normal Cost rate. Please see the following page for the rates after the gross-up.

Appendix F

Normal Cost Rates with Additional Member Contributions under Cost Sharing Arrangements (continued)

Total Normal Cost Contribution Rates
Employer and Member Normal Cost Rates

(C) Normal Cost (Assuming Exactly 50:50 Payment by the Employer and the Member) – After Gross-up for the Integration with Social Security

Miscellaneous

Percent of Payroll
Member Paying Full Rate

	Tier 1	Tier 2	Tier 3	Tier 4
Employer	10.66%[1]	8.21%	10.90%	10.39%
Member[4]	9.65%	8.37%	10.81%	10.28%
Member COLA Buydown	0.84%	0.00%	0.28%	0.28%
Total	21.15%	16.58%	21.99%	20.95%

Safety

Percent of Payroll
Member Paying Full Rate

	Tier 1	Tier 2	Tier 3
Employer	25.92%[2]	19.55%[3]	18.64%
Member[4]	22.31%	19.41%	18.60%
Member COLA Buydown	1.72%	0.29%	0.29%
Total	49.95%	39.25%	37.53%

Note: Member rates shown are for annual salary in excess of $4,200 (or monthly salary of $350). For annual salary less than $4,200 (or monthly salary of $350), the rates are equal to 2/3 of the rates shown. Also, the member COLA buydown is a non-cash contribution item.

(1) The employer rate has been adjusted by 0.33% of payroll to account for the cost associated with the cessation of member contributions for those members hired on or before March 7, 1973 and after 30 years of service.
(2) The employer rate has been adjusted by 2.11% of payroll to account for the cost associated with the cessation of member contributions after 30 years of service.
(3) The employer rate has been adjusted by 0.07% of payroll to account for the cost associated with the cessation of member contributions after 30 years of service.
(4) The member rates have been grossed up for the rate on the first $4,200 in annual salary being less (by one-third) when compared to the 50:50 total Normal Cost rate.

Segal Consulting

Sacramento County Employees' Retirement System (SCERS)

Governmental Accounting Standards Board Statement 67 (GASBS 67) Actuarial Valuation as of June 30, 2018

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

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October 30, 2018

Board of Retirement
Sacramento County Employees' Retirement System
980 9th Street, Suite 1900
Sacramento, CA 95814

Dear Board Members:

We are pleased to submit this Governmental Accounting Standards Board Statement 67 (GASBS 67) Actuarial Valuation as of June 30, 2018. It contains various information that will need to be disclosed in order to comply with GASBS 67.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Retirement System. The census and financial information on which our calculations were based was provided by the Retirement System. That assistance is gratefully acknowledged.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law.

The actuarial calculations were completed under the supervision of Andy Yeung, ASA, MAAA, Enrolled Actuary. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and expectations for the Retirement System.

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

Sincerely,

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

By:

Paul Angelo, FSA, EA, MAAA, FCA	Andy Yeung, ASA, EA, MAAA, FCA	Molly Calcagno, ASA, MAAA
Senior Vice President and Actuary	Vice President and Actuary	Assistant Actuary

MYM/jl

SECTION 1
VALUATION SUMMARY

SECTION 2
GASBS 67 INFORMATION

Purpose

This report has been prepared by Segal Consulting to present certain disclosure information required by Governmental Accounting Standards Board Statement 67 (GASBS 67) as of June 30, 2018. This valuation is based on:

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

General Observations on GASBS 67 Actuarial Valuation

The following points should be considered when reviewing this GASBS 67 report:

- The Governmental Accounting Standards Board (GASB) rules only define pension liability and expense for financial reporting purposes, and do not apply to contribution amounts for pension funding purposes. Employers and plans 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 SCERS uses for funding. This means that the Total Pension Liability (TPL) measure for financial reporting shown in this report is determined on the same basis as SCERS' 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) on a market value basis.

Significant Issues in Valuation Year

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

- The NPL was measured as of June 30, 2018 and June 30, 2017 and determined based upon the results of the actuarial valuations as of June 30, 2018 and June 30, 2017, respectively.

  The NPL decreased from $2,096.8 million as of June 30, 2017 to $1,961.3 million as of June 30, 2018 primarily as a result of favorable investment return (a decrease in the liability by about $841.4 million) offset by some actuarial losses. Changes in these values during the last two fiscal years ending June 30, 2017 and June 30, 2018 can be found in Exhibit 3.

- The discount rate used to determine the TPL and NPL as of both June 30, 2018 and June 30, 2017 was 7.00%. Details on the derivation of the discount rate as of June 30, 2018 can be found in Exhibit 5 of Section 2. Various other information that is required to be disclosed can be found throughout Exhibits 1 through 4 in Section 2.

- The NPL as of June 30, 2018 excludes a liability of $44.9 million that is attributable to members of Florin Fire based on the latest estimate of the asset shortfall for this withdrawn employer available as of June 30, 2017 to June 30, 2018 adjusted with interest at the assumed rate of investment return (i.e., 7.00% as of June 30, 2017) and with contributions made during 2017/2018.

- The Plan Fiduciary Net Position includes $17.2 million that is available to offset a portion of the members' future COLA contribution rates. Since the $17.2 million can only be used in the future to reduce contribution rates for the employees, we have included a liability of the same amount so that the employer's net NPL is unchanged by the availability of this amount.

Summary of Key Valuation Results

	2018	2017
Disclosure elements for fiscal year ending June 30:		
Service Cost[1]	$234,325,324	$193,490,288
Total Pension Liability	11,213,263,000	10,680,998,000
Plan Fiduciary Net Position	9,251,937,000	8,584,225,000
Net Pension Liability	1,961,326,000	2,096,773,000
Schedule of contributions[2] for fiscal year ending June 30:		
Actuarially determined contributions	$201,631,134	$203,928,296
Actual contributions	201,631,134	203,928,296
Contribution deficiency (excess)	0	0
Demographic data for plan year ending June 30:		
Number of retired members and beneficiaries	11,883	11,396
Number of vested terminated members[3]	3,509	3,425
Number of active members	12,677	12,587
Key assumptions:		
Investment rate of return	7.00%	7.00%
Inflation rate	3.00%	3.00%
Projected salary increases[4]	4.50% - 10.75%, varying by service, including inflation	4.50% - 10.75%, varying by service, including inflation

(1) *The Service Cost is based on the previous year's valuation, meaning the 2018 and 2017 values are based on the valuations as of June 30, 2017 and June 30, 2016, respectively.*

(2) *Includes contributions made by Florin Fire.*

(3) *Includes terminated members with member contributions on deposit.*

(4) *Includes inflation at 3.00% plus real across the board salary increase of 0.25% plus merit and promotional increases.*

Important Information about Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare an actuarial valuation, Segal Consulting ("Segal") relies on a number of input items. These include:

- **Plan of benefits** Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan description in this report (as well as the plan summary included in our funding valuation report) to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by SCERS. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
- **Assets** This valuation is based on the market value of assets as of the valuation date, as provided by SCERS.
- **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 cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If SCERS is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.

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

EXHIBIT 1

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

Plan Description

Plan administration. The Sacramento County Employees' Retirement System (SCERS) was established by the County of Sacramento in 1941. SCERS is administered by the Board of Retirement and governed by the County Employees' Retirement Law of 1937 (California Government Code Section 31450 et. seq). SCERS is a cost-sharing multiple employer public employee retirement system whose main function is to provide service retirement, disability, death and survivor benefits to the Safety and Miscellaneous members employed by the County of Sacramento. SCERS also provides retirement benefits to the employee members of the Superior Court of California (County of Sacramento) and twelve Special Districts.

The management of SCERS is vested with the Sacramento County Board of Retirement. The Board consists of nine members and two alternates. Four members are appointed by the Board of Supervisors, two members are elected by the Miscellaneous membership, one member and one alternate are elected by the Safety membership, one member and one alternate are elected by the retired members of the System; and the County Director of Finance serves as ex officio member. All members of the Board of Retirement serve terms of three years except for the County Director of Finance whose term runs concurrent with his term as Director of Finance.

Plan membership. At June 30, 2018, pension plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	11,883
Vested terminated members entitled to but not yet receiving benefits	3,509
Active members	12,677
Total	28,069

Benefits provided. SCERS provides service retirement, disability, death and survivor benefits to eligible employees. All permanent full-time or part-time employees of the County of Sacramento or contracting district become members of SCERS upon employment. There are separate retirement plans for Safety and Miscellaneous members. Safety membership is extended to those involved in active law enforcement, fire suppression, and certain other classifications. There are four tiers applicable to Safety members. Those hired prior to January 1, 2012 are included in either Tier 1 or Tier 2 depending on date of hire and bargaining unit. Those hired after that date but prior to January 1, 2013 are included in Tier 3. Any new Safety member who becomes a member on or after January 1, 2013 is designated PEPRA Safety (Tier 4) and is subject to the provisions of

California Public Employees' Pension Reform Act of 2013 (PEPRA), California Government Code 7522 et seq. and Assembly Bill (AB) 197. All other employees are classified as Miscellaneous members. There are five tiers applicable to Miscellaneous members. Those hired prior to September 27, 1981 are included in Tier 1. Those hired after that date but prior to January 1, 2012 are included in Tier 2 or Tier 3 depending on date of hire and bargaining unit. County members hired after that date but prior to January 1, 2013 are included in Tier 4. New members hired on or after January 1, 2013 are designated as PEPRA Miscellaneous (Tier 5) and are subject to the provisions of California Government Code 7522 et seq. and AB 197.

Safety members hired prior to January 1, 2013, are eligible to retire once they attain the age of 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 who are first hired on or after January 1, 2013, are eligible to retire once they have attained the age of 50, and have acquired five years of retirement service credit.

Miscellaneous members hired prior to January 1, 2013, are eligible to retire once they attain the age of 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. Miscellaneous members who are first hired on or after January 1, 2013, are eligible to retire once they have attained the age of 52, 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.

Safety member benefits for Tier 1 and Tier 2 are calculated pursuant to the provisions of California Government Code Section 31664.1. Safety member benefits for Tier 3 are calculated pursuant to the provision of California Government Code Section 31664.2. The monthly allowance is equal to 2% of the first $350 of final compensation, plus 3% of the excess final compensation times years of accrued retirement service credit times age factor from either Section 31664.1 (Tier 1 and 2) or 31664.2 (Tier 3). Safety member benefits for those who are first hired on or after January 1, 2013, are calculated pursuant to the provision of California Government Code Section 7522.25(d). The monthly allowance is equal to the final compensation multiplied by years of accrued retirement credit multiplied by the age factor from Section 7522.25(d).

Miscellaneous member benefits for Tier 1, Tier 2 and Tier 3 are calculated pursuant to the provisions of California Government Code Section 31676.14. Miscellaneous member benefits for Tier 4 are calculated pursuant to the provisions of California Government Code Section 31676.1. The monthly allowance is equal to 1/90th of the first $350 of final compensation, plus 1/60th of the excess final compensation times years of accrued retirement service credit times age factor from either Section 31676.14 (Tier 1, Tier 2 and Tier 3) or Section 31676.1 (Tier 4). Miscellaneous member benefits for those who are first hired on or after January 1, 2013, are calculated pursuant to the provision of California Government Code Section 7522.20(a). The monthly allowance is equal to the final compensation multiplied by years of accrued retirement credit multiplied by the age factor from Section 7522.20(a).

For members with membership dates before January 1, 2013, the maximum monthly retirement allowance is 100% of final compensation. There is no maximum for members with membership dates on or after January 1, 2013.

Final average compensation consists of the highest 12 consecutive months for a Tier 1 Safety or Tier 1 Miscellaneous member and the highest 36 consecutive months for a Tier 2, Tier 3, Tier 4 or Tier 5 member.

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. An eligible surviving spouse is one married to the member one year prior to the effective retirement date. 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 or named beneficiary having an insurable interest in the life of the member.

SCERS provides an annual cost-of-living benefit to Safety Tier 1, Tier 2, Tier 3 and Tier 4 members and Miscellaneous Tier 1, Tier 3, Tier 4 and Tier 5 members. The cost-of-living adjustment, based upon the Consumer Price Index for the San Francisco-Oakland-San Jose area, is capped at 4.0% for Tier 1 members and 2% for all other members eligible for a cost-of-living adjustment.

The County of Sacramento and contracting districts 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 SCERS' actuary after the completion of the annual actuarial valuation. The average employer contribution rate as of June 30, 2018 for 2017/2018 (based on the June 30, 2016 valuation) was 20.46% of compensation.

All members are required to make contributions to SCERS regardless of the retirement plan or tier in which they are included. The average member contribution rate as of June 30, 2018 for 2017/2018 (based on the June 30, 2016 valuation) was 10.14% of compensation.

EXHIBIT 2

Net Pension Liability

The components of the Net Pension Liability of the SCERS as follows:

	June 30, 2018	June 30, 2017
Total Pension Liability	$11,213,263,000	$10,680,998,000
Plan Fiduciary Net Position	(9,251,937,000)	(8,584,225,000)
Net Pension Liability	$1,961,326,000	$2,096,773,000
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	82.51%	80.37%

The Net Pension Liability (NPL) was measured as of June 30, 2018 and 2017 and determined based upon the Total Pension Liability (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, 2018 and 2017 are the same as those used in the SCERS actuarial valuations as of June 30, 2018 and 2017, respectively.

Actuarial assumptions. The TPL that was measured by an actuarial valuation as of June 30, 2018 used the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	4.50% to 10.75%, varying by service, including inflation
Investment rate of return	7.00%, net of pension plan investment expense, including inflation
Other assumptions	See the analysis of actuarial experience study for the period July 1, 2013 through June 30, 2016.

The TPL that was measured by an actuarial valuation as of June 30, 2017 used the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	4.50% to 10.75%, varying by service, including inflation
Investment rate of return	7.00%, net of pension plan investment expense, including inflation
Other assumptions	See the analysis of actuarial experience study for the period July 1, 2013 through June 30, 2016.

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 (approved by the Board) and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before deducting investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
U.S. Large Cap Equity	17.00%	5.61%
U.S. Small Cap Equity	4.00%	6.37%
International Developed Equity	16.00%	6.96%
Emerging Markets Equity	4.00%	9.28%
High Yield Bonds	1.00%	3.65%
Bank Loans	1.00%	2.96%
Growth Oriented Abs. Return	3.00%	4.97%
Private Equity	9.00%	8.70%
Private Credit/Private Debt	4.00%	5.10%
Core/Core Plus Bonds	10.00%	1.06%
Global Bonds	3.00%	0.07%
U.S. Treasury	5.00%	0.16%
Diversifying Abs. Return	7.00%	3.04%
Private Real Estate	7.00%	4.37%
Private Assets	7.00%	7.74%
Commodities	2.00%	3.76%
Total	100.00%	

Discount rate. The discount rate used to measure the TPL was 7.00% as of 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 rate and that employer contributions will be made at rates equal to the actuarially determined contribution rates. For this purpose, only employer contributions that are intended to fund benefits for current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the Plan Fiduciary Net Position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the TPL as of both June 30, 2018 and June 30, 2017.

Sensitivity of the June 30, 2018 NPL to changes in the discount rate. The following presents the NPL of the SCERS as of June 30, 2018, calculated using the discount rate of 7.00%, as well as what the SCERS' 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:

	1% Decrease (6.00%)	Current Discount Rate (7.00%)	1% Increase (8.00%)
Net Pension Liability as of June 30, 2018	$3,531,085,000	$1,961,326,000	$679,078,000

Sensitivity of the June 30, 2017 NPL to changes in the discount rate. The following presents the NPL of the SCERS as of June 30, 2017, calculated using the discount rate of 7.00%, as well as what the SCERS' 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:

	1% Decrease (6.00%)	Current Discount Rate (7.00%)	1% Increase (8.00%)
Net Pension Liability as of June 30, 2017	$3,611,235,000	$2,096,773,000	$860,712,000

EXHIBIT 3
Schedule of Changes in SCERS Net Pension Liability – Last Two Fiscal Years

	2018	2017
Total Pension Liability		
Service Cost[1]	$234,325,324	$193,490,288
Interest	747,681,853	706,016,047
Change of benefit terms	0	0
Differences between expected and actual experience	18,565,823	-46,244,335
Changes of assumptions	0	823,712,000
Benefit payments, including refunds of employee contributions	-468,308,000	-432,066,000
Net change in Total Pension Liability	$532,265,000	$1,244,908,000
Total Pension Liability – beginning	10,680,998,000	9,436,090,000
Total Pension Liability – ending (a)	$11,213,263,000	$10,680,998,000
Plan Fiduciary Net Position		
Contributions – employer	$198,331,000	$201,928,000
Contributions – employee	99,906,000	89,489,000
Net investment income	841,371,000	1,048,915,000
Benefit payments, including refunds of employee contributions	-468,308,000	-432,066,000
Administrative expense	-6,888,000	-6,906,000
Other	3,300,000[2]	2,000,000[3]
Net change in Plan Fiduciary Net Position	667,712,000	903,360,000
Plan Fiduciary Net Position – beginning	8,584,225,000	7,680,865,000
Plan Fiduciary Net Position – ending (b)	$9,251,937,000	$8,584,225,000
Net Pension Liability – ending (a) – (b)	$1,961,326,000	$2,096,773,000
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	82.51%	80.37%
Covered payroll[4]	$985,375,000	$958,934,000
Plan Net Pension Liability as percentage of covered payroll	199.04%	218.66%

EXHIBIT 3

Schedule of Changes in SCERS Net Pension Liability – Last Two Fiscal Years (continued)

(1) *The Service Cost is based on the previous year's valuation, meaning the 2018 and 2017 values are based on the valuations as of June 30, 2017 and June 30, 2016, respectively.*

(2) *We have classified the $3,300,000 contribution made by Florin Fire, a non-active employer, during 2017/2018 in the "Other" category. This is done to anticipate that the NPL for the active employers to be disclosed later in our GASBS 68 actuarial valuation as of June 30, 2019 will be allocated using the employer contributions excluding the $3,300,000 contribution made during 2017/2018.*

Throughout the rest of this report, those contributions are included in the Actuarially Determined Contributions for the System's active and non-active employers.

(3) *In last year's report, we classified the $2,000,000 contribution made by Florin Fire during 2016/2017 in the "Other" category. This was done because the NPL for the non-active employer disclosed in our GASBS 68 actuarial valuation as of June 30, 2018 was calculated by adjusting with interest only the latest withdrawal liability amount determined for that non-active employer (and without adjusting for the $2,000,000 contribution made during 2016/2017).*

Throughout the rest of this report, those contributions are included in the Actuarially Determined Contributions for the System's active and non-active employers.

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

Notes to Schedule:

Benefit changes: None

EXHIBIT 4

Schedule of SCERS' Contributions – Last Ten Fiscal Years

Year Ended June 30	Actuarially Determined Contributions(1),(2)	Contributions in Relation to the Actuarially Determined Contributions(2)	Contribution Deficiency (Excess)	Covered Payroll(3),(4)	Contributions as a Percentage of Covered Payroll
2009	$177,011,005	$177,011,005	$0	$923,375,000	19.17%
2010	167,141,893	167,141,893	0	872,804,000	19.15%
2011	182,920,751	182,920,751	0	818,804,000	22.34%
2012	179,098,469	179,098,469	0	835,737,000	21.43%
2013	189,663,720	189,663,720	0	858,551,000	22.09%
2014	210,503,324	210,503,324	0	858,343,000	24.52%
2015	222,959,365	222,959,365	0	873,328,000	25.53%
2016	209,020,162	209,020,162	0	912,421,000	22.91%
2017	203,928,296	203,928,296	0	958,934,000	21.27%
2018	201,631,134	201,631,134	0	985,375,000	20.46%

See accompanying notes to this schedule on next page.

(1) *All "Actuarially Determined Contributions" through June 30, 2015 were determined as the "Annual Required Contribution" under GASBS 25 and 27.*

(2) *Includes contributions made by Florin Fire, as applicable.*

(3) *Payroll for the years ending 2009 through 2012 are calculated by dividing the contribution dollar amount by the contribution as a percentage of payroll.*

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

Notes to Exhibit 4

Methods and assumptions used to establish "actuarially determined contribution" rates:	
Valuation date	Actuarially determined contribution rates are calculated as of June 30, two years 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	
June 30, 2016 valuation	20 years (declining) as of June 30, 2016 for the outstanding balance of the June 30, 2012 UAAL. The UAAL established as a result of the Early Retirement Incentive Program for LEMA members is amortized over a 10-year period, beginning June 30, 2010. Effective June 30, 2013, any changes in UAAL due to actuarial gains or losses or due to changes in actuarial assumptions or methods will be amortized over a 20-year closed period effective with each valuation. Any change in UAAL that arises due to plan amendments will be amortized over its own declining 15-year period and any change in UAAL due to retirement incentive programs will be amortized over a declining period of up to 5 years.
Asset valuation method	The market value of assets less unrecognized returns from each of the last six years. Unrecognized return is equal to the difference between actual and expected returns on a market value basis and is recognized over a seven-year period. The deferred return is further adjusted, if necessary, so that the actuarial value of assets will stay within 30% of the market value of assets. Deferred gains and losses as of June 30, 2013 have been combined and will be recognized in equal amounts over a six-year period starting July 1, 2013.
Actuarial assumptions:	
June 30, 2016 valuation (used for the year ended June 30, 2018 ADC)	
Investment rate of return	7.50%, net of pension plan investment expense, including inflation
Inflation rate	3.25%
Projected salary increases	4.50% - 11.50%, varying by age, including inflation
Cost of living adjustments	3.25% of Miscellaneous and Safety Tier 1 retirement income, 2.00% of Miscellaneous Tier 3, Tier 4 and Tier 5 and Safety Tier 2, Tier 3 and Tier 4 retirement income, and 0.00% of Miscellaneous Tier 2 retirement income.
Other assumptions	Same as those used in the June 30, 2016 funding actuarial valuation.
Other information:	All members with membership dates on or after January 1, 2013 enter the new tiers created by the California Public Employees' Pension Reform Act of 2013 (PEPRA).

EXHIBIT 5

Projection of Plan Fiduciary Net Position for Use in Calculation of Discount Rate as of June 30, 2018 ($ in millions)

Year Beginning July 1,	Projected Beginning Plan Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expense (d)	Projected Investment Earnings (e)	Projected Ending Plan Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
2018	$9,252	$388	$529	$7	$641	$9,743
2019	9,743	385	556	8	674	10,239
2020	10,239	382	588	8	707	10,733
2021	10,733	385	621	9	741	11,229
2022	11,229	384	656	9	774	11,722
2023	11,722	375	692	9	807	12,202
2024	12,202	372	729	10	839	12,674
2025	12,674	370	767	10	870	13,137
2026	13,137	369	806	11	901	13,591
2027	13,591	368	845	11	931	14,035
2045	16,443	54 (1)	1,364	13	1,100	16,220
2046	16,220	50 (1)	1,371	13	1,084	15,970
2047	15,970	47 (1)	1,375	13	1,066	15,695
2065	8,962	22 (1)	998	7	589	8,568
2066	8,568	22 (1)	958	7	563	8,189
2067	8,189	21 (1)	917	7	538	7,825
2085	5,620	11 (1)	220	5	385	5,792
2086	5,792	10 (1)	193	5	398	6,002
2087	6,002	10 (1)	169	5	414	6,253
2105	17,817	15 (1)	2	14	1,247	19,063
2106	19,063	16 (1)	2	15	1,334	20,396
2107	20,396	17 (1)	1	16	1,428	21,823
2136	145,081	116 (1)	0 (2)	116	10,156	155,237
2137	155,237					
2137	Discounted Value: 49 (3)					

(1) Mainly attributable to employer contributions to fund each year's annual administrative expenses.

(2) Less than $1 million, when rounded.

(3) $155,237 million when discounted with interest at the rate of 7.00% per annum has a value of $49 million (or 0.53% of the Plan Fiduciary Net Position) as of June 30, 2018.

EXHIBIT 5 (continued)

Projection of Plan's Fiduciary Net Position for Use in Calculation of Discount Rate as of June 30, 2018 ($ in millions)

Notes:

(1) Amounts may not total exactly due to rounding.

(2) Years 2028-2044, 2048-2064, 2068-2084, 2088-2104, and 2108-2135 have been omitted from this table.

(3) Column (a): Except for the "discounted value" shown for 2137, all of the projected beginning Plan Fiduciary Net Position amounts shown have not been adjusted for the time value of money.

(4) Column (b): Projected total contributions include employee 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. Contributions are assumed to occur halfway through the year, on average.

(5) 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, 2018 report.

(6) Column (d): Projected administrative expenses are calculated as approximately 0.08% of the beginning Plan Fiduciary Net Position amount. The 0.08% portion was based on the actual fiscal year 2017-2018 administrative expenses as a percentage of the beginning Plan Fiduciary Net Position amount as of July 1, 2017. Administrative expenses are assumed to occur halfway through the year, on average.

(7) Column (e): Projected investment earnings are based on the assumed investment rate of return of 7.00% per annum.

(8) As illustrated in this Exhibit, the Plan Fiduciary Net Position was projected to be available to make all projected future benefit payments for current Plan members. In other words, there is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 7.00% per annum was applied to all periods of projected benefit payments to determine the Total Pension Liability as of June 30, 2018 shown earlier in this report, pursuant to paragraph 44 of GASB Statement No. 67.

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