Board of Retirement Regular Meeting

Sacramento County Employees' Retirement System

Agenda Item 17

MEETING DATE: **December 9, 2020**

SUBJECT: **Actuarial Valuation and Review and GASB 67 Report as of June 30, 2020**

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

RECOMMENDATION

Staff recommends the Board:

1) Adopt the 2021-22 fiscal year employer and member contribution rates recommended by Segal;
2) Receive and file the Actuarial Valuation and Review as of June 30, 2020; and
3) Receive and file the Governmental Accounting Standards Board Statement 67 Actuarial Valuation as of June 30, 2020.

PURPOSE

This item supports the 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, 2020 prepared by Segal is attached. The following sections highlight key components of the valuation report. Segal will attend the Board Meeting to present the report and answer any questions.

Investment Return for 2019-20 – The market value investment return for 2019-20 was 2.97% compared to the assumed investment rate of return for the Plan of 7.00%. For 2019-20, the annual return for valuation purposes was 6.79% (as determined using the seven-year asset smoothing). [See page 23 of the valuation report]

As a result of lower-than-assumed investment returns on a market value basis, SCERS has a net deferred loss of $250.4 million as of June 30, 2020, compared to the prior year's net deferred gain of $118.4 million as of June 30, 2019. This net investment loss 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 SCERS earns the assumed rate of investment return of 6.75% per year, and all other actuarial assumptions are met, there will still be net investment losses on the actuarial value of assets, which translates to increase in employer contribution requirements in the next

few years. SCERS also has $144.0 million in the Contingency Reserve available to help mitigate future losses. [See pages 7-8 of the valuation report]

Funded Status – SCERS' funded status on a market value basis decreased from 82.6% as of June 30, 2019 to 78.6% as of June 30, 2020. SCERS' funding status on an actuarial value of assets basis (using seven-year asset smoothing) decreased from 81.6% as of June 30, 2019 to 80.6% as of June 30, 2020. [See page 11 of the valuation report]

Funded Status
Dollar Amounts in Thousands

Valuation 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)
2020	$12,693,655	$9,979,379	78.6%	$10,229,760	80.6%
2019	$11,895,520	$9,821,694	82.6%	$9,703,313	81.6%

The Unfunded Actuarial Accrued Liability (UAAL) increased from $2.074 billion as of June 30, 2019 to $2.714 billion as of June 30, 2020, on a market value basis. On an actuarial value basis, the UAAL increased from $2.192 billion as of June 30, 2019 to $2.464 billion as of June 30, 2020.

Changes in Actuarial Methods and Assumptions – In May 2020, the Board approved changes in actuarial methods and assumptions as recommended by Segal resulting from the 2019 Experience Study. The changes in actuarial assumptions resulted in increases in contributions, in which 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 rate over a two-year period. The phase-in will take effect in fiscal year 2021-22 and the full cost impact of the assumption changes will be recognized before the next triennial Experience Study.

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 30 of the valuation report]

Aggregate Total Employer Contribution Rate (June 30, 2019 Valuation)	**29.35%**
Effect of investment return less than expected (after smoothing)	0.13%
Effect of actual contributions less than expected	0.12%
Effect of individual salary increases higher than expected	0.07%
Effect of decrease in UAAL rate from higher than expected increase in total payroll	(0.06%)
Effect of COLA increases higher than expected	0.11%
Effect of changes in active member demographics	(0.03%)
Effect of other losses	0.07%
Effect of changes in actuarial assumptions (before two-year phase-in)	2.39%
Total change	2.80%
Average Recommended Employer Contribution Rate as of June 30, 2020 (Before Two-Year Phase-In)	**32.15%**
Effect of phase-in of employer's UAAL contribution rate impact due to changes in actuarial assumptions over two years	(0.73%)
Average Recommended Employer Contribution Rate as of June 30, 2020 (After Two-Year Phase-In)	**31.42%**

Below are the aggregate total employer contribution rates after the two-year phase-in. [See pages 34-37 of the valuation report]

Aggregate Total Employer Contribution Rate *			
Employer	**FY 2021-22**	**FY 2020-21**	**Change**
County of Sacramento	31.52%	29.51%	2.01%
Superior Court	27.58%	25.73%	1.85%
Special Districts	34.13%	33.04%	1.09%
All Employers Combined	31.42%	29.44%	1.98%

***** Contribution rates for FY 2021-22 represent the recommended rates from the June 30, 2020 actuarial valuation report. Contribution rates for FY 2020-21 represent the actual effective rates from the June 30, 2019 actuarial valuation report.

The aggregate total employer contribution rates are a combination of the normal cost rate and the UAAL rate across all member categories and benefit tiers. The contribution rate for Special District employers is higher due to a higher UAAL amortization payment, unlike the County and the Superior Court, Special 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 pages 74-76 of the valuation report.

Impact on Member Contribution Rates – The aggregate member contribution rate across all member categories and benefit tiers reflects an increase from 11.54% to 12.35% largely due to changes in actuarial assumptions. [See page 7 of the valuation report] Information regarding the base (unadjusted) member contribution rates by plan and tier can be found on pages 111-119 of the valuation report.

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 in future years.

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 Public Employees' Pension Reform Act (PEPRA) tiers. Below is a summary of active membership as of June 30, 2020 and 2019: [See pages 48 - 56 of the valuation report]

Active Membership				
Plan/Tier	**June 30, 2020**	**Percentage of Total Membership**	**June 30, 2019**	**Percentage of Total Membership**
Miscellaneous Tier 1	26	0.2%	34	0.3%
Miscellaneous Tier 2	39	0.3%	45	0.4%
Miscellaneous Tier 3	5,824	46.1%	6,229	49.0%
Miscellaneous Tier 4	331	2.6%	342	2.7%
Miscellaneous Tier 5	4,345	34.4%	3,934	31.0%
Safety Tier 1	61	0.5%	96	0.8%
Safety Tier 2	1,076	8.5%	1,151	9.1%
Safety Tier 3	120	0.9%	118	0.9%
Safety Tier 4	828	6.5%	729	5.8%
Total	**12,650**		**12,678**	

Currently, approximately 41% of the membership is in the new Miscellaneous and Safety tiers established by PEPRA. It is projected that within the next few 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 2011, when there were considerably more active participants than non-active participants (inactive vested members and retired members and beneficiaries), there are now 1.31 non-active participants for every active participant as of June 30, 2020. [See page 15 of the valuation report] While a steady increase in retirees and beneficiaries is expected to continue, there appears to be a small increase in the number of active SCERS members. However, the gap continues to widen between members drawing from the Plan 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 Plan experience a loss.

Paying Down Unfunded Liability – Based on SCERS' funding plan, the outstanding Net UAAL balance of $2.464 billion as of June 30, 2020 is projected to be eliminated by year 2038, holding all assumptions constant. [See pages 77-78] Employer contributions should gradually increase through 2034 before dropping significantly as amortization tiers are paid off.

BACKGROUND

The annual actuarial valuation measures the current and projected assets and liabilities of SCERS, as well as the determination of SCERS' funded status. This information forms the basis for establishing the actuary's recommendations for the employer and member 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 SCERS' 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 "differences between expected and actual experience" 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." A review of demographic and economic assumptions is conducted as part of the triennial experience study.

The most recent triennial experience study prepared by Segal covered the period July 1, 2016 through June 30, 2019 and was presented for the Board's consideration in May 2020. At that time, the Board approved the recommended actuarial methods and assumptions changes, which have been used in preparing the annual actuarial valuation as of June 30, 2020.

In determining appropriate contribution rates, the overall goal is to establish employer and member 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 under law. 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) 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, 2020 prepared by Segal.

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 (long-term expected rate of return on pension plan investments) 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, which totals at $12.694 billion as of June 30, 2020.

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

The information in this report are incorporated into SCERS' Comprehensive Annual Financial Report, which was presented to the Audit Committee in November.

ATTACHMENTS

- Fiscal Years 2021-22 and 2020-21 Contribution Rate Schedules
- Actuarial Valuation and Review as of June 30, 2020
- Governmental Accounting Standards Board Statement 67 Actuarial Valuation

/S/
Debbie Chan
Senior Accounting Manager

/S/
Eric Stern
Chief Executive Officer

SCERS
SACRAMENTO COUNTY EMPLOYEES' RETIREMENT SYSTEM

FY 2021-22 and FY 2020-21 EMPLOYER CONTRIBUTION RATES

Sacramento County and Elected Officials

MISCELLANEOUS

	Tier 1		Tier 2		Tier 3		Tier 4		Tier 5	
	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21
Normal Cost	11.80%	10.52%	8.29%	7.66%	11.49%	10.69%	11.07%	10.40%	10.01%	9.45%
UAAL	12.58%	11.51%	12.58%	11.51%	12.58%	11.51%	12.58%	11.51%	12.58%	11.51%
Total	**24.38%**	**22.03%**	**20.87%**	**19.17%**	**24.07%**	**22.20%**	**23.65%**	**21.91%**	**22.59%**	**20.96%**

SAFETY

	Tier 1		Tier 2		Tier 3		Tier 4	
	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21
Normal Cost	30.08%	27.40%	21.36%	19.37%	20.02%	18.73%	15.11%	14.97%
UAAL	35.99%	34.38%	35.99%	34.38%	35.99%	34.38%	35.99%	34.38%
Total	**66.07%**	**61.78%**	**57.35%**	**53.75%**	**56.01%**	**53.11%**	**51.10%**	**49.35%**

Superior Court

MISCELLANEOUS

	Tier 1		Tier 2		Tier 3		Tier 5	
	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21
Normal Cost	15.66%	13.50%	12.41%	11.44%	16.67%	15.54%	10.01%	9.45%
UAAL	12.54%	11.47%	12.54%	11.47%	12.54%	11.47%	12.54%	11.47%
Total	**28.20%**	**24.97%**	**24.95%**	**22.91%**	**29.21%**	**27.01%**	**22.55%**	**20.92%**

Special Districts

MISCELLANEOUS

Galt-Arno Cemetery and Fair Oaks Cemetery Districts

	Tier 3		Tier 5	
	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21
Normal Cost	16.67%	15.54%	10.01%	9.45%
UAAL	16.47%	14.10%	16.47%	14.10%
Total	**33.14%**	**29.64%**	**26.48%**	**23.55%**

Orangevale Recreation and Park District

	Tier 3		Tier 5	
	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21
Normal Cost	11.49%	10.69%	10.01%	9.45%
UAAL	20.61%	18.64%	20.61%	18.64%
Total	**32.10%**	**29.33%**	**30.62%**	**28.09%**

Rio Linda Elverta Recreation and Park District

	Tier 5	
	FY 2021-22	FY 2020-21
Normal Cost	10.01%	9.45%
UAAL	1.83%	0.82%
Total	**11.84%**	**10.27%**

All Other Districts

	Tier 3		Tier 5	
	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21
Normal Cost	16.67%	15.54%	10.01%	9.45%
UAAL	20.61%	18.64%	20.61%	18.64%
Total	**37.28%**	**34.18%**	**30.62%**	**28.09%**

SCERS
SACRAMENTO COUNTY EMPLOYEES' RETIREMENT SYSTEM

FY 2021-22 and FY 2020-21 MEMBER CONTRIBUTION RATES

Sacramento County and Elected Officials

MISCELLANEOUS

	Tier 1*		Tier 2		Tier 3		Tier 4		Tier 5	
	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21
All	11.21%	9.58%	8.44%	7.80%	11.41%	10.60%	10.97%	10.29%	10.01%	9.45%

SAFETY

	Tier 1*		Tier 2		Tier 3		Tier 4	
	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21
All	23.00%	22.40%	21.16%	19.24%	19.95%	18.68%	15.11%	14.97%

Superior Court

MISCELLANEOUS

	Tier 1*		Tier 2		Tier 3		Tier 5	
	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21
All	6.75%	5.98%	4.16%	3.87%	6.01%	5.51%	10.01%	9.45%

Special Districts

MISCELLANEOUS

	Tier 3		Tier 5	
	FY 2021-22	FY 2020-21	FY 2021-22	FY 2020-21
Galt-Arno Cemetery and Fair Oaks Cemetery Districts	6.01%	5.51%	10.01%	9.45%
Orangevale Recreation and Park District	11.41%	10.60%	10.01%	9.45%
Rio Linda Elverta Recreation and Park District			10.01%	9.45%
All Other Districts	6.01%	5.51%	10.01%	9.45%

Note: For legacy tiers (Miscellaneous tiers 1, 2, 3, and 4 and Safety tiers 1, 2, and 3), member rates shown are for bi-weekly salary in excess of $161 (or monthly salary in excess of $350). For PEPRA tiers (Miscellaneous tier 5 and Safety tier 4), member rates shown are for the total bi-weekly salary.

* Members who enter prior to 1/1/1975 contribute on the basis of their actual entry age and all others contribute based on the basis of a single entry age of 35 for Miscellaneous members and age of 29 for Safety members.

Sacramento County Employees' Retirement System

Actuarial Valuation and Review

As of June 30, 2020

Segal

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November 9, 2020

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, 2020. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for fiscal year 2021-2022.

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 staff of the System. That assistance is gratefully acknowledged.

The actuarial calculations were directed under the supervision of Andy Yeung, ASA, MAAA, FCA and 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 this 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 System.

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

Sincerely,

Segal

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

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Actuary

ST/jl

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Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal to present a valuation of the Sacramento County Employees' Retirement System ("SCERS" or "the System") as of June 30, 2020. The valuation was performed to determine whether the assets and contribution rates are sufficient to provide the prescribed benefits. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of current Plan assets to cover the estimated cost of settling the Plan's accrued benefit obligations.

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; and changes in plan provisions or applicable law.

The contribution requirements presented in this report are based on:

- The benefit provisions of the pension plan, 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, 2020, provided by SCERS;
- The assets of the Plan as of June 30, 2020, provided by SCERS;
- Economic assumptions regarding future salary increases and investment earnings;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. and
- The funding policy adopted by the Board of Retirement.

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 liabilities and future contribution requirements. Our calculations are based upon member data and financial information provided to us by the

Section 1: Actuarial Valuation Summary

System's staff. This information has not been audited by us, but it has been reviewed and found to be consistent, both internally and with prior year's information.

The contribution requirements are determined as a percentage of payroll. The System's employer rates provide for both Normal Cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have applied the funding policy adopted by the Board on June 19, 2013 and affirmed by the Board on February 21, 2018. Details of the funding policy are provided in *Section 4, Exhibit I* on pages 92 and 93.

A schedule of current amortization balances and payments may be found in *Section 3, Exhibit H* on pages 74 through 76. A graphical projection of the Unfunded Actuarial Accrued Liability (UAAL) amortization balances and payments has been included in *Section 3, Exhibit I* on pages 77 and 78.

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2021 through June 30, 2022.

Valuation Highlights

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1. The results of this valuation reflect changes in the economic and demographic assumptions as recommended by Segal and adopted by the Board for the June 30, 2020 valuation. These changes were documented in our Actuarial Experience Study and are also outlined in *Section 4, Exhibit I*. These assumption changes resulted in an increase in the average employer rate of 2.39% of payroll and an increase in the aggregate member rate of 0.87% of payroll. There is also an increase in the UAAL amount of $216.1 million. Out of the 2.39% of payroll increase in average employer rate, 0.92% is an increase in the Normal Cost rate and 1.47% is an increase in the UAAL rate.

   The Board adopted a two-year phase-in of the cost impact of the changes in actuarial assumptions on the employer's UAAL rate only. The employer should be aware that their contributions for 2022-2023 (that will be established in the June 30, 2021 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. In this report, we have shown the rates for 2021-2022 both before and after the phase-in.

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2. The ratio of the actuarial value of assets to actuarial accrued liabilities decreased from 81.6% to 80.6%. On a market value of assets basis, the funded ratio decreased from 82.6% to 78.6%. The System's UAAL increased from $2,192 million as of June 30, 2019 to $2,464 million as of June 30, 2020. A reconciliation of the System's UAAL is provided in *Section 2, Subsection E*. A schedule of the current UAAL amortization amounts is provided in *Section 3, Exhibit H*. A graphical projection of the UAAL amortization bases and payments has been provided in *Section 3, Exhibit I*.

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3. The aggregate employer rate increased from 29.35% of payroll to 31.42% of payroll (after first year of phase-in). The reasons for this change in contribution rate are: (i) the changes in actuarial assumptions, (ii) lower than expected returns on investments (after "smoothing"), (iii) lower than expected contributions, (iv) higher than expected COLA increases for Tier 1 retirees and beneficiaries, (v) higher than expected individual salary increases during 2019-2020, (vi) and other losses, offset to some degree by (vii) phasing in the cost impact of the changes in actuarial assumptions on the employer's UAAL rate over two years, (viii) lower UAAL rate due to higher than expected increase in total payroll, and (ix) changes in membership demographics. A reconciliation of the System's aggregate employer rate is provided in *Section 2, Subsection F*.

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4. The aggregate member rate calculated in this valuation has increased from 11.54% of payroll to 12.35% of payroll. The increase in member rate is due to changes in actuarial assumption 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 F*.

5. As of June 30, 2020, about 41% 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 1.2% of payroll compared to what the aggregate Normal Cost rate would have been if all active members were enrolled in the legacy tiers.

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6. As indicated in *Section 2, Subsection B*, the total net unrecognized investment loss as of June 30, 2020 is $250.4 million (as compared to a net unrecognized investment gain of $118.4 million as of June 30, 2019). This net investment loss 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 6.75% per year on a **market value** basis, there will still be net investment losses on the actuarial value of assets in the next few years. Therefore, if the actual market return is equal to the assumed rate of 6.75% and all the other actuarial assumptions are met, the net employer contribution requirements would increase in the next few years.

The unrecognized investment losses represent about 2.5% of the market value of assets. Unless offset by future investment gains or other favorable experience, the recognition of the $250.4 million in past market losses 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:

a. If the deferred losses were recognized immediately in the actuarial value of assets, the funded percentage would decrease from 80.6% to 78.6%.

   For comparison purposes, if all the deferred gains in the June 30, 2019 valuation had been recognized immediately in the June 30, 2019 valuation, the funded percentage would have increased from 81.6% to 82.6%.

b. If the deferred losses were recognized immediately in the actuarial value of assets, the aggregate employer contribution rate would increase from 31.42% of payroll to 33.1% of payroll. Note that both of these rates are calculated with the two-year phase-in of the UAAL rate impact from the assumption changes.

   For comparison purposes, if all the deferred gains in the June 30, 2019 valuation had been recognized immediately in the June 30, 2019 valuation, the aggregate employer contribution rate would have decreased from 29.44% of payroll to 28.6% of payroll.

7. The $144.0 million in the Contingency Reserve as of June 30, 2020 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, 2020 valuation, the aggregate employer contribution rate would have decreased by about 1.0% of payroll.

8. It is important to note that this actuarial valuation is based on plan assets as of June 30, 2020. Due to the COVID-19 pandemic, market conditions have changed significantly during 2020. The Plan's funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the Plan Year. While it is impossible to determine how the pandemic will continue to affect market conditions prior to next year's valuation, Segal is available to prepare projections of potential outcomes upon request.

9. On July 30, 2020, the California Supreme Court issued a decision in the case of Alameda County Deputy Sheriffs' Association et al. v. Alameda County Employees' Retirement Association (ACERA) and Board of Retirement of ACERA. That decision has important implications for SCERS and its members. In particular, that decision requires pension systems like SCERS to exclude certain pay items from a legacy member's compensation earnable. It should be noted that neither the June 30, 2020 assets provided by SCERS nor the liabilities we calculated using the membership data provided by SCERS reflect the financial impact of the Supreme Court decision.

10. 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 only on actuarial experience that occurred on or after July 1, 2017.

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11. Actuarial Standard of Practice No. 51 (ASOP 51) requires actuaries to identify and assess risks that "may reasonably be anticipated to significantly affect the plan's future financial condition." Examples of key risks listed that are particularly relevant to SCERS are asset/liability mismatch risk, investment risk, and longevity risk. The standard also requires an actuary to consider if there is any ongoing contribution risk to the plan, however it does not require the actuary to evaluate the particular ability or willingness of contributing entities to make contributions when due, nor does it require the actuary to assess the likelihood or consequences of future changes in applicable law.

    The actuary's initial assessment can be strictly a qualitative discussion about potential adverse experience and the possible effect on future results, but it may also include quantitative numerical demonstrations where informative. The actuary is also encouraged to consider a recommendation as to whether a more detailed assessment or risk report would be significantly beneficial for the intended user in order to examine particular financial risks. When making that recommendation, the actuary will take into account such factors as the plan's design, risk profile, maturity, size, funded status, asset allocation, cash flow, possible insolvency and current market conditions.

    Since the actuarial valuation results are dependent on a fixed set of assumptions and data as of a specific date, there is risk that emerging results may differ, perhaps significantly, as actual experience is fluid and will not exactly track current assumptions. This potential divergence may have a significant impact on the future financial condition of the plan. Following the completion of the June 30, 2019 valuation, we prepared a stand-alone Risk Assessment report dated February 12, 2020 by using membership and financial information as provided in the actuarial valuation as of June 30, 2019. That report includes various projections (both deterministic and stochastic) of future results under different investment return scenarios together with the assumptions adopted for the June 30, 2019 valuation.

    A copy of the stand-alone risk assessment report associated with this June 30, 2020 valuation, including the quantitative analyses recommended by Segal in consultation with SCERS staff, will be available in the first quarter of 2021. In the interim, we have included a brief discussion of key risks that may affect the System in *Section 2, Subsection J*.

Summary of Key Valuation Results

		June 30, 2020 (After Phase-In)		June 30, 2019	
		Total Rate	Estimated Annual Dollar Amount[1] ($ in '000s)	Total Rate	Estimated Annual Dollar Amount[1] ($ in '000s)
Employer Contribution Rates:	• Miscellaneous Tier 1	24.86%	$589	22.41%	$531
	• Miscellaneous Tier 2	21.61%	653	19.89%	601
	• Miscellaneous Tier 3	24.96%	127,611	23.08%	117,960
	• Miscellaneous Tier 4	23.65%	7,308	21.91%	6,771
	• Miscellaneous Tier 5	23.00%	64,205	21.40%	59,726
	• Safety Tier 1	66.07%	6,543	61.78%	6,119
	• Safety Tier 2	57.35%	83,303	53.75%	78,073
	• Safety Tier 3	56.01%	8,285	53.11%	7,855
	• Safety Tier 4	51.10%	37,810	49.35%	36,516
	All Categories Combined	**31.42%**	**$336,307**	**29.35%**	**$314,152**
Aggregate Member Contribution Rates:	**All Categories Combined**	**12.35%**	**$132,208**	**11.54%**	**$123,537**
		Total Rate[2]	**Per Member Annual Dollar Amount[3]**	**Total Rate[2]**	**Per Member Annual Dollar Amount[3]**
Individual Member Contribution Rates:[4]	• Miscellaneous Tier 1	6.75%	$6,054	5.98%	$5,369
	• Miscellaneous Tier 2	4.16%	3,165	3.87%	2,944
	• Miscellaneous Tier 3	6.01%	5,195	5.51%	4,761
	• Miscellaneous Tier 4	8.99%	8,268	8.36%	7,684
	• Miscellaneous Tier 5	10.01%	6,430	9.45%	6,070
	• Safety Tier 1	18.86%[5]	30,363	19.84%	31,940
	• Safety Tier 2	16.04%	21,424	14.79%	19,764
	• Safety Tier 3	15.52%	18,916	14.35%	17,490
	• Safety Tier 4	15.11%	13,503	14.97%	13,377

1 Based on June 30, 2020 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, 2020 average projected annual compensation for members in each respective tier.
4 Before reflecting members in legacy tiers agreeing to contribute an additional portion of the Normal Cost.
5 There is a reduction in the member rate for Safety Tier 1 primarily as a result of an increase in the COLA offset as the number of active members in that Tier shrunk by about one-third during 2019-2020. Also, the remaining members are expected to retire earlier under the new assumptions used in this valuation.

Summary of Key Valuation Results (continued)

		June 30, 2020 ($ in '000s)	June 30, 2019 ($ in '000s)
Actuarial Accrued Liability as of June 30:	• Retired members and beneficiaries	$7,455,984	$6,980,429
	• Inactive vested members[1]	401,957	374,219
	• Active members	4,680,298	4,395,106
	• Non-valuation reserves and designations	155,416	145,766
	• Total Actuarial Accrued Liability[2]	12,693,655	11,895,520
	• Normal Cost for plan year beginning June 30	274,029	249,783
Assets as of June 30:	• Market Value of Assets (MVA)	$9,979,379	$9,821,694
	• Actuarial Value of Assets (AVA)[2]	10,229,760	9,703,313
Funded status as of June 30:	• Unfunded Actuarial Accrued Liability on Market Value of Assets basis	$2,714,276	$2,073,826
	• Funded percentage on MVA basis	78.6%	82.6%
	• Unfunded Actuarial Accrued Liability on Actuarial Value of Assets basis	$2,463,894	$2,192,207
	• Funded percentage on AVA basis	80.6%	81.6%
Key assumptions:	• Net investment return	6.75%	7.00%
	• Price inflation	2.75%	3.00%
	• Payroll growth	3.00%	3.25%

Note: Results may not total due to rounding.

[1] Includes inactive members due a refund of member contributions.
[2] Includes non-valuation reserves and designations.

Summary of Key Valuation Results (continued)

		June 30, 2020	June 30, 2019	Change From Prior Year
Demographic data as of June 30:	**Active Members:**			
	• Number of members	12,650	12,678	-0.2%
	• Average age	45.7	45.7	0.0
	• Average service	11.9	11.9	0.0
	• Total projected compensation	$1,070,512,488	$1,038,340,908	3.1%
	• Average projected compensation	$84,625	$81,901	3.3%
	Retired Members and Beneficiaries:			
	• Number of members:			
	– Service retired	10,313	10,001	3.1%
	– Disability retired	699	719	-2.8%
	– Beneficiaries	1,720	1,661	3.6%
	– Total	12,732	12,381	2.8%
	• Average age	70.1	69.8	0.3
	• Average monthly benefit	$3,658	$3,521	3.9%
	Inactive Vested Members:			
	• Number of members[1]	3,791	3,602	5.2%
	• Average age	46.9	47.0	-0.1
	Total Members:	29,173	28,661	1.8%

[1] Includes inactive 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 a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the Market Value of Assets as of the valuation date, as provided by the System. The System uses a "Valuation Value of Assets" that differs from market value to gradually reflect year-to-year changes in the Market Value of Assets in determining the contribution requirements.
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, termination, 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.
Models	Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

Section 1: Actuarial Valuation Summary

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

The actuarial valuation is prepared at the request of the System. Segal is not responsible for the use or misuse of its report, particularly by any other party.

An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan. Future contribution requirements may differ from those determined in the valuation because of:

- Differences between actual experience and anticipated experience;
- Changes in actuarial assumptions or methods; and
- Changes in statutory provisions.

Some actuarial results in this report are not rounded, but that does not imply precision.

If the System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.

Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The System should look to their other advisors for expertise in these areas.

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

Section 2: Actuarial Valuation Results

A. Member Data

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, inactive vested 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*.

Member Population: 2011 – 2020

Year Ended June 30	Active Members	Inactive Vested Members[1]	Retired Members and Beneficiaries	Total Non-Actives	Ratio of Non-Actives to Actives	Ratio of Retired Members and Beneficiaries to Actives
2011	12,434	2,710	8,821	11,531	0.93	0.71
2012	12,155	2,851	9,239	12,090	0.99	0.76
2013	12,026	3,249	9,634	12,883	1.07	0.80
2014	12,049	3,201	10,049	13,250	1.10	0.83
2015	12,072	3,261	10,541	13,802	1.14	0.87
2016	12,393	3,301	10,960	14,261	1.15	0.88
2017	12,587	3,425	11,396	14,821	1.18	0.91
2018	12,677	3,509	11,883	15,392	1.21	0.94
2019	12,678	3,602	12,381	15,983	1.26	0.98
2020	12,650	3,791	12,732	16,523	1.31	1.01

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

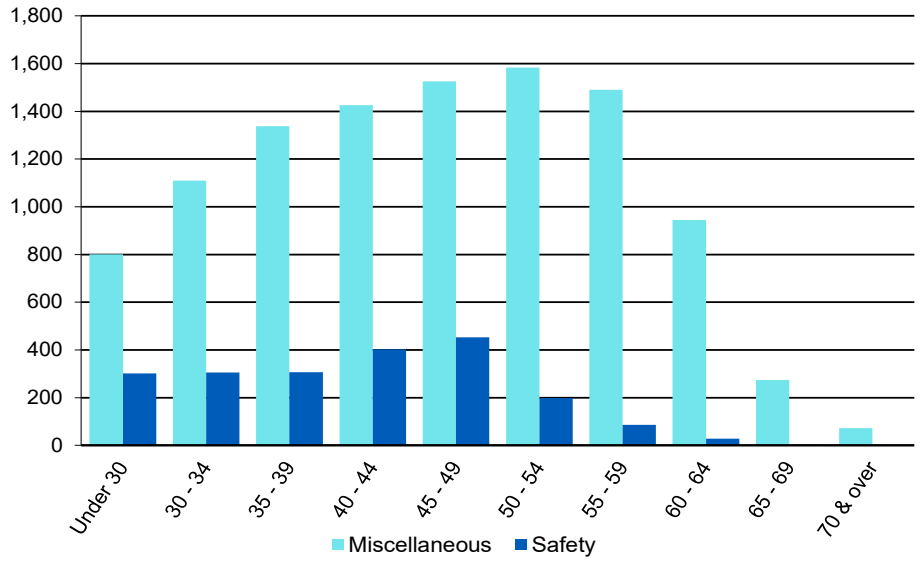
Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 12,650 active members with an average age of 45.7, average years of service of 11.9 years and average compensation of $84,625. The 12,678 active members in the prior valuation had an average age of 45.7, average service of 11.9 years and average compensation of $81,901.

Among the active members, there were none with unknown age information.

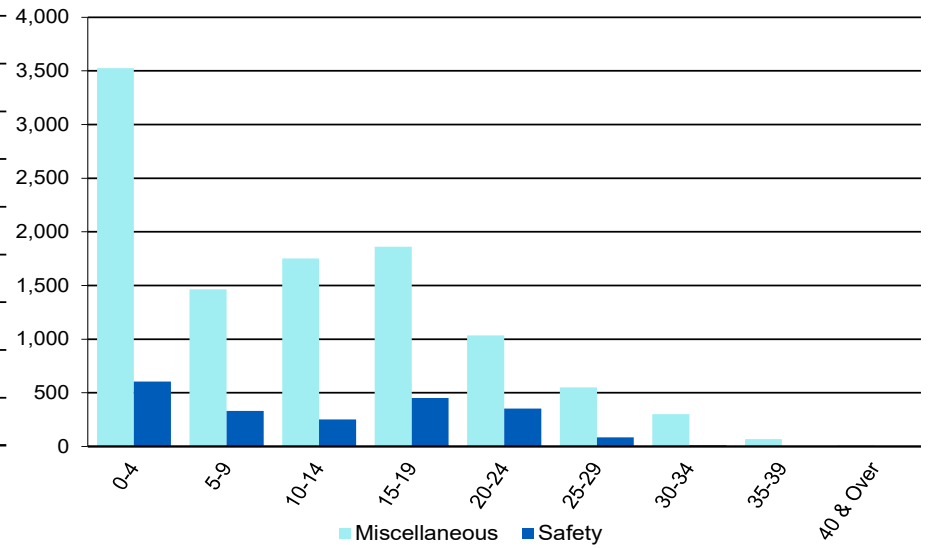
Distribution of Active Members as of June 30, 2020

Actives by Age



Average age	45.7
Prior year average age	45.7
Difference	0.0

Actives by Years of Service



Average years of service	11.9
Prior year average years of service	11.9
Difference	0.0

Inactive Members

In this year's valuation, there were 3,791 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 3,602 in the prior valuation.

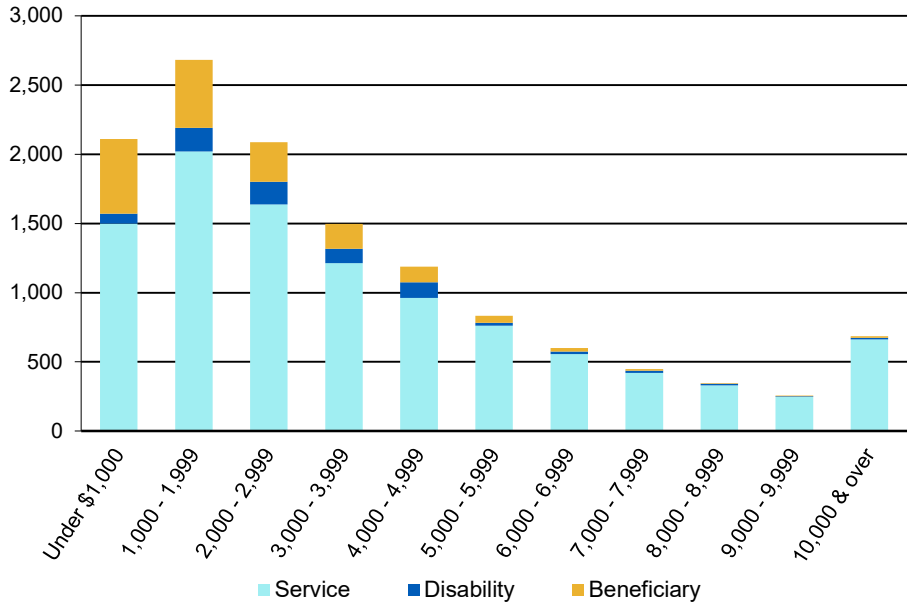
Retired Members and Beneficiaries

As of June 30, 2020, 11,012 retired members and 1,720 beneficiaries were receiving total monthly benefits of $46,579,173. For comparison, in the previous valuation, there were 10,720 retired members and 1,661 beneficiaries receiving monthly benefits of $43,599,217.

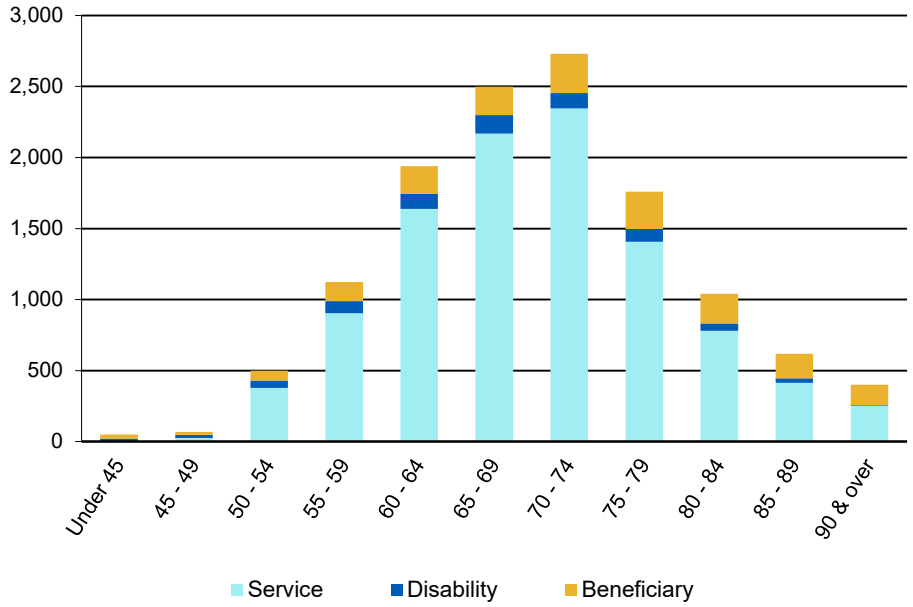
As of June 30, 2020, the average monthly benefit for retired members and beneficiaries is $3,658, compared to $3,521 in the previous valuation. The average age for retired members and beneficiaries is 70.1 in the current valuation, compared with 69.8 in the prior valuation.

Distribution of Retired Members and Beneficiaries as of June 30, 2020

Retired Members and Beneficiaries by Type and Monthly Amount



Retired Members and Beneficiaries by Type and Age



Historical Plan Population

The chart below demonstrates the progression of the active population over the last ten years. The chart also shows the growth among the retired population over the same time period.

Member Data Statistics: 2011 – 2020

	Active Members			Retired Members and Beneficiaries		
Year Ended June 30	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2011	12,434	46.4	12.1	8,821	68.7	$2,683
2012	12,155	46.8	12.6	9,239	68.8	2,780
2013	12,026	47.0	12.9	9,634	69.0	2,865
2014	12,049	46.9	12.8	10,049	69.1	2,950
2015	12,072	46.7	12.7	10,541	69.2	3,072
2016	12,393	46.3	12.4	10,960	69.4	3,156
2017	12,587	46.0	12.1	11,396	69.5	3,260
2018	12,677	45.7	11.9	11,883	69.6	3,381
2019	12,678	45.7	11.9	12,381	69.8	3,521
2020	12,650	45.7	11.9	12,732	70.1	3,658

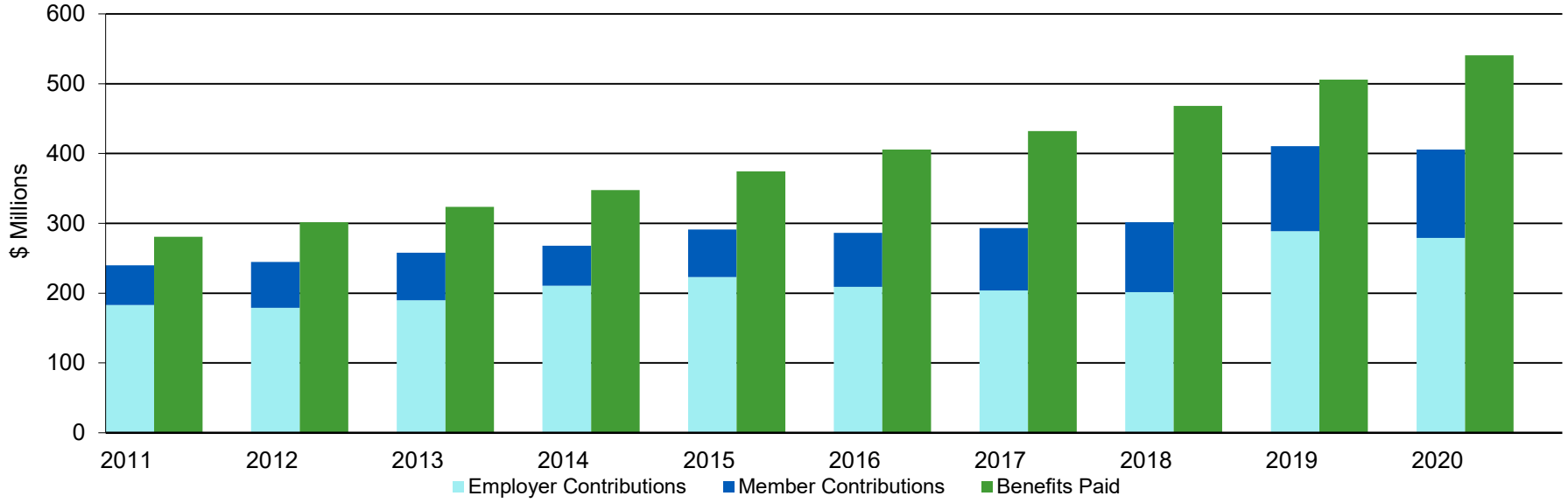
B. Financial Information

Retirement plan funding anticipates that, over the long term, both contributions and 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 transactions for the valuation year, is presented in *Section 3, Exhibits D, E, F* and *G*.

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

Comparison of Contributions Made with Benefits for Years Ended June 30, 2011 – 2020



Section 2: Actuarial Valuation Results

Determination of Actuarial Value of Assets for Year Ended June 30, 2020

		Expected Return	Actual Return	Original Amount	Percent Deferred	Unrecognized Amount
1	**Market Value of Assets**					**$9,979,379,000**
2	Calculation of unrecognized return					
a)	Year ended June 30, 2015	$589,233,282	$152,368,245	$(436,865,037)	14.3%	$(62,409,291)
b)	Year ended June 30, 2016	592,506,256	(78,760,809)	(671,267,065)	28.6%	(191,790,590)
c)	Year ended June 30, 2017	576,748,382	1,042,009,164	465,260,782	42.9%	199,397,478
d)	Year ended June 30, 2018	600,381,878	834,483,764	234,101,886	57.1%	133,772,506
e)	Year ended June 30, 2019	649,300,474	665,185,884	15,885,410	71.4%	11,346,721
f)	Year ended June 30, 2020	690,394,213	292,913,229	(397,480,984)	85.7%	(340,697,986)
g)	Total unrecognized return[1]					$(250,381,162)
3	**Preliminary Actuarial Value of Assets 1 – 2g**					**$10,229,760,162**
4	Adjustment to be within 30% corridor					**0**
5	**Final Actuarial Value of Assets 3 + 4**					**$10,229,760,162**
6	Actuarial Value of Assets as a percentage of Market Value of Assets					102.5%
7	Non-valuation reserves and designations:					
a)	Contingency Reserve					$143,982,952
b)	Other Non-Valuation Reserves					0
c)	Subtotal					$143,982,952
8	**Preliminary Valuation Value of Assets 5 – 7c**					**$10,085,777,210**
9	Adjustment to Preliminary Valuation Value of Assets					
a)	Balance of transfer to offset member COLA rate[2]					$14,809,000
b)	Surplus/(deficit) for declining employer[3]					(3,376,293)
c)	Subtotal					$11,432,707
10	**Final Valuation Value of Assets 8 – 9c**					**$10,074,344,503**

[1] Deferred return as of June 30, 2020 recognized in each of the next six years:

(a)	Amount recognized on June 30, 2021	$(112,909,287)	(d)	Amount recognized on June 30, 2024	(21,070,528)
(b)	Amount recognized on June 30, 2022	(50,499,996)	(e)	Amount recognized on June 30, 2025	(54,513,652)
(c)	Amount recognized on June 30, 2023	45,395,298	(f)	Amount recognized on June 30, 2026	(56,782,997)
			(g)	Total unrecognized return as of June 30, 2020	$(250,381,162)

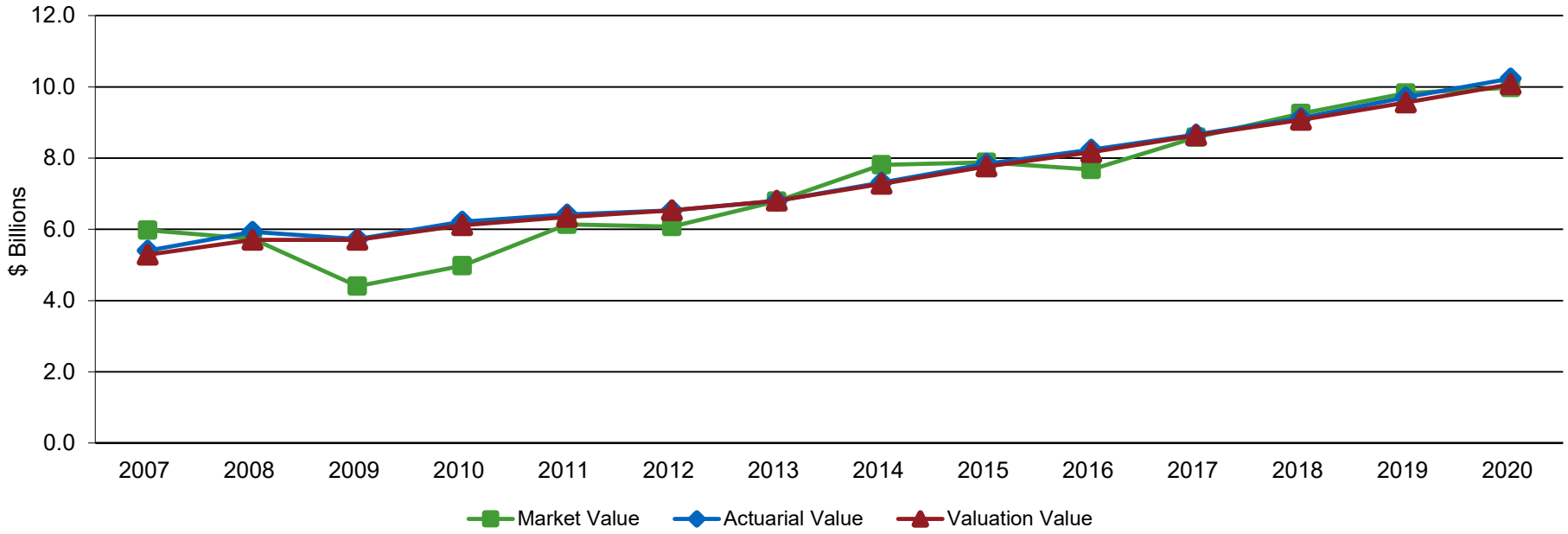
[2] This amount has been applied in this valuation to offset the legacy members' COLA contribution rates over their expected remaining active working career of 8.69 years. There is a reduction in the aggregate member rate of 0.21% when expressed as a percent of payroll for all members in this valuation.

[3] Based on the latest estimate under SCERS' Declining Employer Payroll Policy of the asset shortfall for North Highlands Fire available as of June 30, 2019 adjusted to June 30, 2020 with interest at the assumed rate of investment return (i.e., 7.00% as of June 30, 2019).

Section 2: Actuarial Valuation Results

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

Market Value, Actuarial Value, and Valuation Value of Assets as of June 30, 2007 – 2020



C. Actuarial Experience

To calculate any actuarially determined 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 actuarially determined contribution will decrease from the previous year. On the other hand, the actuarially determined contribution 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. There are changes in actuarial assumptions reflected in this valuation.

The total loss is $83.7 million, which includes $19.9 million from investment losses, a loss of $18.5 million from contribution experience and $45.3 in losses from all other sources. The net experience variation from individual sources other than investments and contributions was 0.4% of the Actuarial Accrued Liability. A discussion of the major components of the actuarial experience is on the following pages.

Actuarial Experience for Year Ended June 30, 2020

1	Net loss from investments[1]	$(19,877,000)
2	Net loss from contribution experience	(18,520,000)
3	Net loss from other experience[2]	(45,262,000)
4	**Net experience loss: 1 + 2 + 3**	**$(83,659,000)**

[1] Details on next page.
[2] See *Section 2, Subsection E* for further details. Does not include the effect of plan or assumption changes, if any.

Investment Experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Plan's investment policy. The rate of return on the Market Value of Assets was 2.97% for the year ended June 30, 2020.

For valuation purposes, the assumed rate of return on the Valuation Value of Assets was 7.00%. The actual rate of return on a valuation basis for the 2019-2020 plan year was 6.79%. Since the actual return for the year was less than the assumed return, the Plan experienced an actuarial loss during the year ended June 30, 2020 with regard to its investments.

Investment Experience for Year Ended June 30, 2020

		Market Value	Actuarial Value	Valuation Value
1	Net investment income	$292,913,000	$661,676,000	$652,027,000
2	Average value of assets	9,862,774,000	9,744,393,000	9,598,627,000
3	Rate of return: **1 ÷ 2**	2.97%	6.79%	6.79%
4	Assumed rate of return	7.00%	7.00%	7.00%
5	Expected investment income: **2 x 4**	$690,394,000	$682,108,000	$671,904,000
6	**Actuarial gain/(loss): 1 - 5**	**$(397,481,000)**	**$(20,432,000)**	**$(19,877,000)**

Section 2: Actuarial Valuation Results

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 and valuation basis compared to the actual market value investment return for the last ten years, including averages over select time periods.

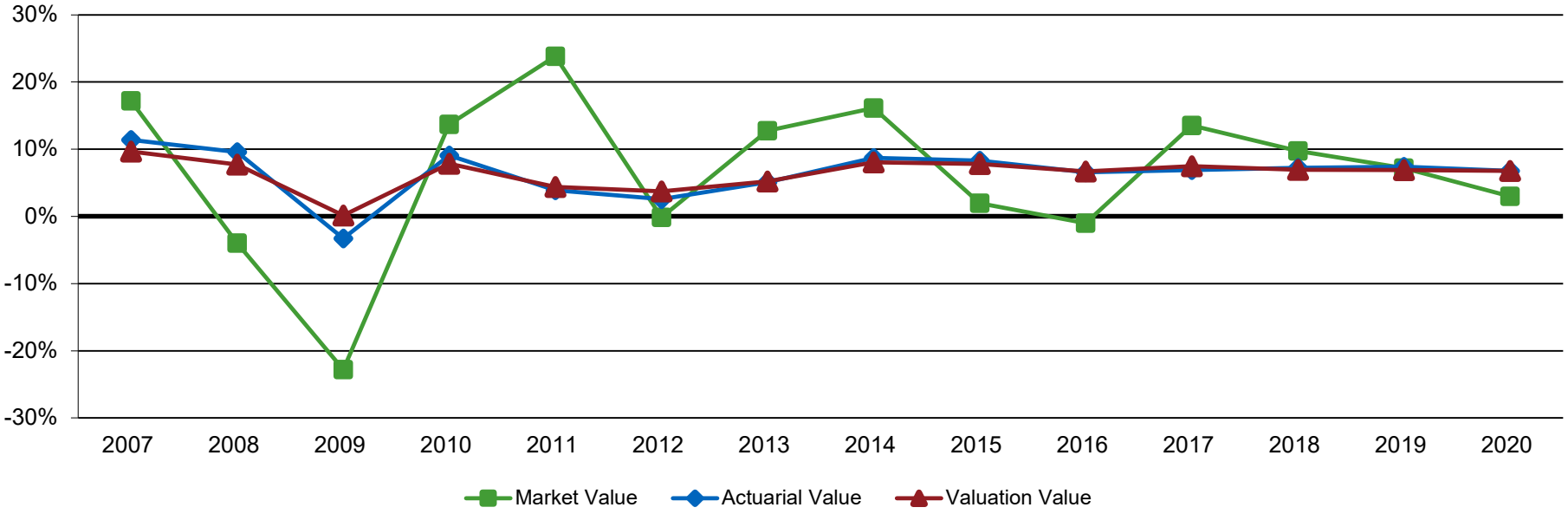
Investment Return – Market Value, Actuarial Value and Valuation Value: 2011 – 2020

	Market Value Investment Return		Actuarial Value Investment Return		Valuation Value Investment Return	
Year Ended June 30	Amount	Percent	Amount	Percent	Amount	Percent
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%
2019	665,186,000	7.17%	675,738,000	7.39%	628,142,000	6.91%
2020	292,913,000	2.97%	661,676,000	6.79%	652,027,000	6.79%
Most recent five-year geometric average return		**6.36%**		**6.97%**		**6.96%**
Most recent ten-year geometric average return		**8.43%**		**6.32%**		**6.39%**

Section 2: Actuarial Valuation Results

Section 2, Subsection B described the actuarial asset valuation method that gradually recognizes fluctuations in the market value rate of return. The goal of this is to stabilize the actuarial rate of return and to produce more level pension plan costs.

Market, Actuarial and Valuation Rates of Return for Years Ended June 30, 2007 – 2020



Contributions

Contributions for the year ended June 30, 2020 totaled $400.7 million (including $0.3 million in contributions made by an employer under the Declining Employer Payroll Policy, but excluding $4.8 million in receivable and actual contributions made by a withdrawn employer required to pay off its unfunded liability), compared to the projected amount of $425.9 million. This resulted in a loss of $18.5 million for the year, when adjusted for timing. These exclude any contributions for withdrawn employers, if any.

Non-Investment 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:

- the extent of turnover among participants,
- retirement experience (earlier or later than projected),
- mortality (more or fewer deaths than projected),
- the number of disability retirements (more or fewer than projected),
- salary increases (greater or smaller than projected), and
- cost-of-living adjustments (COLAs) higher or lower than anticipated.

The net loss from this other experience for the year ended June 30, 2020 amounted to $45.3 million, which is 0.4% of the Actuarial Accrued Liability. See *Section 2, Subsection E* for a detailed development of the Unfunded Actuarial Accrued Liability.

D. Other Changes in the Actuarial Accrued Liability

Actuarial Assumptions

The assumption changes reflected in this report were based on the July 1, 2016 through June 30, 2019 Actuarial Experience Study report dated May 11, 2020.

- These changes increased the Actuarial Accrued Liability by 1.75% and increased the Normal Cost by 5.56%.
- The assumption changes include changes to inflation, investment return, merit and promotion salary increases, retirement from active employment, retirement age for deferred vested members, percent of members assumed to go on to work for a reciprocal system, reciprocal salary increases, pre-retirement mortality, healthy life post-retirement mortality, disabled life post-retirement mortality, beneficiary mortality, termination, and disability incidence (duty and non-duty).

Details on actuarial assumptions and methods are in *Section 4, Exhibit I*.

Plan Provisions

There were no changes in plan provisions since the prior valuation.

A summary of plan provisions is in *Section 4, Exhibit II*.

E. Development of Unfunded Actuarial Accrued Liability

Development for Year Ended June 30, 2020

1	**Unfunded Actuarial Accrued Liability at beginning of year**		**$2,192,207,000**
2	Total Normal Cost at middle of year		249,783,000
3	Expected employer and member contributions[1]		(425,896,000)
4	Interest		148,044,000
5	Expected Unfunded Actuarial Accrued Liability at end of year		$2,164,138,000
6	Changes due to:		
	a) Investment return less than expected (after "smoothing")	$19,877,000	
	b) Actual contributions less than expected[1, 2]	18,520,000	
	c) Individual salary increases higher than expected	10,752,000	
	d) COLA increases higher than expected	17,282,000	
	e) Other experience losses	17,228,000	
	f) Changes in actuarial assumptions	216,097,000	
	Total changes		$299,756,000
7	**Unfunded Actuarial Accrued Liability at end of year**		**$2,463,894,000**

Note: The sum of items 6c through 6e equals the "Net loss from other experience" shown in *Section 2, Subsection C*.

[1] Contribution from Sacramento Metropolitan Fire District is excluded from both the expected and the actual contributions.
[2] Due to the one-year lag in implementation of the contribution rates.

F. Recommended Contribution

The recommended contribution is equal to the employer Normal Cost payment and a payment on the Unfunded Actuarial Accrued Liability. The Board adopted a two-year phase-in of the cost impact of the changes in actuarial assumptions on the employer's UAAL rate only. As of June 30, 2020, the average recommended employer contribution is 31.42% of compensation, after the phase-in.

The Board sets the funding policy used to calculate the recommended contribution based on layered amortization periods. See *Section 4, Exhibit I* for further details on the funding policy.

The contribution requirement as of June 30, 2020 is based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

Average Recommended Employer Contribution for Year Ended June 30

		2020		2019	
		Amount ($ in '000s)	% of Projected Compensation	Amount ($ in '000s)	% of Projected Compensation
1	Total Normal Cost	$274,029	25.60%	$249,783	24.06%
2	Expected member Normal Cost contributions	(132,208)	(12.35%)	(120,240)	(11.58%)
3	Employer Normal Cost: 1 + 2	$141,821	13.25%	$129,543	12.48%
4	Actuarial Accrued Liability[1]	12,538,239		11,749,754	
5	Valuation Value of Assets[1]	10,074,345		9,557,547	
6	Unfunded Actuarial Accrued Liability: 4 - 5	$2,463,894		$2,192,207	
7	Payment on Unfunded Actuarial Accrued Liability	$194,486[2]	18.17%[2]	$176,113	16.96%
8	Total average recommended employer contribution: 3 + 7	$336,307[2]	31.42%[2]	$305,656	29.44%
9	Projected compensation	$1,070,512		$1,038,341	

Note: Contributions are assumed to be paid at the middle of the year.

[1] Excludes non-valuation reserves and designations.
[2] After reflecting two-year phase-in.

Reconciliation of Average Recommended Employer Contribution Rate

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

Reconciliation from June 30, 2019 to June 30, 2020

		Contribution Rate	Estimated Annual Dollar Amount[1] ($ in '000s)
1	**Average Recommended Employer Contribution as of June 30, 2019**	**29.35%**	**$314,152**
2	Effect of investment return less than expected (after "smoothing")	0.13%	1,392
3	Effect of actual contributions less than expected	0.12%	1,285
4	Effect of individual salary increases higher than expected	0.07%	749
5	Effect of decrease in UAAL rate from higher than expected increase in total payroll	(0.06%)	(642)
6	Effect of COLA increases higher than expected	0.11%	1,178
7	Effect of changes in active member demographics	(0.03%)	(267)
8	Effect of other losses	0.07%	751
9	Effect of changes in actuarial assumptions (before reflecting two-year phase-in)	2.39%	25,585
10	Total change	2.80%	$30,031
11	**Average Recommended Employer Contribution as of June 30, 2020 (Before Reflecting Two-Year Phase-In)**	**32.15%**	**$344,183**
12	Effect of phase-in of employer's UAAL contribution rate impact due to changes in actuarial assumptions over two years	(0.73%)	(7,876)
13	**Average Recommended Employer Contribution as of June 30, 2020 (After Reflecting Two-Year Phase-In)**	**31.42%**	**$336,307**

[1] Based on June 30, 2020 projected compensation.

Reconciliation of Average Recommended Member Contribution Rate

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

Reconciliation from June 30, 2019 to June 30, 2020

		Contribution Rate	Estimated Annual Dollar Amount[1] ($ in '000s)
1	**Average Recommended Member Contribution as of June 30, 2019**	**11.54%**	**$123,537**
2	Effect of changes in active member demographics	(0.08%)	(856)
3	Effect of reduction in COLA offset	0.02%	214
4	Effect of changes in actuarial assumptions	0.87%	9,313
5	Total change	0.81%	$8,671
6	**Average Recommended Member Contribution as of June 30, 2020**	**12.35%**	**$132,208**

[1] Based on June 30, 2020 projected compensation.

Recommended Employer Contribution Rate

County Only[1]	June 30, 2020 Actuarial Valuation Contribution Rate	June 30, 2020 Actuarial Valuation Estimated Annual Dollar Amount[2] ($ in '000s)	June 30, 2019 Actuarial Valuation Contribution Rate	June 30, 2019 Actuarial Valuation Estimated Annual Dollar Amount[2] ($ in '000s)
Miscellaneous – Tier 1 Members				
Normal Cost	11.80%	$244	10.52%	$217
UAAL	13.40%	277	11.51%	238
Total Contribution	**25.20%**	**$521**	**22.03%**	**$455**
Total Contribution after 2-year Phase-In	**24.38%**	**$504**		
Miscellaneous – Tier 2 Members				
Normal Cost	8.29%	$204	7.66%	$189
UAAL	13.40%	330	11.51%	284
Total Contribution	**21.69%**	**$534**	**19.17%**	**$473**
Total Contribution after 2-year Phase-In	**20.87%**	**$514**		
Miscellaneous – Tier 3 Members				
Normal Cost	11.49%	$51,984	10.69%	$48,364
UAAL	13.40%	60,625	11.51%	52,074
Total Contribution	**24.89%**	**$112,609**	**22.20%**	**$100,438**
Total Contribution after 2-year Phase-In	**24.07%**	**$108,899**		
Miscellaneous – Tier 4 Members				
Normal Cost	11.07%	$3,421	10.40%	$3,214
UAAL	13.40%	4,141	11.51%	3,557
Total Contribution	**24.47%**	**$7,562**	**21.91%**	**$6,771**
Total Contribution after 2-year Phase-In	**23.65%**	**$7,308**		

[1] Includes elected officials (Board of Supervisors, Sheriff, District Attorney and Assessor).
[2] Based on June 30, 2020 projected annual payroll, see page 38.

Recommended Employer Contribution Rate (continued)

County Only[1] (continued)	June 30, 2020 Actuarial Valuation Contribution Rate	June 30, 2020 Actuarial Valuation Estimated Annual Dollar Amount[2] ($ in '000s)	June 30, 2019 Actuarial Valuation Contribution Rate	June 30, 2019 Actuarial Valuation Estimated Annual Dollar Amount[2] ($ in '000s)
Miscellaneous – Tier 5 Members				
Normal Cost	10.01%	$25,223	9.45%	$23,812
UAAL	13.40%	33,765	11.51%	29,003
Total Contribution	**23.41%**	**$58,988**	**20.96%**	**$52,815**
Total Contribution after 2-year Phase-In	**22.59%**	**$56,922**		
All Miscellaneous County Categories Combined				
Normal Cost	10.96%	$81,076	10.25%	$75,796
UAAL	13.40%	99,138	11.51%	85,156
Total Contribution	**24.36%**	**$180,214**	**21.76%**	**$160,952**
Total Contribution after 2-year Phase-In	**23.54%**	**$174,147**		
Safety – Tier 1 Members				
Normal Cost	30.08%	$2,979	27.40%	$2,714
UAAL	36.44%	3,609	34.38%	3,405
Total Contribution	**66.52%**	**$6,588**	**61.78%**	**$6,119**
Total Contribution after 2-year Phase-In	**66.07%**	**$6,543**		
Safety – Tier 2 Members				
Normal Cost	21.36%	$31,026	19.37%	$28,135
UAAL	36.44%	52,931	34.38%	49,938
Total Contribution	**57.80%**	**$83,957**	**53.75%**	**$78,073**
Total Contribution after 2-year Phase-In	**57.35%**	**$83,303**		

[1] Includes elected officials (Board of Supervisors, Sheriff, District Attorney and Assessor).
[2] Based on June 30, 2020 projected annual payroll, see page 38.

Recommended Employer Contribution Rate (continued)

County Only[1] (continued)	June 30, 2020 Actuarial Valuation Contribution Rate	June 30, 2020 Actuarial Valuation Estimated Annual Dollar Amount[2] ($ in '000s)	June 30, 2019 Actuarial Valuation Contribution Rate	June 30, 2019 Actuarial Valuation Estimated Annual Dollar Amount[2] ($ in '000s)
Safety – Tier 3 Members				
Normal Cost	20.02%	$2,961	18.73%	$2,770
UAAL	36.44%	5,390	34.38%	5,085
Total Contribution	**56.46%**	**$8,351**	**53.11%**	**$7,855**
Total Contribution after 2-year Phase-In	**56.01%**	**$8,285**		
Safety – Tier 4 Members				
Normal Cost	15.11%	$11,180	14.97%	$11,077
UAAL	36.44%	26,963	34.38%	25,439
Total Contribution	**51.55%**	**$38,143**	**49.35%**	**$36,516**
Total Contribution after 2-year Phase-In	**51.10%**	**$37,810**		
All Safety County Categories Combined				
Normal Cost	19.74%	$48,146	18.32%	$44,696
UAAL	36.44%	$88,893	34.38%	$83,867
Total Contribution	**56.18%**	**$137,039**	**52.70%**	**$128,563**
Total Contribution after 2-year Phase-In	**55.73%**	**$135,941**		
All County Categories Combined				
Normal Cost	13.14%	$129,222	12.25%	$120,492
UAAL	19.11%	188,031	17.18%	169,023
Total Contribution	**32.25%**	**$317,253**	**29.43%**	**$289,515**
Total Contribution after 2-year Phase-In	**31.52%**	**$310,088**		

[1] Includes elected officials (Board of Supervisors, Sheriff, District Attorney and Assessor).
[2] Based on June 30, 2020 projected annual payroll, see page 38.

Recommended Employer Contribution Rate (continued)

Superior Court Only	June 30, 2020 Actuarial Valuation: Contribution Rate	June 30, 2020 Actuarial Valuation: Estimated Annual Dollar Amount[1] ($ in '000s)	June 30, 2019 Actuarial Valuation: Contribution Rate	June 30, 2019 Actuarial Valuation: Estimated Annual Dollar Amount[1] ($ in '000s)
Miscellaneous – Tier 1 Members				
Normal Cost	15.66%	$47	13.50%	$41
UAAL	13.36%	40	11.47%	35
Total Contribution	**29.02%**	**$87**	**24.97%**	**$76**
Total Contribution after 2-year Phase-In	**28.20%**	**$85**		
Miscellaneous – Tier 2 Members				
Normal Cost	12.41%	$69	11.44%	$64
UAAL	13.36%	75	11.47%	64
Total Contribution	**25.77%**	**$144**	**22.91%**	**$128**
Total Contribution after 2-year Phase-In	**24.95%**	**$139**		
Miscellaneous – Tier 3 Members				
Normal Cost	16.67%	$6,419	15.54%	$5,984
UAAL	13.36%	5,144	11.47%	4,416
Total Contribution	**30.03%**	**$11,563**	**27.01%**	**$10,400**
Total Contribution after 2-year Phase-In	**29.21%**	**$11,247**		
Miscellaneous – Tier 5 Members				
Normal Cost	10.01%	$1,227	9.45%	$1,158
UAAL	13.36%	1,637	11.47%	1,406
Total Contribution	**23.37%**	**$2,864**	**20.92%**	**$2,564**
Total Contribution after 2-year Phase-In	**22.55%**	**$2,764**		

[1] Based on June 30, 2020 projected annual payroll, see page 38.

Recommended Employer Contribution Rate (continued)

Superior Court Only (continued)	June 30, 2020 Actuarial Valuation Contribution Rate	June 30, 2020 Actuarial Valuation Estimated Annual Dollar Amount[1] ($ in '000s)	June 30, 2019 Actuarial Valuation Contribution Rate	June 30, 2019 Actuarial Valuation Estimated Annual Dollar Amount[1] ($ in '000s)
All Superior Court Categories Combined				
Normal Cost	15.04%	$7,762	14.04%	$7,247
UAAL	13.36%	6,896	11.47%	5,921
Total Contribution	**28.40%**	**$14,658**	**25.51%**	**$13,168**
Total Contribution after 2-year Phase-In	**27.58%**	**$14,235**		

[1] Based on June 30, 2020 projected annual payroll, see page 38.

Recommended Employer Contribution Rate (continued)

District Only[1]	June 30, 2020 Actuarial Valuation: Contribution Rate	June 30, 2020 Actuarial Valuation: Estimated Annual Dollar Amount[2] ($ in '000s)	June 30, 2019 Actuarial Valuation: Contribution Rate	June 30, 2019 Actuarial Valuation: Estimated Annual Dollar Amount[1] ($ in '000s)
Miscellaneous – Tier 3 Members				
Normal Cost	16.54%	$3,347	15.43%	$3,123
UAAL[3]	21.17%	4,284	19.76%	3,999
Total Contribution	**37.71%**	**$7,631**	**35.19%**	**$7,122**
Total Contribution after 2-year Phase-In	**36.89%**	**$7,465**		
Miscellaneous – Tier 5 Members				
Normal Cost	10.01%	$1,490	9.45%	$1,406
UAAL[3]	21.17%	3,151	19.76%	2,941
Total Contribution	**31.18%**	**$4,641**	**29.21%**	**$4,347**
Total Contribution after 2-year Phase-In	**30.36%**	**$4,519**		
All District Categories Combined				
Normal Cost	13.78%	$4,837	12.90%	$4,529
UAAL[3]	21.17%	7,435	19.76%	6,940
Total Contribution	**34.95%**	**$12,272**	**32.66%**	**$11,469**
Total Contribution after 2-year Phase-In	**34.13%**	**$11,984**		
All County and District Categories Combined				
Normal Cost	13.25%	$141,821	12.36%	$132,268
UAAL	18.90%	202,362	16.99%	181,884
Total Contribution	**32.15%**	**$344,183**	**29.35%**	**$314,152**
Total Contribution after 2-year Phase-In	**31.42%**	**$336,307**		

[1] We have not calculated the contribution rate for Miscellaneous Tier 1 District members as there were no active Miscellaneous Tier 1 District members reported as of June 30, 2020.
[2] Based on June 30, 2020 projected annual payroll, see page 38.

Recommended Employer Contribution Rate (continued)

The following June 30, 2020 projected annual payroll is used in developing employer contribution rates on the seven previous pages:

	($ in '000s)			
	County[1]	**Superior Court**	**District**	**Total**
Miscellaneous Tier 1	$2,068	$301	$0	$2,369
Miscellaneous Tier 2	2,464	558	0	3,022
Miscellaneous Tier 3	452,422	38,504	20,236	511,162
Miscellaneous Tier 4	30,900	0	0	30,900
Miscellaneous Tier 5	251,979	12,254	14,883	279,116
Subtotal	**$739,833**	**$51,617**	**$35,119**	**$826,569**
Safety Tier 1	$9,904	$0	$0	$9,904
Safety Tier 2	145,254	0	0	145,254
Safety Tier 3	14,792	0	0	14,792
Safety Tier 4	73,993	0	0	73,993
Subtotal	**$243,943**	**$0**	**$0**	**$243,943**
Total	**$983,776**	**$51,617**	**$35,119**	**$1,070,512**

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

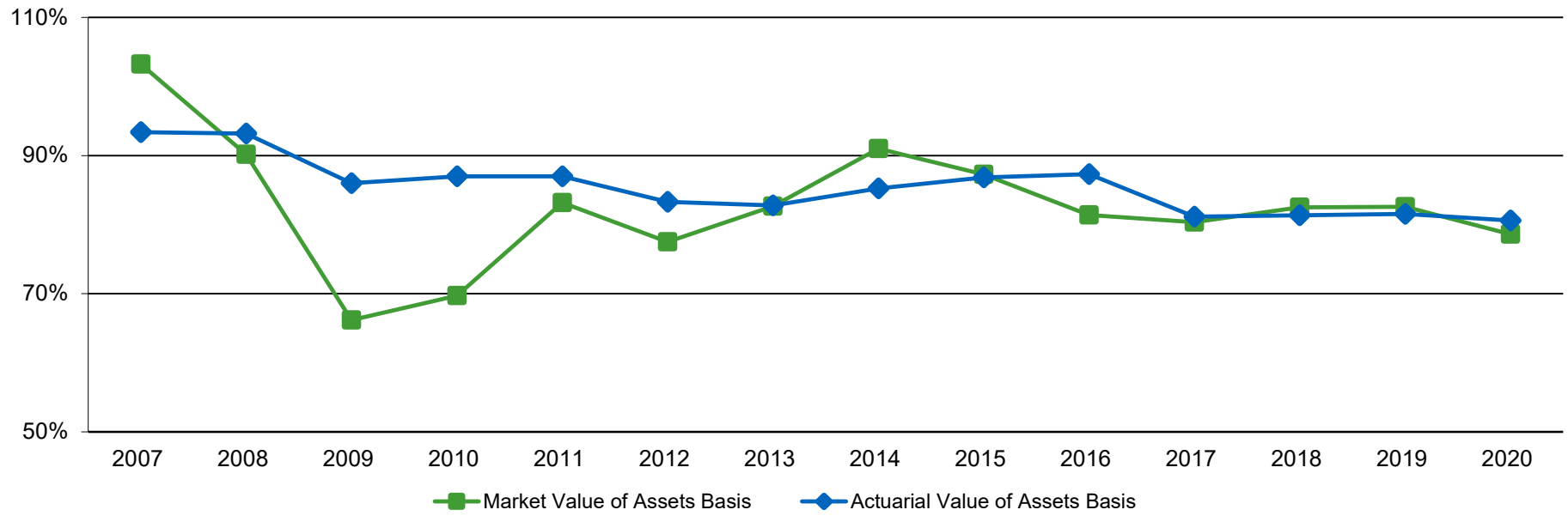
G. Funded Status

A commonly reported piece of information regarding the Plan's financial status is the funded ratio. These ratios compare the Market and Actuarial Value of Assets to the Actuarial Accrued Liability of the Plan. Higher ratios indicate a relatively well-funded plan while lower ratios may indicate recent changes to actuarial assumptions, funding of the plan below actuarial requirements, poor asset performance, or a variety of other causes.

The chart below depicts a history of the funded ratio for the Plan. The chart 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 Market or Actuarial Value of Assets is used.

Funded Ratio for Years Ended June 30, 2007 – 2020



Schedule of Funding Progress for Years Ended June 30, 2011 – 2020

Actuarial Valuation Date as of June 30	Actuarial Value of Assets[1] (a)	Actuarial Accrued Liability (AAL)[1] (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (%) (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll (%) [(b) - (a)] / (c)
2011	$6,420,824,000	$7,382,897,000	$962,073,000	87.0%	$880,766,000	109.2%
2012	6,529,895,000	7,838,223,000	1,308,328,000	83.3	875,672,000	149.4
2013	6,797,757,000	8,210,980,000	1,413,223,000	82.8	877,657,000	161.0
2014	7,312,993,000	8,580,928,000	1,267,935,000	85.2	879,999,000	144.1
2015	7,838,825,000	9,028,679,000	1,189,854,000	86.8	897,341,000	132.6
2016	8,236,402,000	9,436,090,000	1,199,688,000	87.3	938,555,000	127.8
2017	8,665,226,000	10,680,998,000	2,015,772,000	81.1	980,359,000	205.6
2018	9,123,004,000	11,213,263,000	2,090,259,000	81.4	1,007,815,000	207.4
2019	9,703,313,000	11,895,520,000	2,192,207,000	81.6	1,038,341,000	211.1
2020	10,229,760,000	12,693,655,000	2,463,894,000	80.6	1,070,512,000	230.2

Note: Results may not total due to rounding.

[1] Includes contingency reserve and other non-valuation reserves.

H. Actuarial Balance Sheet

An overview of the Plan's funding is given by an Actuarial Balance Sheet. In this approach, first the amount and timing of all future payments that will be made by the Plan for current participants is determined. Then these payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value, referred to as the Actuarial Present Value of Future Benefits of the Plan.

Second, this Actuarial Present Value of Future Benefits is compared to the assets. The "assets" for this purpose 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 for the Unfunded Actuarial Accrued Liability.

Actuarial Balance Sheet for Year Ended June 30, 2020 ($ in '000s)

	Basic	COLA	Total
Actuarial Present Value of Future Benefits			
• Present value of benefits for retired members and beneficiaries	$4,720,267	$2,735,717	$7,455,984
• Present value of benefits for inactive vested members	325,454	76,503	401,957
• Present value of benefits for active members	5,554,097	1,372,395	6,926,492
• Non-valuation reserves	0	0	0
• Surplus/(deficit) for declining employer (preliminary)[1]	(2,397)	(979)	(3,376)
• Contingency reserve	143,983	0	143,983
Total Actuarial Present Value of Future Benefits	**$10,741,404**	**$4,183,636**	**$14,925,040**
Current and future assets			
• Total Valuation Value of Assets (VVA)	$6,707,324	$3,367,021	$10,074,345
• Present value of future contributions by members	686,755	210,170	896,925
• Present value of future employer contributions for:			
– Entry age Normal Cost	1,114,535	219,925	1,334,460
– Unfunded Actuarial Accrued Liability	2,091,204	372,690	2,463,894
• Balance of transfer to offset member COLA rate	0	14,809	14,809
• Adjustment to VVA for surplus/(deficit) for declining employer (preliminary)[1]	(2,397)	(979)	(3,376)
• Contingency reserve	143,983	0	143,983
Total of current and future assets	**$10,741,404**	**$4,183,636**	**$14,925,040**

Note: Results may not total due to rounding.

[1] Based on the latest estimate under SCERS' Declining Employer Payroll Policy of the asset shortfall for North Highlands Fire available as of June 30, 2019 adjusted to June 30, 2020 with interest at the assumed rate of investment return (i.e., 7.00% as of June 30, 2019).

I. 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 measurement since it is based on the current level of assets.

The current AVR is about 9.3. This means that a 1% asset gain or loss (relative to the assumed investment return) translates to about 9.3% of one-year's payroll. Since actuarial gains and losses are amortized over 20 years, 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.

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. The current LVR is about 11.7 but is 9.6 for Miscellaneous compared to 18.9 for Safety. This means that assumption changes will have a greater impact on employer contribution rates for Safety than Miscellaneous.

The chart on the next page shows how the asset and liability volatility ratios have varied over time.

Volatility Ratios for Years Ended 2011 – 2020

Year Ended June 30	Asset Volatility Ratio			Liability Volatility Ratio		
	Miscellaneous	Safety	Total	Miscellaneous	Safety	Total
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
2019	8.0	14.6	9.5	9.4	18.6	11.5
2020	7.8	14.4	9.3	9.6	18.9	11.7

J. Risk Assessment

Since the actuarial valuation results are dependent on a fixed set of assumptions and data as of a specific date, there is risk that emerging results may differ, perhaps significantly, as actual experience is fluid and will not exactly track current assumptions. This potential divergence may have a significant impact on the future financial condition of the plan.

Following the completion of the June 30, 2019 valuation, we prepared a stand-alone risk assessment report dated February 12, 2020 by using membership and financial information as provided in the actuarial valuation as of June 30, 2019. That report includes various projections (both deterministic and stochastic) of future results under different investment return scenarios together with the assumptions adopted for the June 30, 2019 valuation. A copy of the stand-alone risk assessment report associated with this June 30, 2020 valuation, including the additional analyses recommended by Segal in consultation with SCERS staff will be available in the first quarter of 2021. While this section does not contain a detailed analysis of the potential range of future measurements, it does include a concise discussion of some of the primary risks that may affect the Plan's future financial condition.

This section provides descriptions and basic assessments of the primary risks that are likely to have an ongoing influence on the Plan's financial health, as well as a discussion of historical trends and maturity measures:

Risk Assessments

- Asset/Liability Mismatch Risk (the potential that future plan experience does not affect asset and liability values in the same way, causing them to diverge)

  The most significant asset/liability mismatch risk to the Plan is investment risk, as discussed below. In fact, investment risk has the potential to impact asset/liability mismatch in two ways. The first mismatch is evident in annual valuations: when asset values deviate from assumptions they are typically independent from liability changes. The second mismatch can be caused when systemic asset deviations from assumptions may signal the need for an assumption change, which causes liability values and contribution rates to move in the opposite direction from any change in the expected experience of asset growth rates.

  Asset/liability mismatch can also be caused by demographic assumption risk such as longevity, which affects liabilities but have no impact on asset levels. This risk is also discussed below.

- Investment Risk (the risk that investment returns will be different than expected)

  The investment return assumption is a long-term, static assumption for valuation purposes even though in reality market experience can be quite volatile in any given year. That volatility can cause significant changes in the financial health of the plan, affecting both funded status and contribution rates. The inherent year-to-year volatility is reduced by smoothing through the Actuarial Value of Assets, however investment experience can still have a sizable impact. As discussed in *Section 2, Subsection I, Volatility Ratios*, on page 42, a

1% asset gain or loss (relative to the assumed investment return) translates to about 9.3% of one-year's payroll. Since actuarial gains and losses are amortized over 20 years, there would be a 0.7% of payroll decrease/(increase) in the required contribution for each 1% asset gain or loss.

The single year market value rate of return over the last 10 years has ranged from a low of -1.00% to a high of 23.81%.

- Longevity Risk (the risk that mortality experience will be different than expected)

  The actuarial valuation includes current life expectancy assumptions and an expectation of future improvement in life expectancy, which are significant assumptions given the relatively long duration of liabilities for pension plans. Emerging plan experience that does not match these expectations will result in increases or decreases in the actuarially determined contribution over time. This risk can be reduced by using tables appropriate for the Plan (public experience tables) that are weighted by benefit levels, and by using generational mortality projections. Effective with the June 30, 2020 valuation, the Board has adopted benefit weighted mortality tables with the generational mortality projections.

- Other Risks

  In addition to longevity, the valuation includes a variety of other assumptions that are unlikely to match future experience exactly. One example is projected salary scales over time. As salary is central to the determination of benefits paid in retirement, deviations from the projected salary scales could have a material impact on the benefits anticipated for each member. Examples of demographic assumptions include retirement, termination and disability assumptions, and will likely vary in significance for different groups (for example, disability assumptions are typically more significant for Safety groups).

Some plans also carry significant contribution risk, defined as the potential for actual future contributions deviating from expected future contributions. However, the employers have a proven track-record of making the Actuarially Determined Contributions based on the Board's Actuarial Funding Policy, so contribution risk is minimal.

Evaluation of Historical Trends

Past experience can help demonstrate the sensitivity of key results to the Plan's actual experience. Over the past ten years:

- The funded percentage on the Actuarial Value of Assets basis has decreased from 87.0% to 80.6%. For a more detailed history see *Section 2, Subsection G, Funded Status* starting on page 39.
- The average geometric investment return on the Actuarial Value of Assets over the last 10 years was 6.32%. This includes a high single-year return of 8.70% and a low of 2.57%. The average over the last 5 years 6.97%. For more details see the *Investment Return* table in *Section 2, Subsection C* on page 24.

- The primary source of new UAAL was the strengthening of assumptions through multiple assumption changes. For example, the assumption changes in 2020 changed the discount rate from 7.00% to 6.75% and updated mortality tables, adding $216 million in unfunded liability. The assumption changes in 2017 changed the discount rate from 7.50% to 7.00% and updated mortality tables, adding $824 million in unfunded liability. For more details on the unfunded liability changes see *Section 3, Exhibit H, Table of Amortization Bases* starting on page 74.
- The plan's funding policy effectively deals with these unfunded liabilities over time. This can be seen most clearly in *Section 3, Exhibit I, Projection of UAAL Balances and Payments* provided on pages 77 and 78.

Maturity Measures

In the last 10 years the ratio of members in pay status to active participants has increased from 0.71 to 1.01. An increased ratio indicates that the plan has grown in maturity over time. This is to be expected, but is also informative for understanding plan sensitivity to particular risks. For more details see *Section 2, Subsection A, Member Data* on page 15.

As pension plans mature, the cash needed to fulfill benefit obligations will increase over time. Therefore, cash flow projections and analysis should be performed to assure that the Plan's asset allocation is aligned to meet emerging pension liabilities. For the prior year benefits paid were $135.2 million more than contributions received. Plans with high levels of negative cash flows may have a need for a larger allocation to income generating assets, which can create a drag on investment return. However, this plan currently has relatively low levels of negative cash flows. For more details on historical cash flows see the Comparison of Contributions with Benefits in *Section 2, Subsection B, Financial Information* on page 19.

A further discussion of plan maturity measures and how they relate to changes in assets and liabilities is included in *Section 2, Subsection I, Volatility Ratios* starting on page 42.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage

Total Plan

Category	Year Ended June 30 2020	2019	Change From Prior Year
Active members in valuation:			
• Number	12,650	12,678	-0.2%
• Average age	45.7	45.7	0.0
• Average years of service	11.9	11.9	0.0
• Total projected compensation[1]	$1,070,512,488	$1,038,340,908	3.1%
• Average projected compensation	$84,625	$81,901	3.3%
• Account balances	$875,807,482	$820,202,451	6.8%
• Total active vested members	8,531	8,477	0.6%
Inactive vested members:			
• Number[2]	3,791	3,602	5.2%
• Average age	46.9	47.0	-0.1
Retired members:			
• Number in pay status	10,313	10,001	3.1%
• Average age	69.9	69.6	0.3
• Average monthly benefit	$3,956	$3,812	3.8%
Disabled members:			
• Number in pay status	699	719	-2.8%
• Average age	66.9	66.6	0.3
• Average monthly benefit	$3,072	$2,969	3.5%
Beneficiaries:			
• Number in pay status	1,720	1,661	3.6%
• Average age	72.6	72.2	0.4
• Average monthly benefit	$2,112	$2,012	5.0%

[1] Projected compensation for the June 30, 2020 valuation was calculated by increasing the annualized compensation earned during 2019-2020 by 3.00%.
[2] Includes inactive members due a refund of member contributions.

Exhibit A: Table of Plan Coverage (continued)

Miscellaneous Tier 1

Category	Year Ended June 30 2020	2019	Change From Prior Year
Active members in valuation:			
• Number	26	34	-23.5%
• Average age	64.0	63.1	0.9
• Average years of service	37.3	37.4	-0.1
• Total projected compensation[1]	$2,368,911	$2,870,069	-17.5%
• Average projected compensation	$91,112	$84,414	7.9%
• Account balances	$5,140,344	$6,236,233	-17.6%
• Total active vested members	26	34	-23.5%
Inactive vested members:			
• Number[2]	23	27	-14.8%
• Average age	69.5	68.4	1.1
Retired members:			
• Number in pay status	2,535	2,634	-3.8%
• Average age	76.9	76.3	0.6
• Average monthly benefit	$4,173	$3,989	4.6%
Disabled members:			
• Number in pay status	122	139	-12.2%
• Average age	77.5	77.2	0.3
• Average monthly benefit	$2,629	$2,469	6.5%
Beneficiaries:			
• Number in pay status	725	730	-0.7%
• Average age	79.2	78.7	0.5
• Average monthly benefit	$2,131	$2,022	5.4%

[1] Projected compensation for the June 30, 2020 valuation was calculated by increasing the annualized compensation earned during 2019-2020 by 3.00%.
[2] Includes inactive members due a refund of member contributions.

Exhibit A: Table of Plan Coverage (continued)

Miscellaneous Tier 2

Category	Year Ended June 30 2020	Year Ended June 30 2019	Change From Prior Year
Active members in valuation:			
• Number	39	45	-13.3%
• Average age	57.4	57.2	0.2
• Average years of service	28.9	28.3	0.6
• Total projected compensation[1]	$3,021,707	$3,433,719	-12.0%
• Average projected compensation	$77,480	$76,305	1.5%
• Account balances	$3,921,535	$4,376,907	-10.4%
• Total active vested members	39	45	-13.3%
Inactive vested members:			
• Number[2]	105	117	-10.3%
• Average age	59.2	58.3	0.9
Retired members:			
• Number in pay status	386	375	2.9%
• Average age	70.0	69.6	0.4
• Average monthly benefit	$1,224	$1,163	5.2%
Disabled members:			
• Number in pay status	25	29	-13.8%
• Average age	68.6	68.3	0.3
• Average monthly benefit	$938	$938	0.0%
Beneficiaries:			
• Number in pay status	56	56	0.0%
• Average age	72.9	71.9	1.0
• Average monthly benefit	$720	$722	-0.3%

[1] Projected compensation for the June 30, 2020 valuation was calculated by increasing the annualized compensation earned during 2019-2020 by 3.00%.
[2] Includes inactive members due a refund of member contributions.

Exhibit A: Table of Plan Coverage (continued)

Miscellaneous Tier 3

Category	Year Ended June 30 2020	Year Ended June 30 2019	Change From Prior Year
Active members in valuation:			
• Number	5,824	6,229	-6.5%
• Average age	51.8	51.3	0.5
• Average years of service	18.3	17.5	0.8
• Total projected compensation[1]	$511,162,242	$524,945,234	-2.6%
• Average projected compensation	$87,768	$84,274	4.1%
• Account balances	$499,405,652	$484,075,659	3.2%
• Total active vested members	5,778	6,171	-6.4%
Inactive vested members:			
• Number[2]	2,244	2,274	-1.3%
• Average age	50.0	49.4	0.6
Retired members:			
• Number in pay status	5,447	5,145	5.9%
• Average age	68.2	67.8	0.4
• Average monthly benefit	$2,868	$2,755	4.1%
Disabled members:			
• Number in pay status	294	293	0.3%
• Average age	64.8	64.0	0.8
• Average monthly benefit	$1,971	$1,945	1.3%
Beneficiaries:			
• Number in pay status	510	461	10.6%
• Average age	67.0	66.4	0.6
• Average monthly benefit	$1,267	$1,173	8.0%

[1] Projected compensation for the June 30, 2020 valuation was calculated by increasing the annualized compensation earned during 2019-2020 by 3.00%.
[2] Includes inactive members due a refund of member contributions.

Exhibit A: Table of Plan Coverage (continued)

Miscellaneous Tier 4

Category	Year Ended June 30 2020	Year Ended June 30 2019	Change From Prior Year
Active members in valuation:			
• Number	331	342	-3.2%
• Average age	45.2	44.4	0.8
• Average years of service	6.7	5.9	0.8
• Total projected compensation[1]	$30,900,021	$30,338,040	1.9%
• Average projected compensation	$93,354	$88,708	5.2%
• Account balances	$15,041,637	$12,679,726	18.6%
• Total active vested members	255	239	6.7%
Inactive vested members:			
• Number[2]	113	99	14.1%
• Average age	43.5	42.4	1.1
Retired members:			
• Number in pay status	9	7	28.6%
• Average age	63.2	63.7	-0.5
• Average monthly benefit	$1,076	$1,032	4.3%
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, 2020 valuation was calculated by increasing the annualized compensation earned during 2019-2020 by 3.00%.
[2] Includes inactive members due a refund of member contributions.

Exhibit A: Table of Plan Coverage (continued)

Miscellaneous Tier 5

Category	Year Ended June 30 2020	Year Ended June 30 2019	Change From Prior Year
Active members in valuation:			
• Number	4,345	3,934	10.4%
• Average age	39.6	39.0	0.6
• Average years of service	3.3	2.8	0.5
• Total projected compensation[1]	$279,116,158	$240,731,316	15.9%
• Average projected compensation	$64,238	$61,193	5.0%
• Account balances	$75,302,957	$54,115,745	39.2%
• Total active vested members	952	518	83.8%
Inactive vested members:			
• Number[2]	895	673	33.0%
• Average age	38.8	38.4	0.4
Retired members:			
• Number in pay status	15	6	150.0%
• Average age	65.4	65.7	-0.3
• Average monthly benefit	$969	$1,031	-6.0%
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, 2020 valuation was calculated by increasing the annualized compensation earned during 2019-2020 by 3.00%.
[2] Includes inactive members due a refund of member contributions.

Exhibit A: Table of Plan Coverage (continued)

Safety Tier 1

Category	Year Ended June 30 2020	2019	Change From Prior Year
Active members in valuation:			
• Number	61	96	-36.5%
• Average age	52.8	52.1	0.7
• Average years of service	25.7	25.3	0.4
• Total projected compensation[1]	$9,904,369	$14,225,343	-30.4%
• Average projected compensation	$162,367	$148,181	9.6%
• Account balances	$19,123,515	$26,741,709	-28.5%
• Total active vested members	61	96	-36.5%
Inactive vested members:			
• Number[2]	25	37	-32.4%
• Average age	53.6	53.4	0.2
Retired members:			
• Number in pay status	1,357	1,344	1.0%
• Average age	66.5	66.2	0.3
• Average monthly benefit	$8,066	$7,739	4.2%
Disabled members:			
• Number in pay status	185	187	-1.1%
• Average age	67.7	66.9	0.8
• Average monthly benefit	$5,229	$5,093	2.7%
Beneficiaries:			
• Number in pay status	365	359	1.7%
• Average age	70.0	69.0	1.0
• Average monthly benefit	$3,456	$3,253	6.2%

[1] Projected compensation for the June 30, 2020 valuation was calculated by increasing the annualized compensation earned during 2019-2020 by 3.00%.
[2] Includes inactive members due a refund of member contributions.

Exhibit A: Table of Plan Coverage (continued)

Safety Tier 2

Category	Year Ended June 30 2020	Year Ended June 30 2019	Change From Prior Year
Active members in valuation:			
• Number	1,076	1,151	-6.5%
• Average age	45.8	45.2	0.6
• Average years of service	18.4	17.6	0.8
• Total projected compensation[1]	$145,253,595	$146,248,671	-0.7%
• Average projected compensation	$134,994	$127,062	6.2%
• Account balances	$210,154,259	$197,018,517	6.7%
• Total active vested members	1,074	1,148	-6.4%
Inactive vested members:			
• Number[2]	324	329	-1.5%
• Average age	44.7	43.9	0.8
Retired members:			
• Number in pay status	560	489	14.5%
• Average age	61.8	62.3	-0.5
• Average monthly benefit	$5,622	$5,293	6.2%
Disabled members:			
• Number in pay status	72	70	2.9%
• Average age	54.9	54.5	0.4
• Average monthly benefit	$3,508	$3,407	3.0%
Beneficiaries:			
• Number in pay status	63	54	16.7%
• Average age	57.5	57.2	0.3
• Average monthly benefit	$2,155	$2,105	2.4%

[1] Projected compensation for the June 30, 2020 valuation was calculated by increasing the annualized compensation earned during 2019-2020 by 3.00%.
[2] Includes inactive members due a refund of member contributions.

Exhibit A: Table of Plan Coverage (continued)

Safety Tier 3

Category	Year Ended June 30 2020	2019	Change From Prior Year
Active members in valuation:			
• Number	120	118	1.7%
• Average age	41.3	40.2	1.1
• Average years of service	8.3	7.5	0.8
• Total projected compensation[1]	$14,792,107	$13,581,981	8.9%
• Average projected compensation	$123,268	$115,102	7.1%
• Account balances	$12,673,777	$9,998,263	26.8%
• Total active vested members	96	92	4.3%
Inactive vested members:			
• Number[2]	12	11	9.1%
• Average age	40.5	40.2	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	42.1	41.1	1.0
• Average monthly benefit	$3,249	$3,185	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, 2020 valuation was calculated by increasing the annualized compensation earned during 2019-2020 by 3.00%.
[2] Includes inactive members due a refund of member contributions.

Exhibit A: Table of Plan Coverage (continued)

Safety Tier 4

Category	Year Ended June 30 2020	2019	Change From Prior Year
Active members in valuation:			
• Number	828	729	13.6%
• Average age	33.9	33.7	0.2
• Average years of service	3.7	3.2	0.5
• Total projected compensation[1]	$73,993,377	$61,966,535	19.4%
• Average projected compensation	$89,364	$85,002	5.1%
• Account balances	$35,043,805	$24,959,692	40.4%
• Total active vested members	250	134	86.6%
Inactive vested members:			
• Number[2]	50	35	42.9%
• Average age	34.2	34.1	0.1
Retired members:			
• Number in pay status	4	1	300.0%
• Average age	63.3	65.3	-2.0
• Average monthly benefit	$1,740	$2,439	-28.7%
Disabled members:			
• Number in pay status	- -	- -	N/A
• Average age	- -	- -	N/A
• Average monthly benefit	- -	- -	N/A
Beneficiaries:			
• Number in pay status	1	1	0.0%
• Average age	28.4	27.4	1.0
• Average monthly benefit	$3,558	$3,488	2.0%

[1] Projected compensation for the June 30, 2020 valuation was calculated by increasing the annualized compensation earned during 2019-2020 by 3.00%.
[2] Includes inactive members due a refund of member contributions.

Exhibit B: Members in Active Service as of June 30, 2020 by Age, Years of Service, and Average Projected Compensation

Total Plan

	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	151	149	2	- -	- -	- -	- -	- -	- -	- -
	$57,219	$57,394	$44,155	- -	- -	- -	- -	- -	- -	- -
25 – 29	952	864	88	- -	- -	- -	- -	- -	- -	- -
	$65,333	$63,809	$80,291	- -	- -	- -	- -	- -	- -	- -
30 – 34	1,415	983	370	61	1	- -	- -	- -	- -	- -
	$71,412	$65,377	$85,540	$81,786	$143,282	- -	- -	- -	- -	- -
35 – 39	1,645	707	401	385	148	4	- -	- -	- -	- -
	$80,722	$67,755	$85,071	$90,904	$102,797	$139,898	- -	- -	- -	- -
40 – 44	1,829	454	259	474	524	113	5	- -	- -	- -
	$88,617	$68,043	$85,421	$92,039	$99,714	$110,614	$137,751	- -	- -	- -
45 – 49	1,978	344	216	343	563	436	74	2	- -	- -
	$96,799	$69,749	$79,748	$90,703	$99,765	$119,749	$143,290	$77,984	- -	- -
50 – 54	1,782	271	173	292	447	336	202	58	2	1
	$92,182	$70,740	$78,018	$86,324	$93,127	$108,501	$108,766	$103,940	$104,828	$100,119
55 – 59	1,576	210	154	221	345	265	200	151	29	1
	$88,211	$68,375	$82,228	$84,350	$87,805	$94,955	$100,017	$100,525	$91,439	$66,531
60 – 64	973	111	87	153	209	177	123	81	30	2
	$83,186	$72,893	$78,489	$86,275	$76,332	$83,391	$93,399	$97,203	$86,696	$72,334
65 – 69	277	26	38	60	58	44	23	17	5	6
	$78,593	$66,925	$81,498	$74,664	$71,796	$89,323	$83,744	$82,092	$104,278	$85,984
70 & over	72	10	6	14	16	11	8	3	3	1
	$87,417	$70,655	$63,410	$87,533	$88,402	$113,573	$86,836	$78,817	$62,954	$197,826
Total	**12,650**	**4,129**	**1,794**	**2,003**	**2,311**	**1,386**	**635**	**312**	**69**	**11**
	$84,625	**$66,555**	**$82,906**	**$88,606**	**$93,997**	**$105,937**	**$106,103**	**$98,940**	**$89,457**	**$93,186**

Exhibit B: Members in Active Service as of June 30, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

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	4	- -	- -	- -	- -	- -	- -	- -	4	- -
	$77,899	- -	- -	- -	- -	- -	- -	- -	$77,899	- -
60 – 64	11	- -	- -	- -	- -	- -	2	1	7	1
	$81,441	- -	- -	- -	- -	- -	$56,394	$83,130	$89,224	$75,357
65 – 69	9	- -	- -	- -	- -	- -	1	1	1	6
	$89,999	- -	- -	- -	- -	- -	$125,330	$68,021	$100,730	$85,984
70 & over	2	- -	- -	1	- -	- -	- -	- -	- -	1
	$175,741	- -	- -	$153,655	- -	- -	- -	- -	- -	$197,826
Total	**26**	**- -**	**- -**	**1**	**- -**	**- -**	**3**	**2**	**12**	**8**
	$91,112	**- -**	**- -**	**$153,655**	**- -**	**- -**	**$79,373**	**$75,576**	**$86,408**	**$98,636**

Exhibit B: Members in Active Service as of June 30, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

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	1	- -	- -	- -	- -	- -	1	- -	- -	- -
	$67,552	- -	- -	- -	- -	- -	$67,552	- -	- -	- -
50 – 54	11	- -	- -	- -	- -	1	8	2	- -	- -
	$79,159	- -	- -	- -	- -	$120,373	$77,645	$64,608	- -	- -
55 – 59	16	- -	- -	- -	1	1	6	6	2	- -
	$79,528	- -	- -	- -	$28,630	$61,564	$100,988	$73,733	$66,964	- -
60 – 64	9	- -	- -	- -	- -	- -	4	4	1	- -
	$79,737	- -	- -	- -	- -	- -	$81,048	$79,922	$73,757	- -
65 – 69	2	- -	- -	- -	1	- -	1	- -	- -	- -
	$46,665	- -	- -	- -	$30,685	- -	$62,644	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	**39**	**- -**	**- -**	**- -**	**2**	**2**	**20**	**12**	**3**	**- -**
	$77,480	**- -**	**- -**	**- -**	**$29,658**	**$90,968**	**$84,074**	**$74,275**	**$69,228**	**- -**

Exhibit B: Members in Active Service as of June 30, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

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	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
30 – 34	72	5	16	51	- -	- -	- -	- -	- -	- -
	$70,005	$52,101	$70,177	$71,706	- -	- -	- -	- -	- -	- -
35 – 39	451	11	61	293	84	2	- -	- -	- -	- -
	$80,730	$64,533	$83,681	$80,956	$79,100	$115,247	- -	- -	- -	- -
40 – 44	840	7	55	388	324	64	2	- -	- -	- -
	$84,828	$69,641	$90,700	$86,563	$82,139	$83,572	$115,848	- -	- -	- -
45 – 49	1,047	7	37	304	437	227	33	2	- -	- -
	$90,942	$105,435	$77,509	$87,303	$90,411	$96,552	$105,682	$77,984	- -	- -
50 – 54	1,212	5	46	271	405	267	162	53	2	1
	$92,144	$86,201	$80,028	$83,996	$89,051	$100,104	$101,862	$98,078	$104,828	$100,119
55 – 59	1,171	7	32	211	329	244	185	139	23	1
	$90,397	$105,830	$85,770	$82,573	$85,470	$92,061	$98,548	$99,710	$95,922	$66,531
60 – 64	765	2	30	142	207	171	116	74	22	1
	$83,736	$59,557	$79,389	$83,121	$75,669	$82,358	$94,664	$95,336	$86,480	$69,311
65 – 69	208	2	8	58	56	43	21	16	4	- -
	$79,493	$194,916	$73,117	$73,248	$72,032	$88,170	$82,768	$82,972	$105,166	- -
70 & over	58	1	3	13	16	11	8	3	3	- -
	$88,180	$92,136	$55,586	$82,446	$88,402	$113,573	$86,836	$78,817	$62,954	- -
Total	**5,824**	**47**	**288**	**1,731**	**1,858**	**1,029**	**527**	**287**	**54**	**3**
	$87,768	**$84,442**	**$82,094**	**$83,659**	**$85,072**	**$93,111**	**$98,417**	**$96,978**	**$91,258**	**$78,654**

Exhibit B: Members in Active Service as of June 30, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

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	1	- -	1	- -	- -	- -	- -	- -	- -	- -
	$90,827	- -	$90,827	- -	- -	- -	- -	- -	- -	- -
30 – 34	43	9	34	- -	- -	- -	- -	- -	- -	- -
	$89,418	$89,273	$89,456	- -	- -	- -	- -	- -	- -	- -
35 – 39	81	22	55	4	- -	- -	- -	- -	- -	- -
	$91,624	$93,791	$90,018	$101,788	- -	- -	- -	- -	- -	- -
40 – 44	62	13	43	4	1	1	- -	- -	- -	- -
	$96,850	$115,831	$92,556	$81,121	$110,039	$84,417	- -	- -	- -	- -
45 – 49	46	12	33	1	- -	- -	- -	- -	- -	- -
	$95,118	$113,049	$89,799	$55,487	- -	- -	- -	- -	- -	- -
50 – 54	36	10	24	1	- -	1	- -	- -	- -	- -
	$100,675	$129,261	$90,954	$86,859	- -	$61,938	- -	- -	- -	- -
55 – 59	30	6	24	- -	- -	- -	- -	- -	- -	- -
	$90,585	$87,840	$91,272	- -	- -	- -	- -	- -	- -	- -
60 – 64	23	4	18	1	- -	- -	- -	- -	- -	- -
	$78,492	$93,510	$74,562	$89,163	- -	- -	- -	- -	- -	- -
65 – 69	9	- -	9	- -	- -	- -	- -	- -	- -	- -
	$112,821	- -	$112,821	- -	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	**331**	**76**	**241**	**11**	**1**	**2**	- -	- -	- -	- -
	$93,354	**$104,249**	**$90,280**	**$87,559**	**$110,039**	**$73,177**	- -	- -	- -	- -

Exhibit B: Members in Active Service as of June 30, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

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	105	103	2	- -	- -	- -	- -	- -	- -	- -
	$46,301	$46,343	$44,155	- -	- -	- -	- -	- -	- -	- -
25 – 29	695	644	51	- -	- -	- -	- -	- -	- -	- -
	$57,491	$56,951	$64,298	- -	- -	- -	- -	- -	- -	- -
30 – 34	995	798	196	1	- -	- -	- -	- -	- -	- -
	$63,843	$61,070	$74,860	$117,388	- -	- -	- -	- -	- -	- -
35 – 39	806	605	201	- -	- -	- -	- -	- -	- -	- -
	$67,046	$64,622	$74,343	- -	- -	- -	- -	- -	- -	- -
40 – 44	524	399	124	1	- -	- -	- -	- -	- -	- -
	$66,440	$64,107	$74,001	$59,928	- -	- -	- -	- -	- -	- -
45 – 49	431	307	123	1	- -	- -	- -	- -	- -	- -
	$67,149	$65,594	$71,102	$58,166	- -	- -	- -	- -	- -	- -
50 – 54	325	229	94	2	- -	- -	- -	- -	- -	- -
	$66,037	$64,361	$70,545	$45,976	- -	- -	- -	- -	- -	- -
55 – 59	269	183	85	1	- -	- -	- -	- -	- -	- -
	$67,038	$64,255	$73,285	$45,389	- -	- -	- -	- -	- -	- -
60 – 64	137	101	34	2	- -	- -	- -	- -	- -	- -
	$71,224	$71,301	$71,927	$55,362	- -	- -	- -	- -	- -	- -
65 – 69	46	24	21	1	- -	- -	- -	- -	- -	- -
	$63,026	$56,259	$71,267	$52,360	- -	- -	- -	- -	- -	- -
70 & over	12	9	3	- -	- -	- -	- -	- -	- -	- -
	$69,009	$68,268	$71,234	- -	- -	- -	- -	- -	- -	- -
Total	**4,345**	**3,402**	**934**	**9**	**- -**	**- -**	**- -**	**- -**	**- -**	**- -**
	$64,238	**$61,922**	**$72,721**	**$59,545**	**- -**	**- -**	**- -**	**- -**	**- -**	**- -**

Exhibit B: Members in Active Service as of June 30, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

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	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
45 – 49	25	- -	- -	1	- -	7	17	- -	- -	- -
	$165,336	- -	- -	$138,905	- -	$127,336	$182,538	- -	- -	- -
50 – 54	17	- -	- -	1	1	1	12	2	- -	- -
	$174,834	- -	- -	$138,905	$209,047	$91,710	$165,839	$271,219	- -	- -
55 – 59	12	- -	- -	- -	1	3	4	4	- -	- -
	$150,164	- -	- -	- -	$217,732	$148,983	$124,918	$159,404	- -	- -
60 – 64	6	- -	- -	1	- -	2	1	2	- -	- -
	$142,987	- -	- -	$130,359	- -	$120,888	$70,073	$207,859	- -	- -
65 – 69	1	- -	- -	- -	- -	1	- -	- -	- -	- -
	$138,905	- -	- -	- -	- -	$138,905	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	**61**	**- -**	**- -**	**3**	**2**	**14**	**34**	**8**	**- -**	**- -**
	$162,367	**- -**	**- -**	**$136,056**	**$213,390**	**$129,335**	**$166,558**	**$199,472**	**- -**	**- -**

Exhibit B: Members in Active Service as of June 30, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

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	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
30 – 34	12	- -	3	8	1	- -	- -	- -	- -	- -
	$129,842	- -	$108,873	$136,025	$143,282	- -	- -	- -	- -	- -
35 – 39	152	1	9	77	63	2	- -	- -	- -	- -
	$129,211	$133,314	$116,564	$126,090	$133,645	$164,549	- -	- -	- -	- -
40 – 44	328	- -	5	74	198	48	3	- -	- -	- -
	$129,482	- -	$114,117	$120,814	$128,464	$147,214	$152,353	- -	- -	- -
45 – 49	384	- -	4	32	125	200	23	- -	- -	- -
	$140,577	- -	$109,152	$121,237	$132,241	$145,950	$171,532	- -	- -	- -
50 – 54	137	1	- -	10	40	66	19	1	- -	- -
	$139,603	$71,096	- -	$142,050	$130,819	$143,252	$146,729	$158,717	- -	- -
55 – 59	47	- -	1	8	14	17	5	2	- -	- -
	$132,771	- -	$179,119	$129,594	$137,630	$128,910	$133,287	$119,813	- -	- -
60 – 64	14	- -	2	6	2	4	- -	- -	- -	- -
	$139,949	- -	$136,011	$160,345	$145,014	$108,791	- -	- -	- -	- -
65 – 69	2	- -	- -	1	1	- -	- -	- -	- -	- -
	$139,397	- -	- -	$179,119	$99,674	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	**1,076**	**2**	**24**	**216**	**444**	**337**	**50**	**3**	**- -**	**- -**
	$134,994	**$102,205**	**$118,084**	**$125,997**	**$130,807**	**$144,411**	**$157,132**	**$132,781**	**- -**	**- -**

Exhibit B: Members in Active Service as of June 30, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

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	1	- -	1	- -	- -	- -	- -	- -	- -	- -
	$148,411	- -	$148,411	- -	- -	- -	- -	- -	- -	- -
30 – 34	20	3	16	1	- -	- -	- -	- -	- -	- -
	$123,911	$99,160	$128,400	$126,339	- -	- -	- -	- -	- -	- -
35 – 39	38	5	25	7	1	- -	- -	- -	- -	- -
	$122,704	$108,917	$127,283	$112,308	$149,932	- -	- -	- -	- -	- -
40 – 44	28	9	14	5	- -	- -	- -	- -	- -	- -
	$117,731	$125,986	$118,372	$101,081	- -	- -	- -	- -	- -	- -
45 – 49	18	6	7	2	1	2	- -	- -	- -	- -
	$134,322	$124,936	$153,561	$126,903	$127,820	$105,812	- -	- -	- -	- -
50 – 54	9	1	2	4	1	- -	1	- -	- -	- -
	$115,111	$138,905	$137,479	$107,947	$120,279	- -	$70,073	- -	- -	- -
55 – 59	4	- -	3	1	- -	- -	- -	- -	- -	- -
	$118,664	- -	$112,785	$136,298	- -	- -	- -	- -	- -	- -
60 – 64	2	- -	2	- -	- -	- -	- -	- -	- -	- -
	$138,905	- -	$138,905	- -	- -	- -	- -	- -	- -	- -
65 – 69	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	**120**	**24**	**70**	**20**	**3**	**2**	**1**	**- -**	**- -**	**- -**
	$123,268	**$119,352**	**$128,688**	**$111,990**	**$132,677**	**$105,812**	**$70,073**	**- -**	**- -**	**- -**

Exhibit B: Members in Active Service as of June 30, 2020 by Age, Years of Service, and Average Projected Compensation (continued)

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	46	46	- -	- -	- -	- -	- -	- -	- -	- -
	$82,139	$82,139	- -	- -	- -	- -	- -	- -	- -	- -
25 – 29	255	220	35	- -	- -	- -	- -	- -	- -	- -
	$86,281	$83,884	$101,347	- -	- -	- -	- -	- -	- -	- -
30 – 34	273	168	105	- -	- -	- -	- -	- -	- -	- -
	$90,119	$84,350	$99,351	- -	- -	- -	- -	- -	- -	- -
35 – 39	117	63	50	4	- -	- -	- -	- -	- -	- -
	$90,727	$85,006	$97,676	$93,963	- -	- -	- -	- -	- -	- -
40 – 44	47	26	18	2	1	- -	- -	- -	- -	- -
	$90,174	$84,060	$97,321	$104,915	$91,018	- -	- -	- -	- -	- -
45 – 49	26	12	12	2	- -	- -	- -	- -	- -	- -
	$89,794	$84,342	$94,785	$92,564	- -	- -	- -	- -	- -	- -
50 – 54	35	25	7	3	- -	- -	- -	- -	- -	- -
	$99,960	$99,926	$103,831	$91,209	- -	- -	- -	- -	- -	- -
55 – 59	23	14	9	- -	- -	- -	- -	- -	- -	- -
	$100,594	$95,167	$109,037	- -	- -	- -	- -	- -	- -	- -
60 – 64	6	4	1	1	- -	- -	- -	- -	- -	- -
	$101,753	$99,129	$109,391	$104,613	- -	- -	- -	- -	- -	- -
65 – 69	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	**828**	**578**	**237**	**12**	**1**	- -	- -	- -	- -	- -
	$89,364	**$85,093**	**$99,450**	**$95,754**	**$91,018**	- -	- -	- -	- -	- -

Exhibit C: Reconciliation of Member Data

	Active Members	Inactive Vested Members[1]	Retired Members	Disabled Members	Beneficiaries	Total
Number as of June 30, 2019	**12,678**	**3,602**	**10,001**	**719**	**1,661**	**28,661**
• New members	875	81	0	0	129	1,085
• Terminations – with vested rights	(359)	359	0	0	0	0
• Contribution refunds	(106)	(96)	0	0	0	(202)
• Retirements	(440)	(116)	556	0	0	0
• New disabilities	(4)	(3)	(7)	14	0	0
• Return to work	18	(18)	0	0	0	0
• Died with or without beneficiary	(12)	(14)	(238)	(34)	(68)	(366)
• Data adjustments	0	(4)	1	0	(2)	(5)
Number as of June 30, 2020	**12,650**	**3,791**	**10,313**	**699**	**1,720**	**29,173**

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

Exhibit D: Summary Statement of Income and Expenses on a Market Value Basis

	Year Ended June 30, 2020		Year Ended June 30, 2019	
Net assets at market value at the beginning of the year		**$9,821,694,000**		**$9,251,937,000**
Contribution income:				
• Employer contributions	$279,169,000		$288,581,000	
• Member contributions	126,354,000		121,843,000	
Net contribution income		$405,523,000		$410,424,000
Investment income:				
• Interest, dividends and other income	$194,766,000		$222,794,000	
• Asset appreciation	178,055,000		581,330,000	
• Less investment and administrative fees	(79,908,000)		(138,938,000)	
Net investment income		$292,913,000		$665,186,000
Total income available for benefits		**$698,436,000**		**$1,075,610,000**
Less benefit payments:				
• Benefits paid	$(537,698,000)		$(502,944,000)	
• Withdrawal of contributions	(3,053,000)		(2,909,000)	
Net benefit payments		$(540,751,000)		$(505,853,000)
Change in net assets at market value		**$157,685,000**		**$569,757,000**
Net assets at market value at the end of the year		**$9,979,379,000**		**$9,821,694,000**

Note: Results may not total due to rounding.

Exhibit E: Summary Statement of Plan Assets

	June 30, 2020	June 30, 2019
Cash equivalents	$420,429,000	$441,941,000
Accounts receivable:		
• Accrued investment income	$17,275,000	$18,343,000
• Employer and member contributions	52,131,000	50,076,000
• Investment sales and other	92,254,000	280,274,000
Total accounts receivable	$161,660,000	$348,693,000
Investments:		
• Equities	$5,296,523,000	$5,064,220,000
• Absolute return	885,205,000	919,252,000
• Fixed income investments	1,961,218,000	1,870,894,000
• Real assets	1,430,080,000	1,551,953,000
• Securities lending collateral	215,183,000	273,036,000
Total investments at market value	$9,788,209,000	$9,689,355,000
Other assets	$11,006,000	$7,215,000
Total assets	$10,381,304,000	$10,487,204,000
Accounts payable:		
• Accounts payable and other liabilities	$(12,568,000)	$(9,341,000)
• Investment trades and warrants payable	(178,258,000)	(388,248,000)
• Securities lending liability	(211,099,000)	(267,921,000)
Total accounts payable	$(401,925,000)	$(665,510,000)
Net assets at market value	**$9,979,379,000**	**$9,821,694,000**
Net assets at actuarial value	**$10,229,760,000**	**$9,703,313,000**
Net assets at valuation value	**$10,074,345,000**	**$9,557,547,000**

Note: Results may not total due to rounding.

Exhibit F: Summary of Reported Reserve Information as of June 30, 2020

	Reserves
Included in Valuation Value of Assets	
• Employee Reserve	$984,496,733
• Employer Reserve	3,093,045,209
• Retiree Reserve	5,990,123,651
• Death Benefit Reserve	18,111,617
Subtotal: Preliminary Valuation Value of Assets[1]	**$10,085,777,210**
Not Included in Valuation Value of Assets	
• Contingency Reserve	143,982,952
Subtotal: Actuarial Value of Assets	**$10,229,760,162**
• Market Stabilization Reserve	(250,381,162)
Total Market Value of Assets	**$9,979,379,000**

[1] Please note that the Final Valuation Value of Assets (i.e. $10,074,344,503) as shown on page 20 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 declining employer.

Exhibit F: Summary of Reported Reserve Information as of June 30, 2020 (continued)

		Change in Reserves				
	Balance at June 30, 2019	Interest Credit	Contributions	Benefits	Transfers	Balance at June 30, 2020
Employee Reserve	$906,927,252	$8,725,534	$126,354,370	$(3,052,610)	$(54,457,813)	$984,496,733
Employer Reserve	2,908,794,764	206,494,331	279,168,152	(197,638)	(301,214,400)	3,093,045,209
Retiree Reserve	5,740,301,528	430,980,286	0	(536,830,376)	355,672,213	5,990,123,651
Death Benefit Reserve	17,474,649	1,307,095	0	(670,127)	0	18,111,617
Subtotal	**$9,573,498,193**	**$647,507,246**	**$405,522,522**	**$(540,750,751)**	**$0**	**$10,085,777,210**
Contingency Reserve	129,814,743	14,168,209	0	0	0	143,982,952
Total Allocated Reserves	**$9,703,312,936**	**$661,675,455**	**$405,522,522**	**$(540,750,751)**	**$0**	**$10,229,760,162**
Market Stabilization Reserve	118,381,064	(368,762,226)	0	0	0	(250,381,162)
Net Market Value of Assets	**$9,821,694,000**	**$292,913,229**	**$405,522,522**	**$(540,750,751)**	**$0**	**$9,979,379,000**

Note: Results may not total due to rounding.

Exhibit F: Summary of Reported Reserve Information as of June 30, 2020 (continued)

	Per Interest Crediting and Unallocated Earnings Policy
Earnings from June 30, 2019 to June 30, 2020	$292,913,229
Contingency Reserve[1]	(14,168,209)
Subtotal:	**$278,745,020**
Amounts Credited for:	
Market Stabilization Reserve	$368,762,226
Regular Interest Crediting	(647,507,246)
Subtotal	**$(278,745,020)**
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, $14,168,209 was added to the Contingency Reserve on June 30, 2020. As there was a balance of $129,814,743 in the Contingency Reserve as of June 30, 2019, the balance in that reserve as of June 30, 2020 after adding the $14,168,209 is $143,982,952.

Exhibit G: Development of the Fund through June 30, 2020

Year Ended June 30	Employer Contributions	Member Contributions	Net Investment Return[1]	Benefit Payments	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2011	$182,921,000	$57,151,000	$1,200,204,000	$280,594,000	$6,140,644,000	$6,420,824,000	104.6%
2012	179,098,000	65,690,000	(9,703,000)	301,804,000	6,073,926,000	6,529,895,000	107.5%
2013	189,664,000	68,243,000	779,730,000	323,567,000	6,787,995,000	6,797,757,000	100.1%
2014	210,503,000	57,635,000	1,101,487,000	347,620,000	7,810,001,000	7,312,993,000	93.6%
2015	222,959,000	68,143,000	152,368,000	374,657,000	7,878,814,000	7,838,825,000	99.5%
2016	209,020,000	77,494,000	(78,761,000)	405,702,000	7,680,865,000	8,236,402,000	107.2%
2017	203,928,000	89,489,000	1,042,009,000	432,066,000	8,584,225,000	8,665,226,000	100.9%
2018	201,631,000	99,906,000	834,484,000	468,309,000	9,251,937,000	9,123,004,000	98.6%
2019	288,581,000	121,843,000	665,186,000	505,853,000	9,821,694,000	9,703,313,000	98.8%
2020	279,168,000	126,354,000	292,913,000	540,751,000	9,979,379,000	10,229,760,000	102.5%

Note: Market value of assets at year-end calculated by taking previous year's market value and adjusting for cash flows may not total due to rounding.

[1] On a market basis, net of investment fees and administrative expenses.

Exhibit H: Table of Amortization Bases

Miscellaneous

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining	Annual Payment ($ in '000s)
Restart amortization[1]	June 30, 2012	$814,400	23	$791,474	15	$69,379
Actuarial loss[1]	June 30, 2013	34,060	20	31,410	13	3,074
Actuarial gain[1]	June 30, 2014	(125,182)	20	(118,054)	14	(10,908)
Assumption changes[1]	June 30, 2014	(46,607)	20	(43,953)	14	(4,061)
Actuarial gain[1]	June 30, 2015	(73,919)	20	(70,934)	15	(6,218)
Withdrawn employers[2]	June 30, 2015	2,989	20	2,868	15	251
Actuarial loss[1]	June 30, 2016	12,986	20	12,626	16	1,055
Actuarial loss[1]	June 30, 2017	12,571	20	12,336	17	986
Assumption changes[1]	June 30, 2017	466,874	20	458,133	17	36,601
Actuarial loss[1,3]	June 30, 2018	6,060	20	6,002	18	460
Actuarial loss[4]	June 30, 2018	39,429	20	39,047	18	2,994
Actuarial loss[1,3]	June 30, 2019	6,060	20	6,039	19	446
Actuarial loss[4]	June 30, 2019	51,548	20	51,367	19	3,791
Actuarial loss[1,3]	June 30, 2020	4,997	20	4,997	20	356
Actuarial loss[4]	June 30, 2020	24,469	20	24,469	20	1,743
Assumption changes[4]	June 30, 2020	187,738	20	187,738	20	13,372
Subtotal				**$1,395,565**		**$113,321**

Note: Results may not total 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 reflects the net withdrawal liability for the Library Authority and Air Quality Districts and is spread over the payroll for Miscellaneous County only. See page 93 for more details.
[3] These amounts are due to deferred investment losses that were established prior to July 1, 2017. The total amount of those losses for Miscellaneous and Safety combined is $9,275,175 for both June 30, 2018 and June 30, 2019, and $7,648,231 for June 30, 2020.
[4] These amounts are spread over the payroll for all Miscellaneous employers including Rio Linda Elverta Recreation and Parks District.

Exhibit H: Table of Amortization Bases (continued)

Safety

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining	Annual Payment ($ in '000s)
LEMA	June 30, 2010	$4,047	10	$0	0	$0
Restart amortization	June 30, 2012	493,928	23	480,023	15	42,078
Actuarial loss	June 30, 2013	53,174	20	49,036	13	4,800
Actuarial gain	June 30, 2014	(40,247)	20	(37,955)	14	(3,507)
Assumption changes	June 30, 2014	62,388	20	58,835	14	5,436
Actuarial gain	June 30, 2015	(8,318)	20	(7,982)	15	(700)
Actuarial gain	June 30, 2016	(1,139)	20	(1,108)	16	(93)
Actuarial gain	June 30, 2017	(14,836)	20	(14,559)	17	(1,163)
Assumption changes	June 30, 2017	356,837	20	350,156	17	27,974
Actuarial loss	June 30, 2018	44,898	20	44,464	18	3,409
Actuarial loss	June 30, 2019	65,096	20	64,867	19	4,787
Actuarial loss	June 30, 2020	54,193	20	54,193	20	3,860
Assumption changes	June 30, 2020	28,359	20	28,359	20	2,020
Subtotal				**$1,068,329**		**$88,901**

Note: Results may not total due to rounding.

Exhibit H: Table of Amortization Bases (continued)

Miscellaneous and Safety Combined

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining	Annual Payment ($ in '000s)
LEMA	June 30, 2010	$4,047	10	$0	0	$0
Restart amortization	June 30, 2012	1,308,328	23	1,271,497	15	111,457
Actuarial loss	June 30, 2013	87,234	20	80,446	13	7,874
Actuarial gain	June 30, 2014	(165,429)	20	(156,009)	14	(14,415)
Assumption changes	June 30, 2014	15,781	20	14,882	14	1,375
Actuarial gain	June 30, 2015	(82,237)	20	(78,916)	15	(6,918)
Withdrawn employers	June 30, 2015	2,989	20	2,868	15	251
Actuarial loss	June 30, 2016	11,847	20	11,518	16	962
Actuarial gain	June 30, 2017	(2,265)	20	(2,223)	17	(177)
Assumption changes	June 30, 2017	823,711	20	808,289	17	64,575
Actuarial loss	June 30, 2018	90,387	20	89,513	18	6,863
Actuarial loss	June 30, 2019	122,704	20	122,273	19	9,024
Actuarial loss	June 30, 2020	83,659	20	83,659	20	5,959
Assumption changes	June 30, 2020	216,097	20	216,097	20	15,392
Total				**$2,463,894**		**$202,222**

Note: Results may not total due to rounding.

Exhibit I: Projection of UAAL Balances and Payments

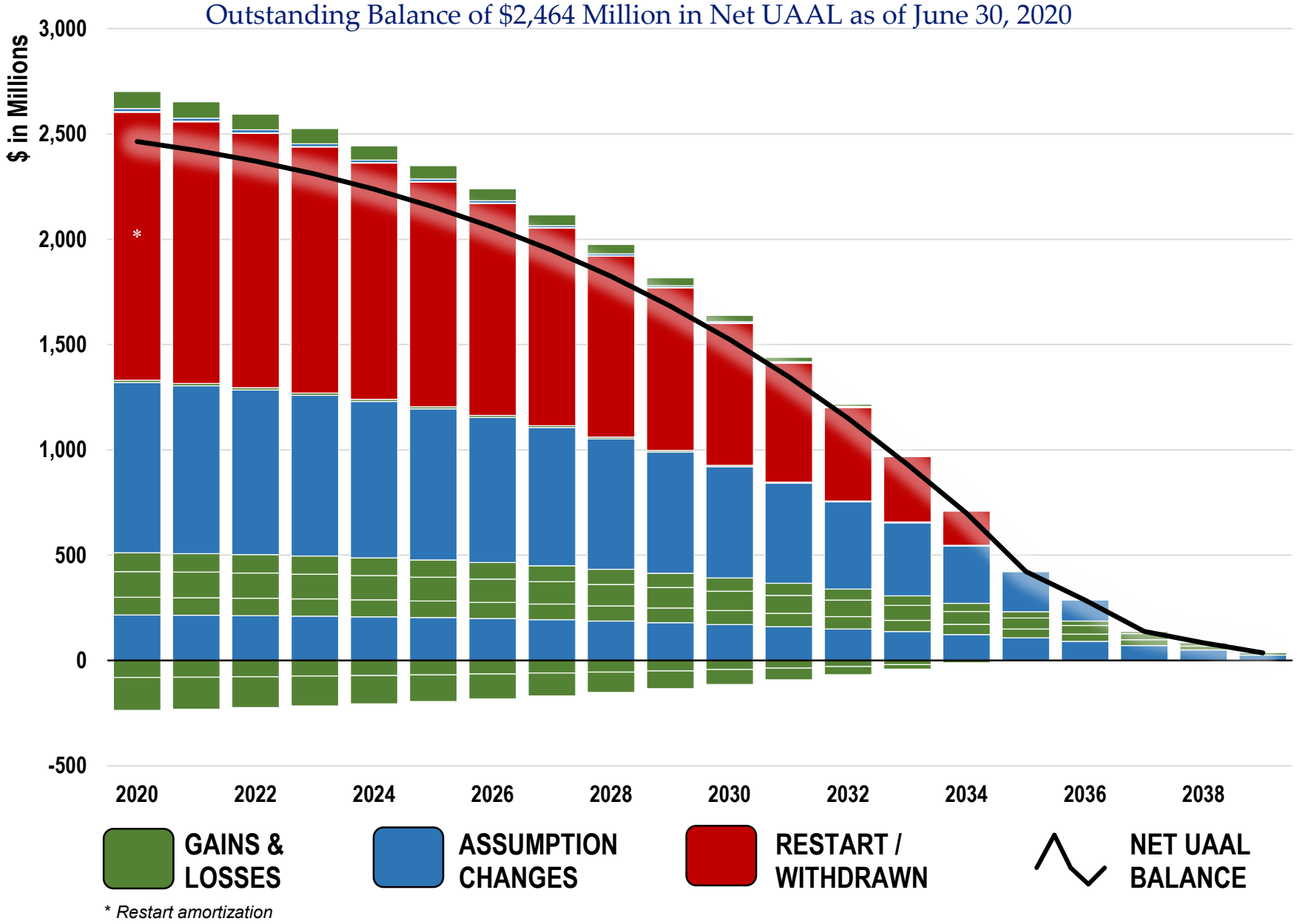
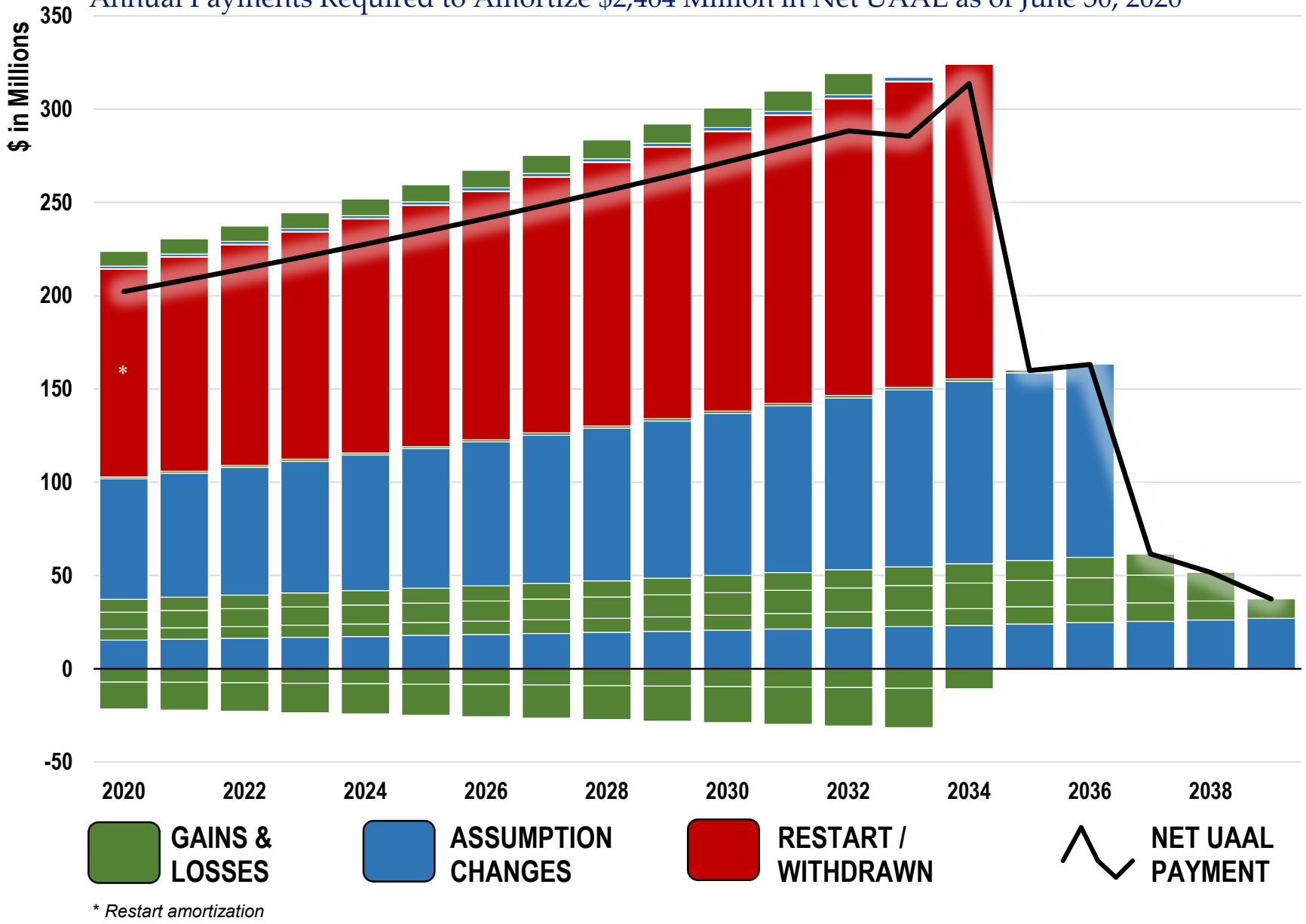


Exhibit I: Projection of UAAL Balances and Payments (continued)

Annual Payments Required to Amortize $2,464 Million in Net UAAL as of June 30, 2020



* *Restart amortization*

Exhibit J: Definition of Pension Terms

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

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 and Beneficiaries:	Actuarial Present Value of lifetime benefits to existing pensioners and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial Cost Method:	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the actuarially determined contribution.
Actuarial Gain or Loss:	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield actuarial liabilities that are larger than projected.
Actuarially Equivalent:	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV):	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is: Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.) Multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination, etc.) on which the payment is conditioned, and Discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Section 3: Supplemental Information

Actuarial Present Value of Future Plan Benefits:	The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation:	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution and the Net Pension Liability (NPL).
Actuarial Value of Assets (AVA):	The value of the Plan's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the Actuarially Determined Contribution.
Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
Actuarially Determined Contribution (ADC):	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization Method:	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the Unfunded Actuarial Accrued Liability. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the Unfunded Actuarial Accrued Liability. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is intended to pay off the Unfunded Actuarial Accrued Liability.

Section 3: Supplemental Information

Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Plan is calculated, including: Investment return - the rate of investment yield that the Plan will earn over the long-term future; Mortality rates - the rate or probability of death at a given age for employees and pensioners; Retirement rates - the rate or probability of retirement at a given age or service; Disability rates - the rate or probability of disability retirement at a given age; Termination rates - the rate or probability at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; Salary increase rates - the rates of salary increase due to inflation, real wage growth and merit and promotion increases.
Closed Amortization Period:	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 20 years, it is 19 years at the end of one year, 18 years at the end of two years, etc. See Open Amortization Period.
Decrements:	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.
Defined Benefit Plan:	A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.
Defined Contribution Plan:	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer Normal Cost:	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Experience Study:	A periodic review and analysis of the actual experience of the Plan that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
Funded Ratio:	The ratio of the Actuarial Value of Assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the Market Value of Assets (MVA), rather than the AVA.
Investment Return:	The rate of earnings of the Fund 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 capital gains and losses to avoid significant swings in the value of assets from one year to the next.

Section 3: Supplemental Information

Normal Cost:	The portion of the Actuarial Present Value of Future Benefits allocated to a valuation year by the Actuarial Cost Method. Any payment with respect to an Unfunded Actuarial Accrued Liability is not part of the Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of member contributions and employer Normal Cost unless otherwise specifically stated.
Open Amortization Period:	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in each future year in determining the Amortization Period.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Valuation Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus or an Overfunded Actuarial Accrued Liability.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.
Valuation Value of Assets:	The Actuarial Value of Assets reduced by the value of non-valuation reserves.

Section 4: Actuarial Valuation Basis

Exhibit I: Actuarial Assumptions and 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, 2016 through June 30, 2019 Actuarial Experience Study report dated May 11, 2020. Unless otherwise noted, all actuarial assumptions and methods shown below apply to all tiers. These assumptions were adopted by the Board.
Economic Assumptions	
Net Investment Return:	6.75%; net of administrative and investment expenses. Based on the Actuarial Experience Study reference above, expected administrative and investment expenses represent about 0.75% of the Actuarial Value of Assets.
Employee Contribution Crediting Rate:[1]	2.75% (assumed rate of inflation), compounded semi-annually.
Consumer Price Index:	Increase of 2.75% per year. Miscellaneous and Safety Tier 1 benefits are assumed to increase at 2.75% 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 2.00% per year. Miscellaneous Tier 2 receive no COLA increases.
Payroll Growth:	Inflation of 2.75% per year plus "across the board" salary increases of 0.25% per year, used to amortize the Unfunded Actuarial Accrued Liability as a level percentage of payroll.
Increase in Section 7522.10 Compensation Limit:	Increase of 2.75% 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 6.75%.

Salary Increases:

The annual rate of compensation increase includes: inflation at 2.75%, plus "across the board" salary increases of 0.25% per year, plus the following merit and promotion increases:

Merit and Promotion Increases

Years of Service	Rate (%)	
	Miscellaneous	Safety
Less than 1	5.00	7.50
1 – 2	5.00	6.50
2 – 3	5.00	6.25
3 – 4	5.00	5.50
4 – 5	4.00	5.00
5 – 6	3.00	4.25
6 – 7	2.50	4.00
7 – 8	2.25	3.50
8 – 9	2.00	3.25
9 – 10	1.80	3.00
10 – 11	1.70	2.50
11 – 12	1.60	2.50
12 – 13	1.50	2.50
13 – 14	1.45	2.50
14 – 15	1.35	2.50
15 & Over	1.25	2.50

Section 4: Actuarial Valuation Basis

Demographic Assumptions:	
Post-Retirement Mortality Rates:	*Healthy* • **Miscellaneous Members:** Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) with rates increased by 10%, projected generationally with the two-dimensional mortality improvement scale MP-2019. • **Safety Members:** Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) with rates decreased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2019. *Disabled* • **Miscellaneous Members:** Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019. • **Safety Members:** Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019. *Beneficiaries* • Pub-2010 Contingent Survivor Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019. The Pub-2010 mortality tables and adjustments as shown above reasonably reflect the mortality experience as of the measurement date. The generational projection is a provision for future mortality improvement.

Section 4: Actuarial Valuation Basis

Pre-Retirement Mortality Rates:

- **Miscellaneous Members:** Pub-2010 General Employee Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019.
- **Safety Members:** Pub-2010 Safety Employee Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019

	Rate (%)			
	Miscellaneous		Safety	
Age	Male	Female	Male	Female
20	0.04	0.01	0.04	0.01
25	0.02	0.01	0.03	0.02
30	0.03	0.01	0.04	0.02
35	0.04	0.02	0.04	0.03
40	0.06	0.03	0.05	0.04
45	0.09	0.05	0.07	0.06
50	0.13	0.08	0.10	0.08
55	0.19	0.11	0.15	0.11
60	0.28	0.17	0.23	0.14
65	0.41	0.27	0.35	0.20

Note that generational projections beyond the base year (2010) are not reflected in the above mortality rates.

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.

Mortality Rates for Member Contributions:

- **Miscellaneous Members:** Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) with rates increased by 10%, projected 30 years (from 2010) with the two-dimensional mortality improvement scale MP-2019, weighted 40% male and 60% female.
- **Safety Members:** Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) with rates decreased by 5% for males, projected 30 years (from 2010) with the two-dimensional mortality improvement scale MP-2019, weighted 75% male and 25% female.

Section 4: Actuarial Valuation Basis

Assumptions for Optional Form of Benefits:	• **Miscellaneous Service Retirees:** Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) with rates increased by 10%, projected generationally with the two-dimensional mortality improvement scale MP-2019 weighted 40% male and 60% female. • **Safety Service Retirees:** Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) with rates decreased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2019 weighted 75% male and 25% female. • **Miscellaneous Disabled Retirees:** Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019 weighted 40% male and 60% female. • **Safety Disabled Retirees:** Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019 weighted 75% male and 25% female. • **All Miscellaneous Beneficiaries:** Pub-2010 Contingent Survivor Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019 weighted 60% male and 40% female. • **All Safety Beneficiaries:** Pub-2010 Contingent Survivor Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019 weighted 25% male and 75% female. • Note that for optional form of benefits, a 6.75% per annum interest rate with a 0.00% COLA is used.

Disability Incidence:

	Rate (%)	
Age	**Miscellaneous**	**Safety**
20	0.000	0.050
25	0.006	0.050
30	0.016	0.080
35	0.044	0.220
40	0.084	0.360
45	0.160	0.460
50	0.230	0.680
55	0.310	0.920
60	0.410	1.120
65	0.630	0.000

40% of Miscellaneous disabilities are assumed to be duty disabilities. The other 60% are assumed to be non-duty disabilities.

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

Termination:

Less Than Five Years of Service

Years of Service	Rate (%)	
	Miscellaneous	Safety
Less than 1	13.00	5.00
1 – 2	8.00	4.50
2 – 3	6.50	4.00
3 – 4	5.50	2.50
4 – 5	5.25	2.50

55% of the Miscellaneous terminated members and 50% of the Safety terminated members with less than five years of service are assumed to choose a refund of contributions. The other 45% and 50% of Miscellaneous and Safety terminated members, respectively, are assumed to choose a deferred vested benefit.

Five or More Years of Service

Age	Rate (%)	
	Miscellaneous	Safety
20	5.25	2.00
25	5.25	2.00
30	5.10	2.00
35	4.40	1.55
40	3.40	1.10
45	2.70	1.00
50	2.44	1.00
55	2.34	1.00
60	2.24	1.00
65	1.48	0.00

30% of the Miscellaneous terminated members and 15% of the Safety terminated members with 5 or more years of service are assumed to choose a refund of contributions. The other 70% and 85% of Miscellaneous and Safety terminated members are assumed to choose a deferred vested benefit.

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

Section 4: Actuarial Valuation Basis

Retirement Rates:

	Rate (%)				
		Miscellaneous Tiers 2 & 3			
Age	Miscellaneous Tier 1	Less Than 30 Years of Service	30 or More Years of Service	Miscellaneous Tier 4	Miscellaneous Tier 5
50	6.00	2.50	2.50	2.50	0.00
51	4.50	1.75	1.75	1.75	0.00
52	4.50	2.00	2.00	2.00	4.00
53	4.50	2.50	2.50	1.75	1.25
54	5.50	3.00	3.00	2.25	1.75
55	12.00	4.00	8.00	3.00	2.50
56	18.00	5.00	10.00	4.50	4.00
57	18.00	8.00	16.00	6.50	6.00
58	18.00	9.00	18.00	7.00	6.50
59	20.00	9.00	18.00	7.00	6.50
60	28.00	9.00	18.00	7.50	7.00
61	35.00	15.00	30.00	12.00	11.00
62	35.00	18.00	18.00	13.00	12.00
63	35.00	18.00	18.00	12.00	11.00
64	35.00	20.00	20.00	13.00	13.00
65	35.00	35.00	35.00	25.00	24.00
66	40.00	35.00	35.00	18.00	18.00
67	40.00	35.00	35.00	18.00	18.00
68	50.00	35.00	35.00	21.00	21.00
69	60.00	35.00	35.00	23.00	23.00
70 & Over	100.00	100.00	100.00	100.00	100.00

These retirement rates only apply to members who are eligible to retire at the age shown.

Section 4: Actuarial Valuation Basis

Retirement Rates (continued):

	Rate (%)			
	Safety Tiers 1 & 2			
Age	Less Than 25 Years of Service	25 or More Years of Service	Safety Tier 3	Safety Tier 4
45	2.50	2.50	1.50	0.00
46	2.50	2.50	1.50	0.00
47	2.50	2.50	1.50	0.00
48	2.50	2.50	1.50	0.00
49	10.00	10.00	4.00	0.00
50	18.00	36.00	10.00	15.00
51	15.00	30.00	12.00	10.50
52	18.00	36.00	14.00	12.00
53	16.00	32.00	16.00	14.00
54	18.00	27.00	18.00	15.50
55	18.00	27.00	50.00	40.00
56	20.00	30.00	25.00	25.00
57	20.00	30.00	25.00	25.00
58	20.00	30.00	25.00	25.00
59	30.00	30.00	30.00	25.00
60	45.00	45.00	45.00	45.00
61	55.00	55.00	55.00	55.00
62	70.00	70.00	70.00	70.00
63	70.00	70.00	70.00	70.00
64	70.00	70.00	70.00	70.00
65 & Over	100.00	100.00	100.00	100.00

These retirement rates only apply to members who are eligible to retire at the age shown.

Retirement Age and Benefit for Deferred Vested Members:

Miscellaneous Retirement Age: 59

Safety Retirement Age: 52

Current and future deferred vested non-reciprocal members who terminate with less than five years of service and are not vested are assumed to retire at age 70 for both Miscellaneous and Safety if they decide to leave their contributions on deposit.

30% of future Miscellaneous and 40% of future Safety deferred vested members are assumed to continue to work for a reciprocal employer. For reciprocals, 4.25% and 5.50% compensation increases are assumed per annum for Miscellaneous and Safety, 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.

Section 4: Actuarial Valuation Basis

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 active and inactive members are assumed to elect the unmodified option at retirement.
Percent Married:	For all active and inactive members, 80% of male members and 55% of female members are assumed to be married at pre-retirement death or retirement.
Age and Gender of Spouse:	For all active and inactive members, male members are assumed to have a female spouse who is 3 years younger than the member and female members are assumed to have a male spouse who is 2 years older than the member.
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 Retirement	Disability Retirement
Miscellaneous	1.50%	0.25%
Safety	2.25%	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 Funding Policy	
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age on the valuation date minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percentage of compensation.
Actuarial Value of Assets:	Market Value of Assets (MVA) less unrecognized returns in each of the last seven years. Unrecognized returns are equal to the difference between the actual market return and the expected return on the market value, and are recognized over a seven-year period. The Actuarial Value of Assets (AVA) is limited by a 30% corridor; the AVA cannot be less than 70% of MVA, nor greater than 130% of MVA.
Valuation Value of Assets:	The Actuarial Value of Assets reduced by the value of the non-valuation reserves and designations.

Section 4: Actuarial Valuation Basis

Amortization Policy:	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.
Other Actuarial Methods	
Employer Contributions:	Employer contributions consist of two components: *Normal Cost* The annual contribution rate that, if paid annually from a member's first year of membership through the year of retirement, would accumulate to the amount necessary to fully fund the member's retirement-related benefits. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution rate is expressed as a level percentage of the member's compensation. *Contribution to the Unfunded Actuarial Accrued Liability (UAAL)* The annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution (or rate credit in the case of a negative UAAL) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the System) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the annual rate of 3.00% (i.e., 2.75% inflation plus 0.25% across-the-board salary increase). 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 amortization policy is described above. The recommended employer contributions are provided in *Section 2, Subsection F.* Employer Normal Cost and UAAL contribution rates are calculated assuming payments made at the end of every pay period.

Section 4: Actuarial Valuation Basis

Member Contributions:	*Miscellaneous Tiers 1, 2, 3 & 4 and 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.

Member Contributions (continued):	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 and 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 for all members are provided in *Section 4, Exhibit III*. Member contributions are assumed to be made at the end of every pay period.
Internal Revenue Code Section 415:	Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan. A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active participants could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets. In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of $160,000 indexed for inflation. That limit is $230,000 for 2020. 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. Non-CalPEPRA benefits in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m). Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard. Contribution rates determined in this valuation have not been reduced for the Section 415 limitations. However, it is anticipated that PEPRA members will not be limited in the future due to the PEPRA compensation limit applied in the determination of their benefit. Actual limitations will result in gains as they occur.
Justification for Change in Actuarial Assumptions:	The following assumptions have been changed since the prior valuation. Rationale for these changes are presented in the July 1, 2016 through June 30, 2019 Actuarial Experience Study:

Section 4: Actuarial Valuation Basis

Prior Actuarial Assumptions:	
Net Investment Return:	7.00%; net of administrative and investment expenses. Based on the Actuarial Experience Study reference above, expected administrative and investment expenses represent about 0.65% of the Actuarial Value of Assets.
Employee Contribution Crediting Rate:[1]	3.00% (assumed rate of inflation), compounded semi-annually.
Consumer Price Index:	Increase of 3.00% per year. Miscellaneous and Safety Tier 1 benefits are assumed to increase at 3.00% 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 2.00% per year. Miscellaneous Tier 2 receive no COLA increases.
Payroll Growth:	Inflation of 3.00% per year plus "across the board" salary increases of 0.25% per year, used to amortize the Unfunded Actuarial Accrued Liability as a level percentage of payroll.
Increase in Section 7522.10 Compensation Limit	Inflation of 3.00% per year from the valuation date.
Salary Increases:	The annual rate of compensation increase includes: inflation at 3.00%, plus "across the board" salary increases of 0.25% per year, plus the following merit and promotion increases:

Merit and Promotion Increases

Years of Service	Rate (%)	
	Miscellaneous	Safety
Less than 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 & Over	1.25	2.00

[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%.

Section 4: Actuarial Valuation Basis

Prior Actuarial Assumptions (continued):

Post-Retirement Mortality Rates:

Healthy

- **Miscellaneous Members and All 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.
- **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

- **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.
- **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 mortality tables and adjustments as shown above reasonably reflect the mortality experience as of the measurement date. The generational projection is a provision for future mortality improvement.

Pre-Retirement Mortality Rates:

- **Miscellaneous and Safety Members**: Headcount-Weighted RP-2014 Employee Mortality Table multiplied by 50%, projected generationally with the two-dimensional MP-2016 projection scale.

	Rate (%)			
	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

Generational projections beyond the base year (2014) are not reflected in the above mortality rates.

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.

Section 4: Actuarial Valuation Basis

Prior Actuarial Assumptions (continued):	
Mortality Rates for Member Contributions:	• **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. • **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.
Assumptions for Optional Form of Benefits:	• **Miscellaneous Service Retirees:** 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. • **Safety Service Retirees:** 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. • **Miscellaneous Disabled Retirees:** Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected 20 years with the two-dimensional scale MP-2016 set forward seven years for males and set forward eight years for females weighted 40% male and 60% female. • **Safety Disabled Retirees:** 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 weighted 75% male and 25% female. • **All Miscellaneous Beneficiaries:** 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 60% male and 40% female. • **All Safety Beneficiaries:** 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 25% male and 75% female. • Note that for optional form of benefits, a 7.00% per annum interest rate with a 0.00% COLA is used.

Section 4: Actuarial Valuation Basis

Prior Actuarial Assumptions (continued):

Disability Incidence:

Age	Rate (%) Miscellaneous	Safety
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

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

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

Prior Actuarial Assumptions (continued):

Termination:

Less Than Five Years of Service

Years of Service	Rate (%)	
	Miscellaneous	Safety
Less than 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

65% of the Miscellaneous terminated members and 50% of the Safety terminated members with less than 5 years of service are assumed to choose a refund of contributions. The other 35% and 50% of Miscellaneous and Safety terminated members, respectively, are assumed to choose a deferred vested benefit.

Five or More Years of Service

Age	Rate (%)	
	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

40% of the Miscellaneous terminated members and 15% of the Safety terminated members with 5 or more years of service are assumed to choose a refund of contributions. The other 60% and 85% of Miscellaneous and Safety terminated members are assumed to choose a deferred vested benefit.

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

Section 4: Actuarial Valuation Basis

Prior Actuarial Assumptions (continued):

Retirement Rates:

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

Section 4: Actuarial Valuation Basis

Prior Actuarial Assumptions (continued):

Retirement Rates (continued):

Age	Rate (%)		
	Safety Tiers 1 & 2	Safety Tier 3	Safety Tier 4
45	2.00	1.50	0.00
46	2.00	1.50	0.00
47	2.00	1.50	0.00
48	2.00	1.50	0.00
49	5.00	4.00	0.00
50	22.00	10.00	15.00
51	16.00	12.00	10.50
52	16.00	14.00	12.00
53	20.00	16.00	14.00
54	20.00	18.00	15.50
55	20.00	50.00	40.00
56	25.00	25.00	25.00
57	25.00	25.00	25.00
58	25.00	25.00	25.00
59	30.00	30.00	25.00
60	45.00	45.00	45.00
61	55.00	55.00	55.00
62	70.00	70.00	70.00
63	70.00	70.00	70.00
64	70.00	70.00	70.00
65 & Over	100.00	100.00	100.00

Retirement Age and Benefit for Deferred Vested Members:

Miscellaneous Retirement Age:59

Safety Retirement Age: 53

Future deferred vested members who terminate with less than five years of service and are not vested are assumed to retire at age 70 for both Miscellaneous and Safety if they decide to leave their contributions on deposit.

35% of future Miscellaneous and 45% of future Safety deferred vested members are assumed to continue to work for a reciprocal employer. For reciprocals, 4.50% and 5.25% compensation increases are assumed per annum for Miscellaneous and Safety, respectively.

Exhibit II: Summary of Plan Provisions

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

Plan Year:	July 1 through June 30
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 & 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 & 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, & Tier 4 and Safety Tier 2 & 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).

Section 4: Actuarial Valuation Basis

Service Retirement Eligibility:		
Miscellaneous		
Tiers 1, 2, 3 & 4	Age 50 with 10 years of service, or age 70 regardless of service, or after 30 years regardless of age (§31672).	
Tier 5	Age 52 with 5 years of service (§7522.20(a)) or age 70 regardless of service (§31672.3).	
Safety		
Tiers 1, 2 & 3	Age 50 with 10 years of service, or age 70 regardless of service, or after 20 years of Safety service regardless of age (§31663.25).	
Tier 4	Age 50 with 5 years of service (§7522.25(d)) or age 70 regardless of service (§31672.3).	
Benefit Formula:		
Miscellaneous Tier 1 (§31676.14)	**Retirement Age**	**Benefit Formula**
	50	(1.48% x FAS1 – 1/3 x 1.48% x $350 x 12) x Yrs
	55	(1.95% x FAS1 – 1/3 x 1.95% x $350 x 12) x Yrs
	60	(2.44% x FAS1 – 1/3 x 2.44% x $350 x 12) x Yrs
	62 & Over	(2.61% x FAS1 – 1/3 x 2.61% x $350 x 12) x Yrs
Miscellaneous Tier 2 & Tier 3 (§31676.14)	**Retirement Age**	**Benefit Formula**
	50	(1.48% x FAS3 – 1/3 x 1.48% x $350 x 12) x Yrs
	55	(1.95% x FAS3 – 1/3 x 1.95% x $350 x 12) x Yrs
	60	(2.44% x FAS3 – 1/3 x 2.44% x $350 x 12) x Yrs
	62 & Over	(2.61% x FAS3 – 1/3 x 2.61% x $350 x 12) x Yrs
Miscellaneous Tier 4 (§31676.1)	**Retirement Age**	**Benefit Formula**
	50	(1.18% x FAS3 – 1/3 x 1.18% x $350 x 12) x Yrs
	55	(1.49% x FAS3 – 1/3 x 1.49% x $350 x 12) x Yrs
	60	(1.92% x FAS3 – 1/3 x 1.92% x $350 x 12) x Yrs
	62	(2.09% x FAS3 – 1/3 x 2.09% x $350 x 12) x Yrs
	65 & Over	(2.43% x FAS3 – 1/3 x 2.43% x $350 x 12) x Yrs

Section 4: Actuarial Valuation Basis

Benefit Formula: (continued)		
Miscellaneous Tier 5 (§7522.20(a))	**Retirement Age**	**Benefit Formula**
	52	1.00% x FAS3 x Yrs
	55	1.30% x FAS3 x Yrs
	60	1.80% x FAS3 x Yrs
	62	2.00% x FAS3 x Yrs
	65	2.30% x FAS3 x Yrs
	67 & Over	2.50% x FAS3 x Yrs
Safety Tier 1 (§31664.1)	**Retirement Age**	**Benefit Formula**
	50 & Over	(3.00% x FAS1 – 1/3 x 3.00% x $350 x 12) x Yrs
Safety Tier 2 (§31664.1)	**Retirement Age**	**Benefit Formula**
	50 & Over	(3.00% x FAS3 – 1/3 x 3.00% x $350 x 12) x Yrs
Safety Tier 3 (§31664.2)	**Retirement Age**	**Benefit Formula**
	50	(2.29% x FAS3 – 1/3 x 2.29% x $350 x 12) x Yrs
	55 & Over	(3.00% x FAS3 – 1/3 x 3.00% x $350 x 12) x Yrs
Safety Tier 4 (§7522.25(d))	**Retirement Age**	**Benefit Formula**
	50	2.00% x FAS3 x Yrs
	55	2.50% x FAS3 x Yrs
	57 & Over	2.70% x FAS3 x Yrs
Maximum Benefit:		
Miscellaneous Tier 1, Tier 2, Tier 3 & 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. • Fair Oaks Cemetery District • Galt Amo Cemetery District	

Section 4: Actuarial Valuation Basis

Non-Duty Disability:	
Miscellaneous Tier 1 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 projected 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, & Tier 5 and Safety Tier 2, Tier 3 & 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).

Section 4: Actuarial Valuation Basis

Pre-Retirement Death:	
All Members	
Eligibility	No age or service requirements.
Basic lump sum benefit	Refund of employee contributions with interest, plus one month's compensation for each year of service, to a maximum of six 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).
Vested Members	
Eligibility	Five years of service.
Basic benefit	60% of the greater of Service Retirement or Non-Duty Disability Retirement benefit payable to surviving eligible spouse (§31765.1, §31781.1), in lieu of the basic lump sum benefit above.
Death in Line-of-Duty	50% of Final compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor children (§31787).
Death After Retirement:	
All Members	
Service Retirement or Non Service Connected Disability Retirement	Unless another option was selected at retirement, 60% of member's unmodified allowance continues to eligible spouse (§31760.1) and 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	Unless another option was selected at retirement, 100% of member's allowance continued to eligible spouse (§31786) and 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 benefit at age 70 (§31628). A member may also elect to leave contributions on deposit in the retirement fund (§31629.5).
Five or More Years of Service	If contributions left on deposit, eligible for retirement benefits at any time after eligible to retire (§31700).

Section 4: Actuarial Valuation Basis

Post-Retirement Cost-of-Living Benefits:	
Miscellaneous Tier 1 and Safety Tier 1	Annual adjustment based on Consumer Price Index to a maximum of 4% per year; excess "banked" (§31874.2).
Miscellaneous Tier 2	None.
Miscellaneous Tier 3, Tier 4 & Tier 5 and Safety Tier 2, Tier 3 & Tier 4	Annual adjustment based on Consumer Price Index to a maximum of 2% per year; excess "banked" (§31870).
Member Contributions:	Please refer to *Section 4, Exhibit III* for specific rates.
Miscellaneous Tier 1	
Basic	Entry-age based rates that provide for an annuity at age 55 equal to 1/240 of FAS1 (§31621.3).
Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
Miscellaneous Tier 2	
Basic	Entry-age based rates that provide for an annuity at age 55 equal to 1/240 of FAS3 (§31621.3).
Cost-of-Living	None.
Miscellaneous Tier 3	
Basic	Entry-age based rates that provide for an annuity at age 55 equal to 1/240 of FAS3 (§31621.3).
Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
Miscellaneous Tier 4	
Basic	Entry-age based rates that provide for an annuity at age 60 equal to 1/120 of FAS3 (§31621).
Cost-of-Living	Entry-age based rates that 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 & Tier 3	
Basic	Entry-age based rates that provide for an annuity at age 50 equal to 1/100 of FAS1 (FAS3 for Tier 2 and Tier 3). (§31639.25).
Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
Safety Tier 4	50% of the total Normal Cost rate.

Member Contributions (continued):

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.

Section 4: Actuarial Valuation Basis

Other Information:	Safety Tier 1, Tier 2 & 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.
Changes in Plan Provisions:	There have been no changes in plan provisions since the last valuation.

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.

Exhibit III: Member Contribution Rates

Comparison of Member Rate[1] from the June 30, 2019 and June 30, 2020 Valuations

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 *Section 4, Exhibit VI*.

	June 30, 2020			June 30, 2019			
Miscellaneous	**Basic**	**COLA**	**Total**	**Basic**	**COLA**	**Total**	**Increase / (Decrease) in Rate**
Tier 1	4.34%	2.41%	6.75%	4.05%	1.93%	5.98%	0.77%
Tier 2	4.16%	0.00%	4.16%	3.87%	0.00%	3.87%	0.29%
Tier 3	4.16%	1.85%	6.01%	3.87%	1.64%	5.51%	0.50%
Tier 4	7.30%	1.69%	8.99%	6.82%	1.54%	8.36%	0.63%
Tier 5	8.24%	1.77%	10.01%	7.80%	1.65%	9.45%	0.56%

	June 30, 2020			June 30, 2019			
Safety	**Basic**	**COLA**	**Total**	**Basic**	**COLA**	**Total**	**Increase / (Decrease) in Rate**
Tier 1	12.10%	6.76%	18.86%[2]	11.15%	8.69%	19.84%	-0.98%
Tier 2	11.48%	4.56%	16.04%	10.60%	4.19%	14.79%	1.25%
Tier 3	11.48%	4.04%	15.52%	10.60%	3.75%	14.35%	1.17%
Tier 4	11.83%	3.28%	15.11%	11.74%	3.23%	14.97%	0.14%

[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.
[2] There is a reduction in the member rate for Safety Tier 1 primarily as a result of an increase in the COLA offset as the number of active members in that Tier shrunk by about one-third during 2019-2020. Also, the remaining members are expected to retire earlier under the new assumptions used in this valuation.

Exhibit III: Member Contribution Rates (continued)

Miscellaneous Tier 1 Members' Contribution Rates Based on the June 30, 2020 Actuarial Valuation
(as a % of monthly payroll)

	Basic		COLA		Total	
Entry Age	First $350	Over $350	First $350	Over $350	First $350	Over $350
16	2.20%	3.30%	1.22%	1.83%	3.42%	5.13%
17	2.23%	3.35%	1.24%	1.86%	3.47%	5.21%
18	2.27%	3.40%	1.26%	1.89%	3.53%	5.29%
19	2.29%	3.44%	1.27%	1.91%	3.56%	5.35%
20	2.33%	3.49%	1.29%	1.94%	3.62%	5.43%
21	2.36%	3.54%	1.31%	1.96%	3.67%	5.50%
22	2.39%	3.59%	1.33%	1.99%	3.72%	5.58%
23	2.43%	3.65%	1.35%	2.03%	3.78%	5.68%
24	2.47%	3.70%	1.37%	2.05%	3.84%	5.75%
25	2.50%	3.75%	1.39%	2.08%	3.89%	5.83%
26	2.53%	3.80%	1.41%	2.11%	3.94%	5.91%
27	2.57%	3.86%	1.43%	2.14%	4.00%	6.00%
28	2.61%	3.91%	1.45%	2.17%	4.06%	6.08%
29	2.65%	3.97%	1.47%	2.20%	4.12%	6.17%
30	2.69%	4.03%	1.49%	2.24%	4.18%	6.27%
31	2.73%	4.09%	1.51%	2.27%	4.24%	6.36%
32	2.77%	4.15%	1.53%	2.30%	4.30%	6.45%
33	2.81%	4.21%	1.56%	2.34%	4.37%	6.55%
34	2.85%	4.27%	1.58%	2.37%	4.43%	6.64%
35	2.89%	4.34%	1.61%	2.41%	4.50%	6.75%
36	2.93%	4.40%	1.63%	2.44%	4.56%	6.84%
37	2.98%	4.47%	1.65%	2.48%	4.63%	6.95%
38	3.03%	4.54%	1.68%	2.52%	4.71%	7.06%
39	3.08%	4.62%	1.71%	2.56%	4.79%	7.18%
40	3.13%	4.69%	1.73%	2.60%	4.86%	7.29%

Exhibit III: Member Contribution Rates (continued)

Miscellaneous Tier 1 Members' Contribution Rates Based on the June 30, 2020 Actuarial Valuation (as a % of monthly payroll)

	Basic		COLA		Total	
Entry Age	**First $350**	**Over $350**	**First $350**	**Over $350**	**First $350**	**Over $350**
41	3.17%	4.76%	1.76%	2.64%	4.93%	7.40%
42	3.22%	4.83%	1.79%	2.68%	5.01%	7.51%
43	3.27%	4.90%	1.81%	2.72%	5.08%	7.62%
44	3.31%	4.97%	1.84%	2.76%	5.15%	7.73%
45	3.37%	5.05%	1.87%	2.80%	5.24%	7.85%
46	3.41%	5.12%	1.89%	2.84%	5.30%	7.96%
47	3.45%	5.18%	1.91%	2.87%	5.36%	8.05%
48	3.49%	5.24%	1.94%	2.91%	5.43%	8.15%
49	3.53%	5.29%	1.96%	2.94%	5.49%	8.23%
50	3.53%	5.30%	1.96%	2.94%	5.49%	8.24%
51	3.51%	5.27%	1.95%	2.92%	5.46%	8.19%
52	3.49%	5.24%	1.94%	2.91%	5.43%	8.15%
53	3.47%	5.21%	1.93%	2.89%	5.40%	8.10%
54	3.45%	5.18%	1.91%	2.87%	5.36%	8.05%
55	3.45%	5.18%	1.91%	2.87%	5.36%	8.05%
56	3.45%	5.18%	1.91%	2.87%	5.36%	8.05%
57	3.45%	5.18%	1.91%	2.87%	5.36%	8.05%
58	3.45%	5.18%	1.91%	2.87%	5.36%	8.05%
59 & Over	3.45%	5.18%	1.91%	2.87%	5.36%	8.05%

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

Interest:	6.75% per annum
COLA:	2.75%
Mortality:	See *Section 4, Exhibit I*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.25%) + Merit (See *Section 4, Exhibit I*)
COLA Loading Factor:	55.50%[1]
Non-Refundability Factor:	100.00%

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

Exhibit III: Member Contribution Rates (continued)

Miscellaneous Tier 2 Members' Contribution Rates Based on the June 30, 2020 Actuarial Valuation (as a % of monthly payroll)

	Basic		COLA		Total	
Entry Age	**First $350**	**Over $350**	**First $350**	**Over $350**	**First $350**	**Over $350**
35	2.77%	4.16%	0.00%	0.00%	2.77%	4.16%

Note: Members who enter on or after 1/1/1975 contribute on the basis of a single entry age of 35.

Interest:	6.75% per annum
COLA:	0.00%
Mortality:	See *Section 4, Exhibit I*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.25%) + Merit (See *Section 4, Exhibit I*)
COLA Loading Factor:	0.00%
Non-Refundability Factor:	100.00%

Miscellaneous Tier 3 Members' Contribution Rates Based on the June 30, 2020 Actuarial Valuation (as a % of monthly payroll)

	Basic		COLA		Total	
Entry Age	**First $350**	**Over $350**	**First $350**	**Over $350**	**First $350**	**Over $350**
35	2.77%	4.16%	1.23%	1.85%	4.00%	6.01%

Note: Members who enter on or after 1/1/1975 contribute on the basis of a single entry age of 35.

Interest:	6.75% per annum
COLA:	2.00%
Mortality:	See *Section 4, Exhibit I*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.25%) + Merit (See *Section 4, Exhibit I*)
COLA Loading Factor:	44.58%[1]
Non-Refundability Factor:	99.27%

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

Exhibit III: Member Contribution Rates (continued)

Miscellaneous Tier 4 Members' Contribution Rates Based on the June 30, 2020 Actuarial Valuation (as a % of monthly payroll)

	Basic		COLA		Total	
Entry Age	**First $350**	**Over $350**	**First $350**	**Over $350**	**First $350**	**Over $350**
35	4.87%	7.30%	1.13%	1.69%	6.00%	8.99%

Note: Members who enter on or after 1/1/1975 contribute on the basis of a single entry age of 35.

Interest:	6.75% per annum
COLA:	2.00%
Mortality:	See *Section 4, Exhibit I*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.25%) + Merit (See *Section 4, Exhibit I*)
COLA Loading Factor:	23.17%[1]
Non-Refundability Factor:	98.04%

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

Miscellaneous Tier 5 Members' Contribution Rates Based on the June 30, 2020 Actuarial Valuation (as a % of monthly payroll)

	All Eligible Pay[1]		
	Basic	**COLA**	**Total**
All Members	8.24%	1.77%	10.01%

[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 2020 is equal to $126,291 (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2020 (reference: Section 7522.10(d)).

Interest:	6.75% per annum
COLA:	2.00%
Mortality:	See *Section 4, Exhibit I*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.25%) + Merit (See *Section 4, Exhibit I*)
COLA Loading Factor:	21.48%
Non-Refundability Factor:	95.91%

Exhibit III: Member Contribution Rates (continued)

Safety Tier 1 Members' Contribution Rates Based on the June 30, 2020 Actuarial Valuation
(as a % of monthly payroll)

	Basic		COLA		Total	
Entry Age	First $350	Over $350	First $350	Over $350	First $350	Over $350
18	7.44%	11.16%	4.16%	6.24%	11.60%	17.40%
19	7.49%	11.24%	4.19%	6.28%	11.68%	17.52%
20	7.55%	11.32%	4.22%	6.33%	11.77%	17.65%
21	7.60%	11.40%	4.25%	6.37%	11.85%	17.77%
22	7.65%	11.48%	4.28%	6.42%	11.93%	17.90%
23	7.71%	11.56%	4.31%	6.46%	12.02%	18.02%
24	7.77%	11.65%	4.34%	6.51%	12.11%	18.16%
25	7.82%	11.73%	4.37%	6.56%	12.19%	18.29%
26	7.88%	11.82%	4.41%	6.61%	12.29%	18.43%
27	7.94%	11.91%	4.44%	6.66%	12.38%	18.57%
28	8.00%	12.00%	4.47%	6.71%	12.47%	18.71%
29	8.07%	12.10%	4.51%	6.76%	12.58%	18.86%
30	8.13%	12.19%	4.54%	6.81%	12.67%	19.00%
31	8.19%	12.29%	4.58%	6.87%	12.77%	19.16%
32	8.27%	12.40%	4.62%	6.93%	12.89%	19.33%
33	8.34%	12.51%	4.66%	6.99%	13.00%	19.50%
34	8.41%	12.62%	4.70%	7.05%	13.11%	19.67%
35	8.49%	12.74%	4.75%	7.12%	13.24%	19.86%
36	8.57%	12.86%	4.79%	7.19%	13.36%	20.05%
37	8.67%	13.00%	4.85%	7.27%	13.52%	20.27%

Exhibit III: Member Contribution Rates (continued)

Safety Tier 1 Members' Contribution Rates Based on the June 30, 2020 Actuarial Valuation (as a % of monthly payroll)

	Basic		COLA		Total	
Entry Age	**First $350**	**Over $350**	**First $350**	**Over $350**	**First $350**	**Over $350**
38	8.77%	13.15%	4.90%	7.35%	13.67%	20.50%
39	8.87%	13.31%	4.96%	7.44%	13.83%	20.75%
40	8.95%	13.42%	5.00%	7.50%	13.95%	20.92%
41	9.02%	13.53%	5.04%	7.56%	14.06%	21.09%
42	9.08%	13.62%	5.07%	7.61%	14.15%	21.23%
43	9.11%	13.66%	5.09%	7.63%	14.20%	21.29%
44	9.13%	13.70%	5.11%	7.66%	14.24%	21.36%
45	9.11%	13.67%	5.09%	7.64%	14.20%	21.31%
46	9.07%	13.60%	5.07%	7.60%	14.14%	21.20%
47	8.97%	13.46%	5.01%	7.52%	13.98%	20.98%
48	8.87%	13.31%	4.96%	7.44%	13.83%	20.75%
49 & Over	8.73%	13.09%	4.88%	7.32%	13.61%	20.41%

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

Interest:	6.75% per annum
COLA:	2.75%
Mortality:	See *Section 4, Exhibit I*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.25%) + Merit (See *Section 4, Exhibit I*)
COLA Loading Factor:	55.89%[1]
Non-Refundability Factor:	100.00%

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

Exhibit III: Member Contribution Rates (continued)

Safety 2 Members' Contribution Rates Based on the June 30, 2020 Actuarial Valuation (as a % of monthly payroll)

	Basic		COLA		Total	
Entry Age	**First $350**	**Over $350**	**First $350**	**Over $350**	**First $350**	**Over $350**
29	7.65%	11.48%	3.04%	4.56%	10.69%	16.04%

Note: Members who enter on or after 1/1/1975 contribute on the basis of a single entry age of 29.

Interest:	6.75% per annum
COLA:	2.75%
Mortality:	See *Section 4, Exhibit I*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.25%) + Merit (See *Section 4, Exhibit I*)
COLA Loading Factor:	39.69%[1]
Non-Refundability Factor:	99.86%

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

Safety Tier 3 Members' Contribution Rates Based on the June 30, 2020 Actuarial Valuation (as a % of monthly payroll)

	Basic		COLA		Total	
Entry Age	**First $350**	**Over $350**	**First $350**	**Over $350**	**First $350**	**Over $350**
29	7.65%	11.48%	2.69%	4.04%	10.34%	15.52%

Note: Members who enter on or after 1/1/1975 contribute on the basis of a single entry age of 29.

Interest:	6.75% per annum
COLA:	2.75%
Mortality:	See *Section 4, Exhibit I*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.25%) + Merit (See *Section 4, Exhibit I*)
COLA Loading Factor:	35.21%[1]
Non-Refundability Factor:	99.52%

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

Exhibit III: Member Contribution Rates (continued)

Safety Tier 4 Members' Contribution Rates Based on the June 30, 2020 Actuarial Valuation (as a % of monthly payroll)

	All Eligible Pay[1]		
	Basic	**COLA**	**Total**
All Members	11.83%	3.28%	15.11%

[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 2020 is equal to $126,291 (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2020 (reference: Section 7522.10(d)).

Interest:	6.75% per annum
COLA:	2.75%
Mortality:	See *Section 4, Exhibit I*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.25%) + Merit (See *Section 4, Exhibit I*)
COLA Loading Factor:	27.73%
Non-Refundability Factor:	98.74%

Exhibit IV: Calculation of Additional District Rate as of June 30, 2020 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 in this report have been increased to reflect that they did not buy down their UAAL rates and for other adjustments (Districts with All Service Improvements vs. Future Service Improvements, Rio Linda Elverta becoming a participating employer effective October 1, 2017, two-year phase-in of cost impact of actuarial assumptions). The POB rate adjustment has been calculated as follows:

The Calculation of the Additional District Rate as Of June 30, 2020

June 30, 2019 POB Balance	$31,044,897
Additional Rate in June 30, 2019 Valuation	8.21%
June 30, 2019 Projected District Payroll[1]	$31,606,000
June 30, 2020 POB Balance[2]	$30,532,368
15-Year Amortization	0.087658
June 30, 2020 Projected District Payroll[1]	$34,688,000
Additional Rate in June 30, 2020 Valuation[3]	7.72%

[1] Excluding the payroll for Rio Linda Elverta Recreation and Parks District.
[2] Equal to $31,044,897 * 1.07 – 8.21% * $31,606,000 * (1+0.07/2).
[3] Equal to $30,532,368 * 0.087658 / $34,688,000.

Exhibit V: Detailed District Rates as of June 30, 2020

Special Districts with All Service Improvement Only

	Member Paying Full Rate (% of Payroll)			Member Paying 50:50 Rate (% of Payroll)		
	Tier 1[1]	Tier 3[1]	Tier 5	Tier 1[2]	Tier 3[2]	Tier 5[3]
Normal Cost	N/A	16.67%	N/A	N/A	11.49%	10.01%
UAAL	N/A	20.61%	N/A	N/A	20.61%	20.61%
Total	N/A	37.28%	N/A	N/A	32.10%	30.62%

Special Districts with Future Service Improvement Only[4]

	Member Paying Full Rate (% of Payroll)			Member Paying 50:50 Rate (% of Payroll)		
	Tier 1	Tier 3	Tier 5	Tier 1	Tier 3	Tier 5
Normal Cost	N/A	16.67%	N/A	N/A	N/A	10.01%
UAAL	N/A	16.47%	N/A	N/A	N/A	16.47%
Total	N/A	33.14%	N/A	N/A	N/A	26.48%

Rio Linda Elverta Recreation and Parks District

	Member Paying Full Rate (% of Payroll)			Member Paying 50:50 Rate (% of Payroll)		
	Tier 1	Tier 3	Tier 5	Tier 1	Tier 3	Tier 5
Normal Cost	N/A	N/A	N/A	N/A	N/A	10.01%
UAAL	N/A	N/A	N/A	N/A	N/A	1.83%
Total	N/A	N/A	N/A	N/A	N/A	11.84%

[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.

Exhibit VI: 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.

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

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

Total Normal Cost Contribution Rates (Employer and Member Normal Cost Rates)

Miscellaneous

	Member Paying Full Rate (% of Payroll)			
	Tier 1[1]	**Tier 2**	**Tier 3**	**Tier 4**
Employer	15.66%	12.41%	16.67%	12.85%
Member	6.75%	4.16%	6.01%	8.99%
Member COLA Buydown	0.34%	0.00%	0.26%	0.26%
Total	**22.75%**	**16.57%**	**22.94%**	**22.10%**

Safety

	Member Paying Full Rate (% of Payroll)		
	Tier 1[1]	**Tier 2**	**Tier 3**
Employer	30.06%	26.13%	24.19%
Member	18.86%	16.04%	15.52%
Member COLA Buydown	3.32%	0.29%	0.29%
Total	**52.24%**	**42.46%**	**40.00%**

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.

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

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

Total Normal Cost Contribution Rates (Employer and Member Normal Cost Rates)

Miscellaneous

	Member Paying 50:50 Rate (% of Payroll)			
	Tier 1	**Tier 2**	**Tier 3**	**Tier 4**
Employer	11.80%[1]	8.29%	11.49%	11.07%
Member[5]	11.04%	8.29%	11.23%	10.81%
Member COLA Buydown	0.34%	0.00%	0.26%	0.26%
Total	**23.18%**	**16.58%**	**22.98%**	**22.14%**

Safety

	Member Paying 50:50 Rate (% of Payroll)		
	Tier 1	**Tier 2**	**Tier 3**
Employer	30.08%[2]	21.36%[3]	20.02%[4]
Member[5]	22.80%	20.94%	19.72%
Member COLA Buydown	3.32%	0.29%	0.29%
Total	**56.20%**	**42.59%**	**40.03%**

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 0.42% 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 3.96% 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 0.13% of payroll to account for the cost associated with the cessation of member contributions after 30 years of service.
[4] The employer rate has been adjusted by 0.01% of payroll to account for the cost associated with the cessation of member contributions after 30 years of service.
[5] 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.

Exhibit VI: Normal Cost Rates with Additional Member Contributions Under Cost Sharing Arrangements (continued)

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

Total Normal Cost Contribution Rates (Employer and Member Normal Cost Rates)

Miscellaneous

	Member Paying 50:50 Rate (% of Payroll)			
	Tier 1	**Tier 2**	**Tier 3**	**Tier 4**
Employer	11.80%[1]	8.29%	11.49%	11.07%
Member[5]	11.21%	8.44%	11.41%	10.97%
Member COLA Buydown	0.34%	0.00%	0.26%	0.26%
Total	**23.35%**	**16.73%**	**23.16%**	**22.30%**

Safety

	Member Paying 50:50 Rate (% of Payroll)		
	Tier 1	**Tier 2**	**Tier 3**
Employer	30.08%[2]	21.36%[3]	20.02%[4]
Member[5]	23.00%	21.16%	19.95%
Member COLA Buydown	3.32%	0.29%	0.29%
Total	**56.40%**	**42.81%**	**40.26%**

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[1] The employer rate has been adjusted by 0.42% 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 3.96% 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 0.13% of payroll to account for the cost associated with the cessation of member contributions after 30 years of service.
[4] The employer rate has been adjusted by 0.01% of payroll to account for the cost associated with the cessation of member contributions after 30 years of service.
[5] 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.

Sacramento County Employees' Retirement System (SCERS)

Governmental Accounting Standards Board Statement 67 (GASBS 67) Actuarial Valuation

As of June 30, 2020

Segal

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San Francisco, CA 94105-6147
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T 415.263.8200

October 23, 2020

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, 2020. 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; increases or decreases expected as part of the natural operation of the methodology used for these measurements; 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

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

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

Molly Calcagno, ASA, EA, MAAA
Actuary

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Section 1: Actuarial Valuation Summary

Purpose and basis

This report has been prepared by Segal to present certain disclosure information required by Governmental Accounting Standards Board Statement 67 (GASBS 67) as of June 30, 2020. 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, 2020, provided by SCERS;
- The assets of the Plan as of June 30, 2020, provided by SCERS;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the June 30, 2020 valuation; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc. adopted by the Board for the June 30, 2020 valuation.

General observations on GASBS 67 actuarial valuation

1. It is important to note that 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.
2. 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.
3. The Net Pension Liability (NPL) is equal to the difference between the TPL and the Plan Fiduciary Net Position. The Plan Fiduciary Net Position is equal to the market value of assets and therefore, the NPL measure is very similar to an Unfunded Actuarial Accrued Liability (UAAL) calculated on a market value basis.

Highlights of the valuation

1. The NPL was measured as of June 30, 2020 and June 30, 2019 and determined based upon the results of the actuarial valuations as of June 30, 2020 and June 30, 2019, respectively.
2. The NPL increased from $2,073.8 million as of June 30, 2019 to $2,714.3 million as of June 30, 2020 primarily as a result of changes in actuarial assumptions (about $216 million) and unfavorable investment return (about $389 million[1]). Changes in these values during the last two fiscal years ending June 30, 2019 and June 30, 2020 can be found in *Section 2, Schedule of Changes in Net Pension Liability* on page 16.
3. The discount rate used to determine the TPL and NPL was 6.75% as of June 30, 2020 and 7.00% as of June 30, 2019, following the same assumptions used by SCERS in the actuarial valuations as of June 30, 2020 and June 30, 2019, respectively. The detailed calculations used in this derivation as of June 30, 2020 can be found in *Section 3, Appendix A*. Various other information that is required to be disclosed can be found throughout *Section 2*.
4. The NPL as of June 30, 2020 excludes a liability of $3.4 million that is attributable to members of North Highlands (an employer that merged with Sacramento Metro Fire District) based on the latest estimate of the asset shortfall for this employer under SCERS' Declining Employer Payroll Policy available as of June 30, 2019 adjusted with interest at the assumed rate of investment return (i.e., 7.00% as of June 30, 2019).
5. The Plan Fiduciary Net Position includes $14.8 million that is available to offset a portion of the members' future COLA contribution rates. Since the $14.8 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.
6. On July 30, 2020, the California Supreme Court issued a decision in the case of Alameda County Deputy Sheriffs' Association et al. v. Alameda County Employees' Retirement Association (ACERA) and Board of Retirement of ACERA. That decision has important implications for SCERS and its members. In particular, the decision requires pension systems like SCERS to exclude certain pay items from a legacy member's compensation earnable. It should be noted that neither the June 30, 2020 assets provided by SCERS nor the liabilities we calculated using the membership data provided by SCERS reflect the financial impact of the California Supreme Court decision.
7. It is important to note that this actuarial valuation is based on plan assets as of June 30, 2020. Due to the COVID-19 pandemic, market conditions have changed significantly during 2020. The Plan's funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the Plan Year. While it is impossible to determine how the pandemic will continue to affect market conditions prior to next year's valuation, Segal is available to prepare projections of potential outcomes upon request.

[1] Equal to $397 million investment loss net of $8 million in administrative expenses.

Summary of key valuation results

Measurement Date		June 30, 2020	June 30, 2019
Disclosure elements for plan year ending June 30:	• Service cost[1]	$241,474,340	$238,685,306
	• Total Pension Liability	12,693,655,000	11,895,520,000
	• Plan Fiduciary Net Position	9,979,379,000	9,821,694,000
	• Net Pension Liability	2,714,276,000	2,073,826,000
Schedule of contributions[2] for plan year ending June 30:	• Actuarially determined contributions	$274,054,940	$240,237,090
	• Actual contributions	274,054,940	240,237,090
	• Contribution deficiency / (excess)	0	0
Demographic data for plan year ending June 30:	• Number of retired members and beneficiaries	12,732	12,381
	• Number of vested terminated members[3]	3,791	3,602
	• Number of active members	12,650	12,678
Key assumptions as of June 30:	• Investment rate of return	6.75%	7.00%
	• Inflation rate	2.75%	3.00%
	• Projected salary increases[4]	4.25% - 10.50%, 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 2020 and 2019 values are based on the valuations as of June 30, 2019 and June 30, 2018, respectively. The key assumptions in the June 30, 2018 valuation were as follows:

Investment rate of return:	7.00%
Inflation rate:	3.00%
Projected salary increases:	4.50% - 10.75%, varying by service, including inflation

[2] These amounts exclude $1,911,003 and $45,201,885 in receivable contributions due by Florin Fire in the 2020 and 2019 valuations, respectively. The amount for the 2020 valuation also excludes $264,000 in contributions made by UC Davis for outstanding pension liabilities.

The 2019 amount also excludes $3,141,977 in contributions made by Florin Fire. $3,141,977 when added to the $240,237,090 displayed above for the 2019 valuation equal the $243,379,067 previously included in our GASBS 67 report as of June 30, 2019.

[3] Includes terminated members with member contributions on deposit.

[4] For June 30 2020, includes inflation at 2.75% plus real across the board salary increase of 0.25% plus merit and promotional increases.
For June 30 2019, 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 a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan description in this report (as well as the plan summary included in our funding valuation report) to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by 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 (if any). The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan's assets or, if there are no assets, a rate of return based on a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale). 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.
Models	Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

Section 1: Actuarial Valuation Summary

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 SCERS 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 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.

Section 2: GASBS 67 Information

General information about the 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 nine 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, 2020, pension plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	12,732
Vested terminated members entitled to but not yet receiving benefits	3,791
Active members	12,650
Total	29,173

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 entering prior to June 25, 1995 are Tier 1 members. Those entering on or after June 25, 1995 are Tier 2 members. County employees entering on or after January 1, 2012 but prior to January 1, 2013 are members of Tier 3. Any new Safety employee 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 entering prior to September 27, 1981 are Tier 1 members. Those hired on or after September 27, 1981 and June 27, 1993 are members of Tier 2 or Tier 3, respectively. County employees entering on or after January 1, 2012 but prior to January 1, 2013 are members of Tier 4. Any new Miscellaneous employee who becomes a member on or after January 1, 2013 is 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.

Section 2: GASBS 67 Information

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-Hayward 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, 2020 for 2019/2020 (based on the June 30, 2018 valuation) was 25.85% 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, 2020 for 2019/2020 (based on the June 30, 2018 valuation) was 11.92% of compensation.

Net Pension Liability

Measurement Date	June 30, 2020	June 30, 2019
Components of the Net Pension Liability		
Total Pension Liability	$12,693,655,000	$11,895,520,000
Plan Fiduciary Net Position	(9,979,379,000)	(9,821,694,000)
Net Pension Liability	$2,714,276,000	$2,073,826,000
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	78.62%	82.57%

The Net Pension Liability (NPL) was measured as of June 30, 2020 and 2019 and determined based upon the Total Pension Liability (TPL) from actuarial valuations as of June 30, 2020 and 2019, respectively.

Plan Provisions. The plan provisions used in the measurement of the NPL as of June 30, 2020 and 2019 are the same as those used in the SCERS actuarial valuations as of June 30, 2020 and 2019, respectively.

Actuarial assumptions. The TPL that was measured by an actuarial valuation as of June 30, 2020 used the following actuarial assumptions, applied to all periods included in the measurement:

Inflation:	2.75%
Salary increases:	4.25% to 10.50%, varying by service, including inflation
Investment rate of return:	6.75%, net of pension plan investment expense, including inflation
Other assumptions:	See the analysis of actuarial experience study for the period July 1, 2016 through June 30, 2019.

The TPL that was measured by an actuarial valuation as of June 30, 2019 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.

Determination of discount rate and investment rates of return

The long-term expected rate of return on pension plan investments was determined in 2020 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 are shown in the following table. This information was used in the derivation of the long-term expected investment rate of return assumption for the June 30, 2020 actuarial valuations. This information will change every three years in the actuarial experience study.

Asset Class	Target Allocation	Long-Term Expected Arithmetic Real Rate of Return
U.S. Large Cap Equity	18%	5.42%
U.S. Small Cap Equity	2%	6.21%
International Developed Equity	16%	6.50%
Emerging Markets Equity	4%	8.80%
Core Plus Bonds	10%	1.13%
High Yield Bonds	1%	3.40%
Global Bonds	3%	(0.04%)
Bank Loans	1%	3.89%
U.S. Treasury	5%	0.30%
Real Estate	5%	4.57%
Cash	1%	(0.03%)
Liquid Real Return	2%	4.47%
Hedge Fund Growth	3%	2.40%
Hedge Fund Diversifying	7%	2.40%
Value Added Real Estate	2%	8.10%
Private Equity	9%	9.40%
Private Real Assets	7%	8.05%
Private Credit	4%	5.60%
Total	**100%**	

Section 2: GASBS 67 Information

Discount rate. The discount rate used to measure the TPL was 6.75% for June 30, 2020 and 7.00% for June 30, 2019. 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, 2020 and June 30, 2019.

Discount rate sensitivity

Sensitivity of the June 30, 2020 NPL to changes in the discount rate. The following presents the NPL of the SCERS as of June 30, 2020, calculated using the discount rate of 6.75%, as well as what the SCERS' NPL would be if it were calculated using a discount rate that is 1 percentage-point lower (5.75%) or 1 percentage-point higher (7.75%) than the current rate:

	1% Decrease (5.75%)	Current Discount Rate (6.75%)	1% Increase (7.75%)
Net Pension Liability as of June 30, 2020	$4,448,538,000	$2,714,276,000	$1,294,578,000

Sensitivity of the June 30, 2019 NPL to changes in the discount rate. The following presents the NPL of the SCERS as of June 30, 2019, 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, 2019	$3,713,495,000	$2,073,826,000	$734,226,000

Schedule of changes in Net Pension Liability – Last two fiscal years

Measurement Date	June 30, 2020	June 30, 2019
Total Pension Liability		
• Service cost[1]	$241,474,340	$238,685,306
• Interest	830,663,319	783,931,526
• Change of benefit terms	0	0
• Differences between expected and actual experience	50,651,341	165,493,168
• Changes of assumptions	216,097,000	0
• Benefit payments, including refunds of member contributions	(540,751,000)	(505,853,000)
Net change in Total Pension Liability	**$798,135,000**	**$682,257,000**
Total Pension Liability – beginning	**11,895,520,000**	**11,213,263,000**
Total Pension Liability – ending	**$12,693,655,000**	**$11,895,520,000**
Plan Fiduciary Net Position		
• Contributions – employer	$274,055,000	$240,071,000
• Contributions – employee	126,354,000	121,843,000
• Net investment income	301,373,000[2]	672,786,000[3]
• Benefit payments, including refunds of member contributions	(540,751,000)	(505,853,000)
• Administrative expense	(8,460,000)	(7,601,000)
• Other	5,114,000[4]	48,511,000[5]
Net change in Plan Fiduciary Net Position	**$157,685,000**	**$569,757,000**
Plan Fiduciary Net Position – beginning	**9,821,694,000**	**9,251,937,000**
Plan Fiduciary Net Position – ending	**$9,979,379,000**	**$9,821,694,000**
Net Pension Liability – ending	**$2,714,276,000**	**$2,073,826,000**
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	**78.62%**	**82.57%**
Covered payroll[6]	**$1,059,984,000**	**$1,017,885,000**
Net Pension Liability as percentage of covered payroll	**256.07%**	**203.74%**

1 The Service Cost is based on the previous year's valuation, meaning the 2020 and 2019 values are based on the valuations as of June 30, 2019 and June 30, 2018, respectively.

2 This is different from $304,312,000 included in the CAFR as of June 30, 2020. In the CAFR, the $2,939,000 interest portion of the $3,531,000 contribution made by Florin Fire, as described in footnote 4, was classified as investment income.

3 This is different from $675,726,000 included in the CAFR as of June 30, 2019. In the CAFR, the $2,940,000 interest portion of the $3,142,000 contribution made by Florin Fire, as described in footnote 5, was classified as investment income.

4 We have classified the $2,939,000 interest contribution made by Florin Fire, a non-active employer, during 2019/2020 as well as the $1,911,000 receivable contributions due from Florin Fire in the "Other" category. We have also classified $264,000 made by UC Davis in the "Other" Category for contributions made due to outstanding pension liabilities. 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, 2021 will be allocated using the employer contributions excluding the total $5,114,000 contribution made during 2019/2020.

Section 2: GASBS 67 Information

[5] We have classified the $3,142,000 contribution made by Florin Fire, a non-active employer, during 2018/2019 as well as the $45,202,000 receivable contributions due from Florin Fire in the "Other" category. We have also classified $167,000 made by SETA in the "Other" category for contributions made due to an enrollment correction. This was done because the NPL for the active employers disclosed in our GASBS 68 actuarial valuation as of June 30, 2020 was allocated using the employer contributions excluding the total $48,511,000 contribution made during 2018/2019.

Throughout the rest of this report, the $167,000 in contributions made by SETA for contributions made due to an enrollment correction are included in the Actuarially Determined Contributions for the System's active employers.

[6] 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

Schedule of contributions – Last ten fiscal years

Year Ended June 30	Actuarially Determined Contributions[1]	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency / (Excess)	Covered Payroll[2, 3]	Contributions as a Percentage of Covered Payroll
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[4]	188,528,426	188,528,426	0	858,551,000	21.96%
2014[4]	209,367,323	209,367,323	0	858,343,000	24.39%
2015[4]	221,823,365	221,823,365	0	873,328,000	25.40%
2016[4]	207,884,162	207,884,162	0	912,421,000	22.78%
2017[4]	201,928,297	201,928,297	0	958,934,000	21.06%
2018[4]	198,331,133	198,331,133	0	985,375,000	20.13%
2019[4]	240,237,090	240,237,090	0	1,017,885,000	23.60%
2020	274,054,940	274,054,940	0	1,059,984,000	25.85%

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

2 Payroll for the years ending 2011 through 2012 are calculated by dividing the contribution dollar amount by the contribution as a percentage of payroll.

3 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.

4 Since our prior GASBS 67 report, these have been restated to exclude the following contributions from Florin Fire, and include $167,039 in contributions made by SETA in 2019 due to an enrollment correction:

Year Ended June 30	Contributions Excluded
2013	$1,135,294
2014	1,136,000
2015	1,136,000
2016	1,136,000
2017	2,000,000
2018	3,300,000
2019	3,141,977

See accompanying notes to this schedule on the next page.

Section 2: GASBS 67 Information

Notes to Schedule:

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 (3.25% payroll growth assumed)
Remaining amortization period:	**June 30, 2018 valuation** 17 years (declining) as of June 30, 2018 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.
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).

Section 2: GASBS 67 Information

Actuarial assumptions:	
	June 30, 2018 valuation (used for the year ended June 30, 2020 ADC)
Investment rate of return:	7.00%, net of pension plan investment expense, including inflation
Inflation rate:	3.00%
Projected salary increases:	Miscellaneous: 4.50% to 8.25% and Safety: 5.25% to 10.75%, varying by service, including inflation
Cost of living adjustments:	3.00% 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, 2018 funding actuarial valuation.

Section 3: Appendices

Appendix A: Projection of Plan Fiduciary Net Position for use in the Calculation of Discount Rate as of June 30, 2020 ($ in millions)

Year Beginning July 1,	Projected Beginning Plan Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Plan Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
2020	$9,979	$453	$609	$9	$666	$10,481
2021	10,481	463	635	9	699	11,000
2022	11,000	468	670	9	733	11,521
2023	11,521	465	706	10	767	12,037
2024	12,037	467	744	10	800	12,550
2025	12,550	471	782	11	834	13,062
2026	13,062	475	821	11	867	13,572
2027	13,572	474	860	12	900	14,075
2028	14,075	474	899	12	932	14,571
2029	14,571	474	939	13	964	15,058
2045	17,938	81	1,387	15	1,162	17,777
2046	17,777	68	1,396	15	1,150	17,584
2047	17,584	64	1,403	15	1,137	17,367
2048	17,367	60	1,408	15	1,122	17,126
2049	17,126	56	1,410	15	1,105	16,862
2104	37,253	33 *	5	32	2,514	39,764
2105	39,764	35 *	3	34	2,684	42,445
2106	42,445	37 *	2	37	2,865	45,308
2107	45,308	39 *	2	39	3,058	48,365
2108	48,365	42 *	1	42	3,265	51,629
2136	301,165	259 *	0	259	20,329	321,494
2137	321,494					
2137	Discounted Value: 154 **					

* Mainly attributable to employer contributions to fund each year's annual administrative expenses.

** $321,494 million when discounted with interest at the rate of 6.75% per annum has a value of $154 million (or 1.55% of the Plan Fiduciary Net Position) as of June 30, 2020.

Section 3: Appendices

Notes:

1. Amounts may not total exactly due to rounding.
2. Various years have been omitted from this table.
3. Column (a): Except for the "discounted value" shown for 2137, none of the projected beginning Plan Fiduciary Net Position amounts shown have 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, 2020), 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, 2020. The projected benefit payments reflect the cost of living increase assumptions used in the June 30, 2020 valuation report.
6. Column (d): Projected administrative expenses are calculated as approximately 0.09% of the projected beginning Plan Fiduciary Net Position amount. The 0.09% proportion was based on the actual fiscal year 2019-2020 administrative expenses as a percentage of the beginning Plan Fiduciary Net Position amount as of July 1, 2019. 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 6.75% per annum.
8. As illustrated in this Appendix, the Plan Fiduciary Net Position was projected to be available to make all projected future benefit payments for current Plan members. In other words, there is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 6.75% per annum was applied to all periods of projected benefit payments to determine the Total Pension Liability as of June 30, 2020 shown earlier in this report, pursuant to paragraph 44 of GASB Statement No. 67.

Appendix B: Definition of Terms

Definitions of certain terms as they are used in Statement 67. The terms may have different meanings in other contexts.

Actuarial Present Value of Projected Benefit Payments:	Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation:	The determination, as of a point in time (the actuarial valuation date), of the service cost, Total Pension Liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date:	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution:	A target or recommended contribution to a defined benefit pension plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.
Ad Hoc Cost-of-Living Adjustments (Ad Hoc COLAs):	Cost-of-living adjustments that require a decision to grant by the authority responsible for making such decisions.
Ad Hoc Postemployment Benefit Changes:	Postemployment benefit changes that require a decision to grant by the authority responsible for making such decisions.
Automatic Cost-of-Living Adjustments (Automatic COLAs):	Cost-of-living adjustments that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).
Automatic Postemployment Benefit Changes:	Postemployment benefit changes that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).
Cost-of-Living Adjustments:	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (Cost-Sharing Pension Plan):	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered Payroll:	Payroll on which contributions to the pension plan are based.
Defined Benefit Pension Plans:	Pension plans that are used to provide defined benefit pensions.

Section 3: Appendices

Defined Benefit Pensions:	Pensions for which the income or other benefits that the employee will receive at or after separation from employment are defined by the benefit terms. The pensions may be stated as a specified dollar amount or as an amount that is calculated based on one or more factors such as age, years of service, and compensation. (A pension that does not meet the criteria of a defined contribution pension is classified as a defined benefit pension for purposes of Statement 67.)
Defined Contribution Pension Plans:	Pension plans that are used to provide defined contribution pensions.
Defined Contribution Pensions:	Pensions having terms that (1) provide an individual account for each employee; (2) define the contributions that an employer is required to make (or the credits that it is required to provide) to an active employee's account for periods in which that employee renders service; and (3) provide that the pensions an employee will receive will depend only on the contributions (or credits) to the employee's account, actual earnings on investments of those contributions (or credits), and the effects of forfeitures of contributions (or credits) made for other employees, as well as pension plan administrative costs, that are allocated to the employee's account.
Discount Rate:	The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following: 1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the pension Plan Fiduciary Net Position is projected (under the requirements of Statement 67) to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments. 2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.
Entry Age Actuarial Cost Method:	A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the actuarial accrued liability.
Inactive Employees:	Terminated individuals that have accumulated benefits but are not yet receiving them, and retirees or their beneficiaries currently receiving benefits.
Multiple-Employer Defined Benefit Pension Plan:	A defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Net Pension Liability (NPL):	The liability of employers and non-employer contributing entities to employees for benefits provided through a defined benefit pension plan.

Section 3: Appendices

Other Postemployment Benefits:	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits, regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
Pension Plans:	Arrangements through which pensions are determined, assets dedicated for pensions are accumulated and managed and benefits are paid as they come due.
Pensions:	Retirement income and, if provided through a pension plan, postemployment benefits other than retirement income (such as death benefits, life insurance, and disability benefits). Pensions do not include postemployment healthcare benefits and termination benefits.
Plan Members:	Individuals that are covered under the terms of a pension plan. Plan members generally include (1) employees in active service (active plan members) and (2) terminated employees who have accumulated benefits but are not yet receiving them and retirees or their beneficiaries currently receiving benefits (inactive plan members).
Postemployment:	The period after employment.
Postemployment Benefit Changes:	Adjustments to the pension of an inactive employee.
Postemployment Healthcare Benefits:	Medical, dental, vision, and other health-related benefits paid subsequent to the termination of employment.
Projected Benefit Payments:	All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and their expected future service.
Public Employee Retirement System:	A special-purpose government that administers one or more pension plans; also may administer other types of employee benefit plans, including postemployment healthcare plans and deferred compensation plans.
Real Rate of Return:	The rate of return on an investment after adjustment to eliminate inflation.
Service Costs:	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Single-Employer Defined Benefit Pension Plan (Single-Employer Pension Plan):	A defined benefit pension plan that is used to provide pensions to employees of only one employer.
Termination Benefits:	Inducements offered by employers to active employees to hasten the termination of services, or payments made in consequence of the early termination of services. Termination benefits include early-retirement incentives, severance benefits, and other termination-related benefits.
Total Pension Liability (TPL):	The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of Statement 67.