Ventura County Employees' Retirement Association

Actuarial Valuation and Review

As of June 30, 2020

Segal

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December 8, 2020

Board of Retirement
Ventura County Employees' Retirement Association
1190 S. Victoria Avenue, Suite 200
Ventura, CA 93003-6572

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 July 1, 2021 to June 30, 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 Association. The census information and financial information on which our calculations were based was prepared by the staff of the Association. That assistance is gratefully acknowledged.

The actuarial calculations were directed under the supervision of Eva Yum, FSA, 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 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 Association.

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

Molly Calcagno, ASA, EA, MAAA
Actuary

JY/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 Ventura County Employees' Retirement Association ("VCERA" or "the Association") 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 VCERA;
- The assets of the plan as of June 30, 2020, provided by VCERA;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board of Retirement for the June 30, 2020 valuation;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. adopted by the Board of Retirement for the June 30, 2020 valuation; 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 Association'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.

Section 1: Actuarial Valuation Summary

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

The contribution requirements are determined as a percentage of payroll. The Association's employer rates provide for both Normal Cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have applied the funding policy last reviewed and adopted by the Board in 2018. Details of the funding policy are provided in *Section 4, Exhibit I* on pages 81 and 82.

A schedule of current amortization balances and payments may be found in *Section 3, Exhibit H* starting on page 65. A graphical projection of the Unfunded Actuarial Accrued Liability (UAAL) amortization balances and payments has been included in *Section 3, Exhibit I* on pages 69 and 70.

The Actuarial Standards Board Actuarial Standard of Practice (ASOP) No. 4 provides guidelines for actuaries to follow when measuring pension obligations. For a plan such as that offered by the Retirement Association that may use undesignated excess earnings to provide supplemental benefits, the valuation report must indicate that the impact of any such future use of undesignated excess earnings on the future financial condition of the plan has not been explicitly measured or otherwise reflected in the valuation. However, it should be noted that under the Board's Interest Crediting Policy, the balance of $1.45 billion (negative) in the Interest Crediting Shortfall Tracking Account (ICSTA) has to be fully restored out of future excess earnings before any subsequent earnings can be used to provide for any supplemental benefits. The ICSTA tracks any cumulative shortfalls in investment earnings relative to earnings required to credit full interest at the assumed rate to valuation reserves.

In this report, the employer and member contribution rates shown in *Section 2, Subsection F* and *Section 4, Exhibit III*, respectively, are calculated based on a 50/50 sharing of Normal Cost for both PEPRA and non-PEPRA Tiers. For purposes of these calculations, we have been previously directed by VCERA to assume that the cessation of member contributions after 30 years of service for non-PEPRA members continues per the County Employees Retirement Law (CERL) and that the cost associated with this provision is to be paid for by employers.

The employer and member contribution rates calculated under the prior method (i.e., <u>without</u> 50/50 sharing of Normal Cost for non-PEPRA tiers) are shown in *Section 4, Exhibit IV* and *Exhibit V*, respectively, starting on page 93.

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 UAAL amortization layer established as of the June 30, 2005 valuation has been fully amortized as of June 30, 2020. This resulted in a reduction in the UAAL contribution rate of about 0.9% of payroll for the plan in total (0.8% of payroll for General and 1.6% of payroll for Safety) in the June 30, 2020 valuation.

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2. In April 2020 the Board directed Segal to adjust the remaining amortization periods for certain amortization layers in order to minimize the contribution rate tail volatility associated with the UAAL layers that were to be fully amortized between the 2021 and 2023 valuations (these UAAL layers were first established in 2006, 2007 and 2008) and in the 2029 and 2030 valuations (these UAAL layers were first established in 2014 and 2015). This was done by setting the remaining amortization periods for the 2006, 2007, and 2008 UAAL amortization layers to 4 years and the 2014 and 2015 UAAL actuarial gain/loss amortization layers to 12 years, effective with the 2020 valuation. The adjustments resulted in a decrease in the average employer rate of 0.05% of payroll in this valuation before taking into consideration other experience during fiscal year 2019/2020.

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3. The ratio of the Valuation Value of Assets to Actuarial Accrued Liabilities increased slightly from 88.0% to 89.6%. The ratio of the Market Value of Assets to the Actuarial Accrued Liability decreased from 89.1% to 87.7%. The Association's UAAL (which is based on the Valuation Value of Assets) has decreased from $775 million to $704 million. The decrease in UAAL is primarily due actual contributions more than expected during fiscal year 2019/2020 and contributions paying down a portion of the UAAL, partially offset by the investment return (after "smoothing") less than the 7.25% return assumption. A complete reconciliation of the Association's UAAL is provided in *Section 2, Subsection E*.

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4. The average employer contribution rate calculated in this valuation decreased from 23.32% of payroll to 22.22% of payroll. This decrease is primarily due of the effect of the 2005 UAAL amortization layer becoming fully amortized and actual contributions more than expected during fiscal year 2019/2020, partially offset by the investment return (after "smoothing") less than the 7.25% return assumption and expected total payroll growth less than expected. A complete reconciliation of the Association's average employer rate is provided in *Section 2, Subsection F*.

   As previously adopted by the Board, we have continued to calculate the Basic and COLA UAAL rates on a combined basis for all General Tiers even though General Tier 2 and associated PEPRA tiers are overfunded this year. This results in more stable UAAL rates for General Tier 1.

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5. The average member rate calculated in this valuation decreased from 9.99% of payroll to 9.91% of payroll. This change was due to changes in member demographics amongst the tiers. A complete reconciliation of the Association's average member rate is provided in *Section 2, Subsection F*.

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6. The total unrecognized net investment <u>loss</u> as of June 30, 2020 is about $129.2 million as compared to an unrecognized net investment <u>gain</u> of $70.8 million in the previous valuation. This deferred investment loss of $129.2 million will be recognized in the determination of the Actuarial Value of Assets for funding purposes in the next few years as shown in *Section 2, Subsection B*.

The net deferred losses of $129.2 million represent about 2.2% of the Market Value of Assets. Unless offset by future investment gains or other favorable experience, the recognition of the $129.2 million market losses is expected to have an impact on the Association's future funded ratio and contribution rate requirements. This potential impact may be illustrated as follows:

a. If the net deferred losses in this year's valuation were recognized immediately and entirely in the Valuation Value of Assets, the funded ratio would decrease from 89.6% to 87.7%.

   For comparison purposes, if all the net deferred gains in the June 30, 2019 valuation had been recognized immediately in the June 30, 2019 valuation, the funded ratio in last year's valuation would have increased from 88.0% to 89.1%.

b. If the net deferred losses in this year's valuation were recognized immediately and entirely in the Valuation Value of Assets, the average employer contribution rate would increase from 22.22% to 23.65% of payroll.

   For comparison purposes, if all the net deferred gains in the June 30, 2019 valuation had been recognized immediately in the June 30, 2019 valuation, the average employer contribution rate in last year's valuation would have decreased from 23.32% to 22.52% of payroll.

7. The actuarial valuation report as of June 30, 2020 is based on financial information as of that date. Changes in the assets subsequent to that date, to the extent that they exist, are not reflected. Declines in asset values will increase the actuarial cost of the plan, while increases will decrease the actuarial cost of the plan.

8. 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 VCERA and its members. In particular, the decision requires pension systems like VCERA 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 VCERA nor the liabilities we calculated using the membership data provided by VCERA reflect the financial impact of the California Supreme Court decision.

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9. The Actuarial Standards Board approved Actuarial Standard of Practice No. 51 (ASOP 51) regarding risk assessment, which was first effective with VCERA's June 30, 2019 actuarial valuation. 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 VCERA 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.

Because 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. We have not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the Association's future financial condition, but have included a brief discussion of key risks that may affect the Association in *Section 2, Subsection J*. A more detailed assessment of the risks tailored to specific interests or concerns of the Board would provide the Board with a better understanding of the inherent risks. This assessment would further discuss and highlight information and risks particular to VCERA such as detailed historical experience and key events, growing plan maturity, heightened contribution sensitivity to asset and liability changes, and projected sensitivity to potential future investment returns through selected scenario or stress test projections.

10. Segal strongly recommends an actuarial funding policy that targets 100% funding of the Actuarial Accrued Liability. Generally, this implies payments that are ultimately at least enough to cover Normal Cost, interest on the Unfunded Actuarial Accrued Liability and the principal balance. The funding policy adopted by the Board meets this standard.
11. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the plan's funding policy and measuring the progress of that funding policy. The Net Pension Liability (NPL) and Pension Expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, for inclusion in the plan and employer's financial statements as of June 30, 2020, will be provided separately. The accounting disclosures will utilize different methodologies from those employed in the funding valuation, as required by the GASB. However, the actuarially determined contribution in this valuation is expected to be used as the actuarially determined contribution (ADC) for GASB financial reporting.
12. 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.

Summary of Key Valuation Results

		June 30, 2020		June 30, 2019	
		Total Rate	Estimated Annual Dollar Amount[1] ($ in '000s)	Total Rate	Estimated Annual Dollar Amount[1] ($ in '000s)
Employer Contribution Rates:[2]	General Tier 1	23.57%	$967	24.26%	$1,108
	General Tier 2	14.31%	29,583	14.83%	31,870
	General PEPRA Tier 2	14.49%	11,904	14.94%	10,610
	General Tier 2 w/ COLA[3]	20.43%	41,272	21.46%	43,625
	General PEPRA Tier 2 w/ COLA[3]	20.70%	24,792	21.63%	22,894
	General Combined	17.65%	108,518	18.36%	110,107
	Safety	37.61%	55,836	39.78%	60,458
	Safety PEPRA	35.17%	14,150	37.32%	12,605
	Safety Combined	37.09%	69,986	39.33%	73,063
	All Categories Combined	**22.22%**	**$178,504**	**23.32%**	**$183,170**
Average Member Contribution Rates:[2 4 5]	General Tier 1	10.53%	$432	10.32%	$471
	General Tier 2	7.30%	15,090	7.38%	15,862
	General PEPRA Tier 2	7.48%	6,145	7.49%	5,319
	General Tier 2 w/ COLA[3]	9.93%	20,057	10.01%	20,349
	General PEPRA Tier 2 w/ COLA [3]	10.11%	12,105	10.12%	10,711
	Safety	13.43%	19,938	13.73%	20,867
	Safety PEPRA	14.57%	5,862	14.43%	4,874
	All Categories Combined	**9.91%**	**$79,629**	**9.99%**	**$78,453**

1 Based on projected compensation for each year.
2 Before reflection of any member rate that may be "picked-up" by the employer. Contributions are assumed to be paid throughout the year.
3 Throughout this report, this category represents those Tier 2 members who contribute a negotiated 2.63% of compensation for a fixed 2% COLA pursuant to Government Code 31627 that applies to service after March 2003.
4 The non-refundability factors are 1.00 for General Tier 1, Tier 2 (non-PEPRA) and Safety (non-PEPRA) for both June 30, 2020 and June 30, 2019.
5 Average member contribution rates for non-PEPRA tiers as shown in this exhibit are after reflecting the impact of the cessation of member contributions after 30 years of service. Individual member rates can be found in *Section 4, Exhibit III*.

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	$3,877,577	$3,682,653
	Inactive vested members[1]	197,387	184,277
	Active members	2,672,808	2,572,458
	Total Actuarial Accrued Liability	$6,747,772	$6,439,388
	Normal Cost for plan year beginning June 30	$157,552	$154,954
Assets as of June 30:	Market Value of Assets (MVA)	$5,914,852	$5,735,360
	Valuation Value of Assets (VVA)[2]	6,044,036	5,664,526
Funded status as of June 30:	Unfunded Actuarial Accrued Liability on Market Value of Assets basis	$832,920	$704,028
	Funded percentage on MVA basis	87.66%	89.07%
	Unfunded Actuarial Accrued Liability on Valuation Value of Assets basis	$703,736	$774,862
	Funded percentage on VVA basis	89.57%	87.97%
Key assumptions:	Net investment return	7.25%	7.25%
	Price Inflation	2.75%	2.75%
	Payroll growth increase	3.25%	3.25%

[1] Includes inactive members with member contributions on deposit.
[2] Excludes non-valuation reserves

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	8,644	8,696	-0.6%
	Average age	44.9	44.9	0.0
	Average service	11.4	11.3	0.1
	Total projected compensation	$803,381,542	$785,402,037	2.3%
	Average projected compensation	$92,941	$90,318	2.9%
	Retired Members and Beneficiaries:			
	Number of members:			
	Service retired	5,639	5,428	3.9%
	Disability retired	812	817	-0.6%
	Beneficiaries	1,070	1,035	3.4%
	Total	7,521	7,280	3.3%
	Average age	70.7	70.5	0.2
	Average monthly benefit	$3,423	$3,329	2.8%
	Inactive Vested Members:			
	Number of members[1]	3,218	3,041	5.8%
	Average age	46.1	46.0	0.1
	Total Members:	19,383	19,017	1.9%

[1] Includes inactive members with member contributions on deposit.

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 Association. 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 Association. The Association uses a "Valuation Value of Assets" that differs from market value to gradually reflect six-month 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 Association. 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; Changes in statutory provisions; and Differences between the contribution rates determined by the valuation and those adopted by the Board of Retirement.[1]
Some actuarial results in this report are not rounded, but that does not imply precision.
If the Association 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 Association 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.

[1] VCERA has a proven track record of adopting the Actuarial Determined Contributions as determined by the valuation and based on the Board's Actuarial Funding Policy.

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	8,040	2,097	5,481	7,578	0.94	0.68
2012	8,019	2,161	5,658	7,819	0.98	0.71
2013	8,068	2,249	5,888	8,137	1.01	0.73
2014	8,210	2,339	6,121	8,460	1.03	0.75
2015	8,299	2,441	6,338	8,779	1.06	0.76
2016	8,509	2,639	6,539	9,178	1.08	0.77
2017	8,636	2,809	6,766	9,575	1.11	0.78
2018	8,611	2,909	7,038	9,947	1.16	0.82
2019	8,696	3,041	7,280	10,321	1.19	0.84
2020	8,644	3,218	7,521	10,739	1.24	0.87

[1] Includes inactive members with member contributions on deposit.

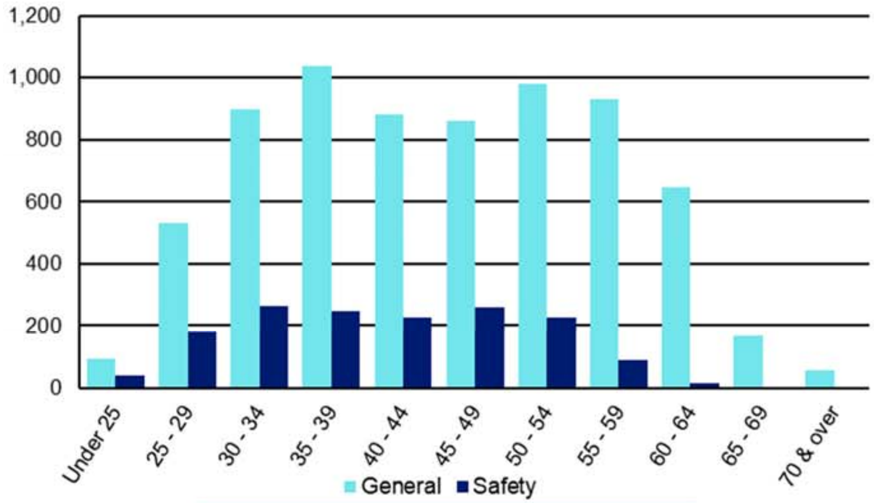
Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 8,644 active members with an average age of 44.9, average years of service of 11.4 years and average compensation of $92,941. The 8,696 active members in the prior valuation had an average age of 44.9, average service of 11.3 years and average compensation of $90,318.

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

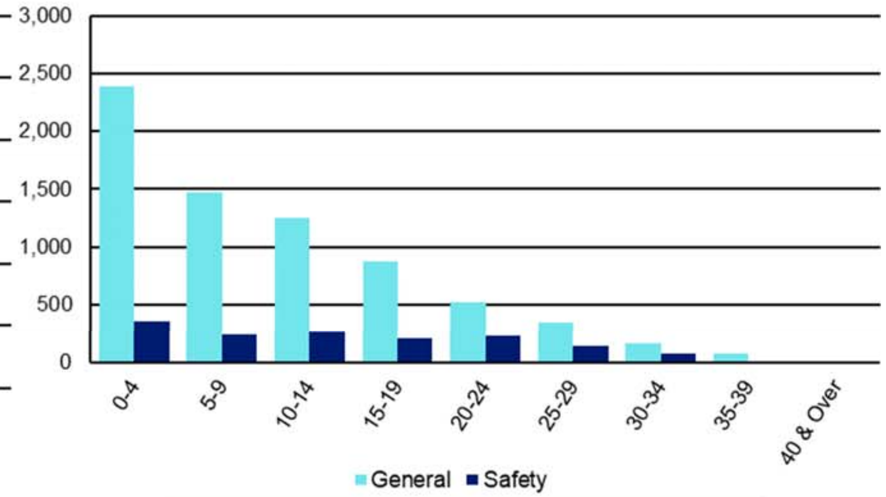
Distribution of Active Members as of June 30, 2020

Actives by Age



Average age	44.9
Prior year average age	44.9
Difference	0.0

Actives by Years of Service



Average years of service	11.4
Prior year average years of service	11.3
Difference	0.1

Inactive Members

In this year's valuation, there were 3,218 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 3,041 in the prior valuation.

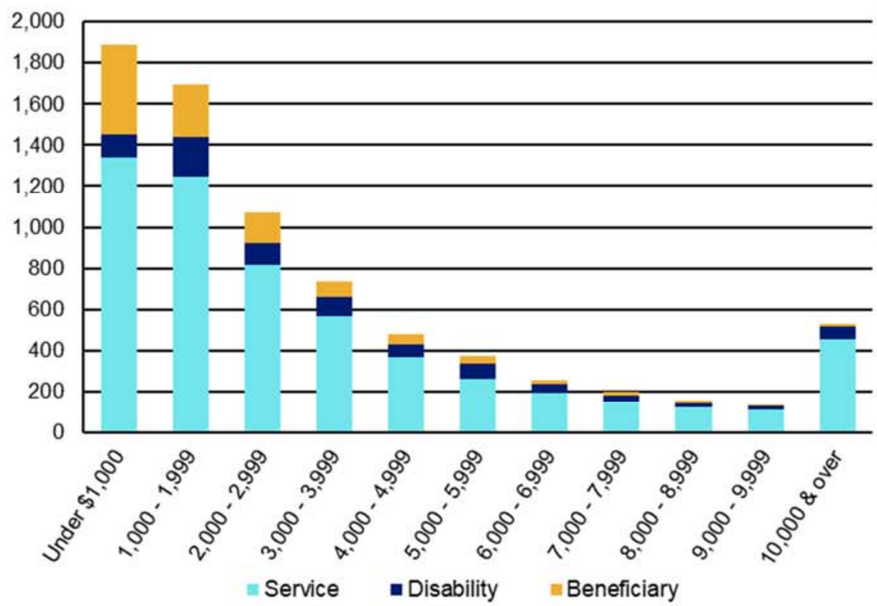
Retired Members and Beneficiaries

As of June 30, 2020, 6,451 retired members and 1,070 beneficiaries were receiving total monthly benefits of $25,743,842. For comparison, in the previous valuation, there were 6,245 retired members and 1,035 beneficiaries receiving total monthly benefits of $24,234,476. These monthly benefits exclude any benefits for vested fixed supplemental and non-vested supplemental benefit amounts.

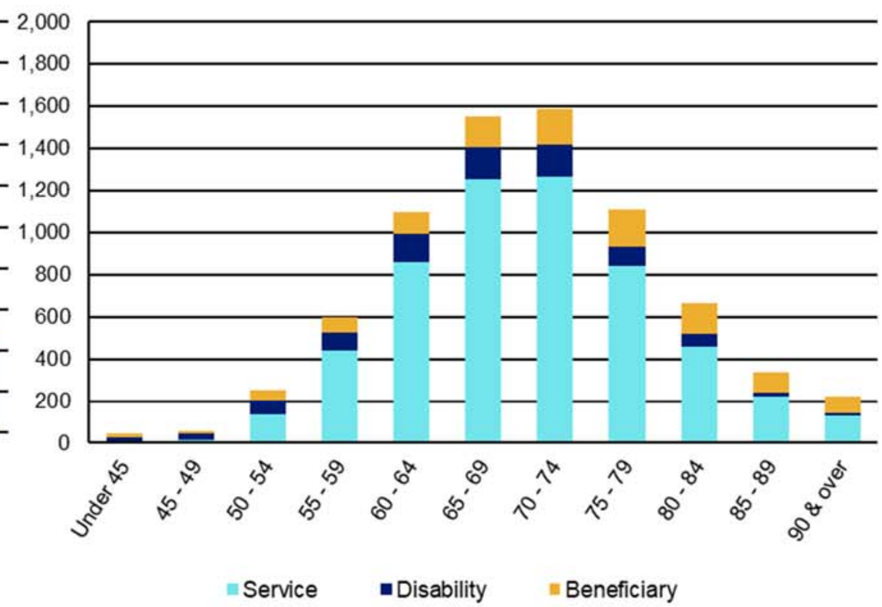
As of June 30, 2020, the average monthly benefit for retired members and beneficiaries is $3,423, compared to $3,329 in the previous valuation. The average age for retired members and beneficiaries is 70.7 in the current valuation, compared with 70.5 in the prior valuation.

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	8,040	45.1	10.9	5,481	68.5	$2,678
2012	8,019	45.4	11.1	5,658	68.9	2,769
2013	8,068	45.4	11.2	5,888	69.1	2,862
2014	8,210	45.3	11.2	6,121	69.4	2,897
2015	8,299	45.2	11.2	6,338	69.6	2,936
2016	8,509	45.0	11.2	6,539	69.8	3,024
2017	8,636	45.0	11.2	6,766	70.2	3,108
2018	8,611	44.9	11.3	7,038	70.3	3,230
2019	8,696	44.9	11.3	7,280	70.5	3,329
2020	8,644	44.9	11.4	7,521	70.7	3,423

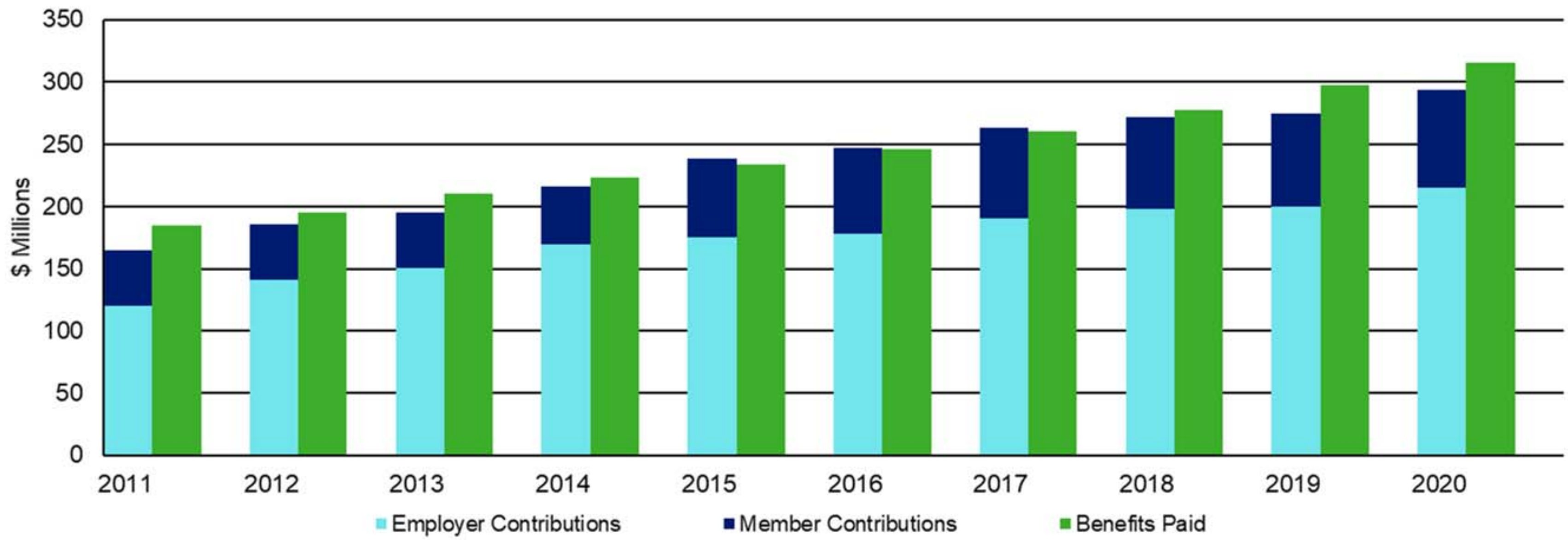
B. Financial Information

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



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

		Actual Return	Expected Return	Investment Gain/Loss	Percent Deferred	Unrecognized Amount[1]
1	**Market Value of Assets**					**$5,914,852,070**
2	Calculation of unrecognized return					
	a) Six months ended June 30, 2015	$83,151,071	$165,743,013	$(82,591,942)	0%	$0
	b) Six months ended December 31, 2015	(131,432,997)	169,038,879	(300,471,876)	0	0
	c) Six months ended June 30, 2016	152,698,097	163,960,894	(11,262,797)	10	(1,126,280)
	d) Six months ended December 31, 2016	223,970,859	164,370,060	59,600,799	20	11,920,160
	e) Six months ended June 30, 2017	351,030,738	172,814,126	178,216,612	30	53,464,984
	f) Six months ended December 31, 2017	399,470,558	185,992,710	213,477,848	40	85,391,139
	g) Six months ended June 30, 2018	38,736,481	200,860,519	(162,124,038)	50	(81,062,019)
	h) Six months ended December 31, 2018	(247,595,921)	201,992,652	(449,588,573)	60	(269,753,144)
	i) Six months ended June 30, 2019	608,522,342	192,294,765	416,227,577	70	291,359,304
	j) Six months ended December 31, 2019	363,251,754	207,517,685	155,734,069	80	124,587,255
	k) Six months ended June 30, 2020	(161,966,237)	220,290,552	(382,256,789)	90	(344,031,110)
	l) Total unrecognized return[2]					$(129,249,711)
3	**Actuarial Value of Assets (1) - (2l)**					**$6,044,101,781**
4	Actuarial Value of Assets as a percentage of Market Value of Assets (3) / (1)					102.2%
5	Non-valuation reserves:					
	a) Non-vested Supplemental Benefit					$65,973
	b) Statutory Contingency					0
	c) Subtotal					$65,973
6	**Valuation Value of Assets (3) – (5c)**					**$6,044,035,808**

Note: Results may be slightly off due to rounding

[1] Recognition at 10% per six month period over 5 years.
[2] Deferred return as of June 30, 2020 recognized in each of the next five years:

(a)	Amount recognized on June 30, 2021	$4,731,221
(b)	Amount recognized on June 30, 2022	(23,884,320)
(c)	Amount recognized on June 30, 2023	(68,189,147)
(d)	Amount recognized on June 30, 2024	(3,681,786)
(e)	Amount recognized on June 30, 2025	(38,225,679)
(f)	Subtotal	$(129,249,711)

Allocation of Valuation Value of Assets as of June 30, 2020

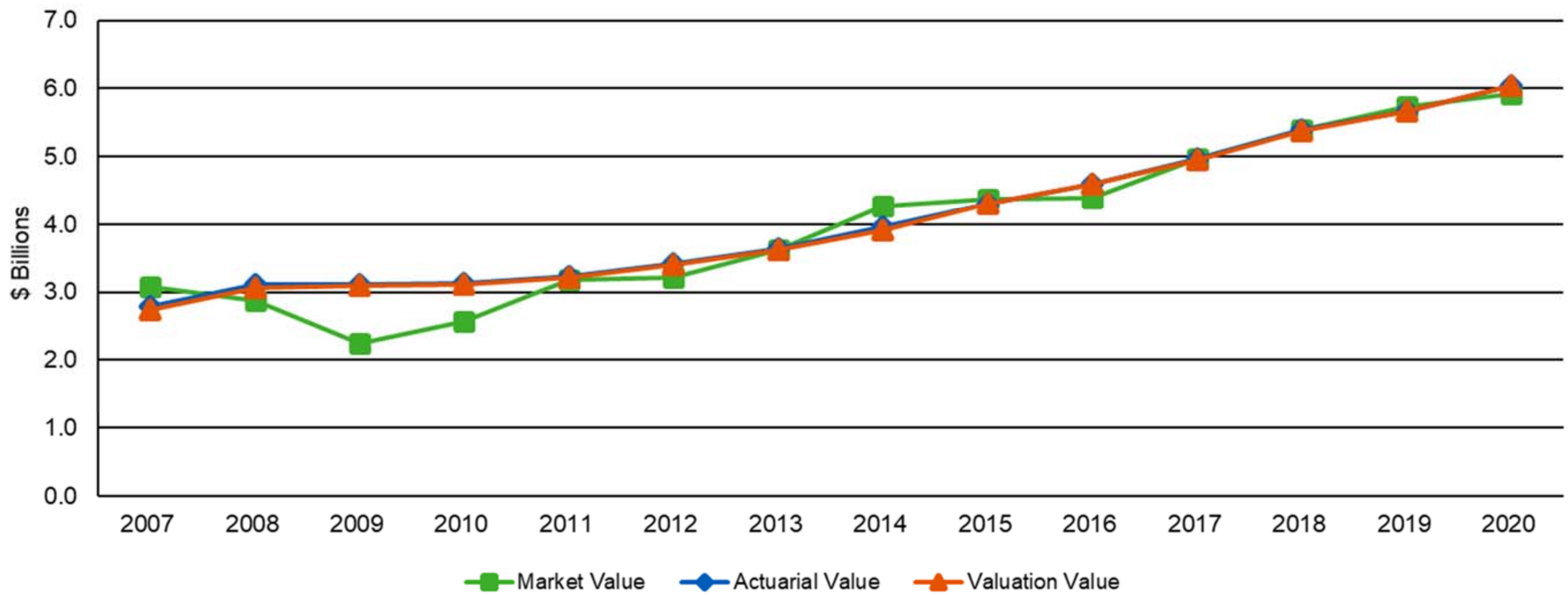
		Allocated Assets for Funding			
		General Tier 1	General Tier 2	Safety	Total
1	**Allocated Assets as of Beginning of Plan Year**	**$388,432,650**	**$2,695,911,643**	**$2,580,181,769**	**$5,664,526,062**
2	Member Contributions	395,783	49,821,627	26,109,105	76,326,515
3	Member Buybacks	14,441	1,676,190	340,501	2,031,132
4	Employer Pick-up Contributions Credited to Member Account	20,526	864,633	(169)	884,990
5	Employer Contributions	1,151,653	113,580,610	99,855,646	214,587,909
6	Refunds of Member Contributions and Death Benefits Paid	272,426	4,685,550	532,773	5,490,749
7	Retiree Benefit Payments Excluding Non-vested Supplemental Payments	81,091,052	104,729,601	124,294,685	310,115,338
8	Subtotal (Items 1 + 2 + 3 + 4 + 5 – 6 – 7)	$308,651,575	$2,752,439,552	$2,581,659,394	$5,642,750,521
9	Weighted Average Fund Balance: Item 1 + ½ of (Items 2, 3, 4, 5) – ½ of (Items 6, 7)	348,542,112	2,724,175,598	2,580,920,582	5,653,638,292
10	Earnings Allocated in Proportion to Item 9	24,738,905	193,357,185	183,189,197	401,285,287
11	**Valuation Value of Assets (Items 8 + 10)**	**$333,390,480**	**$2,945,796,737**	**$2,764,848,591**	**$6,044,035,808**

Note: Results may not total due to rounding.

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 no changes in actuarial assumptions reflected in this valuation.

The net total gain is $17.1 million, which includes $8.6 million from investment losses, a gain of $33.4 million from contribution experience and $7.7 million in losses from all other sources. The net experience variation from individual sources other than investments and contributions was 0.1% 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]	$(8,603,000)
2	Net gain from contribution experience	33,354,000
3	Net loss from other experience[2]	(7,663,000)
4	**Net experience gain: 1 + 2 + 3**	$17,088,000

[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 3.52% for the year ended June 30, 2020.

For valuation purposes, the assumed rate of return on the Valuation Value of Assets is 7.25%. The actual rate of return on a valuation basis for the 2020 plan year was 7.10%. Because 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	$201,285,517	$401,285,288	$401,285,287
2	Average value of assets	5,724,463,356	5,653,713,296	5,653,638,292
3	Rate of return: 1 ÷ 2	3.52%	7.10%	7.10%
4	Assumed rate of return	7.25%	7.25%	7.25%
5	Expected investment income: 2 x 4	$415,023,593	$409,894,214	$409,888,776
6	**Actuarial gain/(loss): 1 - 5**	**$(213,738,076)**	**$(8,608,926)**	**$(8,603,489)**

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[1]		Actuarial Value Investment Return[1]		Valuation Value Investment Return[1]	
Year Ended June 30	**Amount**	**Percent**	**Amount**	**Percent**	**Amount**	**Percent**
2011	$622,940,028	24.34%	$121,406,541	3.89%	$121,406,541	3.91%
2012	47,147,363	1.49%	184,787,098	5.72%	184,909,716	5.75%
2013	432,694,392	13.51%	237,282,497	6.97%	237,282,497	7.00%
2014	654,535,161	18.06%	338,343,729	9.32%	294,307,214	8.13%
2015	84,826,216	1.98%	341,233,326	8.60%	384,442,119	9.82%
2016	21,265,100	0.49%	280,531,179	6.51%	280,531,179	6.52%
2017	575,001,597	13.10%	368,806,019	8.03%	368,806,019	8.04%
2018	438,207,040	8.83%	427,484,168	8.62%	427,484,169	8.62%
2019	360,926,420	6.70%	301,492,986	5.61%	301,492,986	5.61%
2020	201,285,517	3.52%	401,285,288	7.10%	401,285,287	7.10%
Most recent five-year geometric average return		**6.44%**		**7.15%**		**7.15%**
Most recent ten-year geometric average return		**8.26%**		**7.11%**		**7.13%**

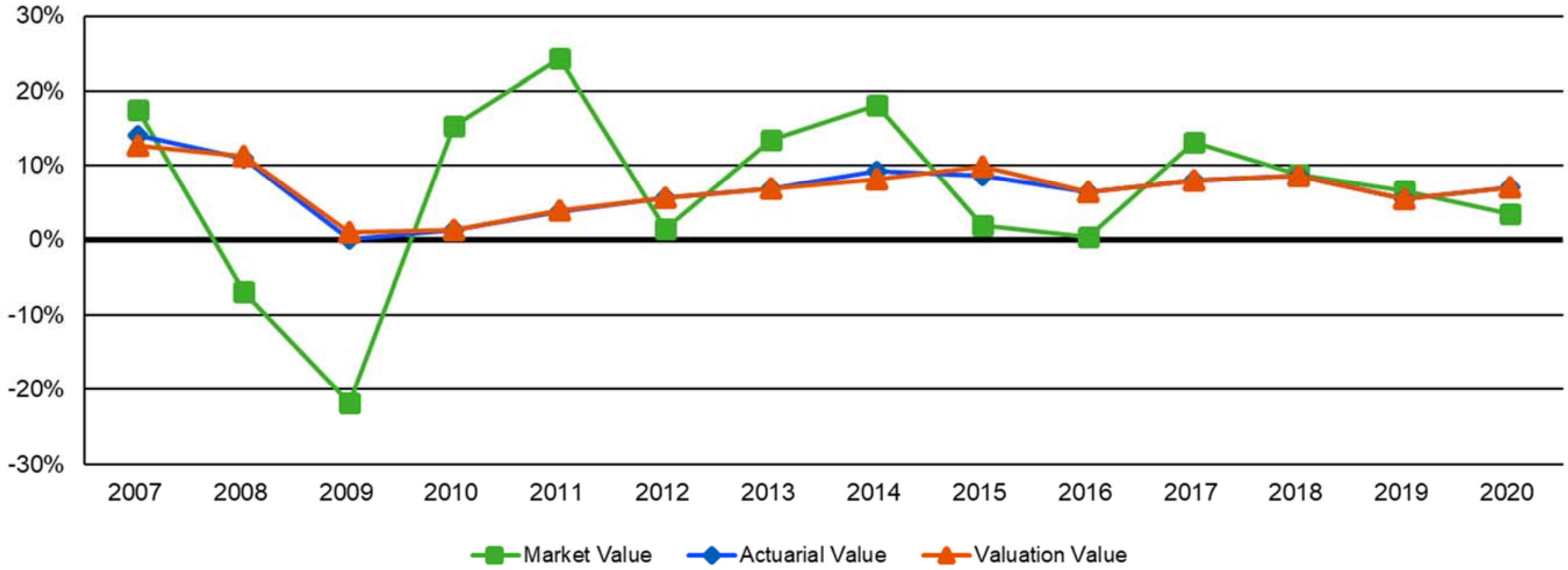
Note: Each year’s yield is weighted by the average asset value in that year.

[1] Net of administrative and investment expenses.

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 $293.8 million, compared to the projected amount of $261.6 million. This resulted in a gain of $33.4 million from contribution experience for the year, when adjusted for timing.

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 $7.7 million, which is 0.1% 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

The Actuarial Accrued Liability as of June 30, 2020 is $6.7 billion, an increase of $0.3 billion, or 4.8%, from the Actuarial Accrued Liability as of the prior valuation date. The liability is expected to grow each year with Normal Cost and interest, and to decline due to benefit payments made. Additional fluctuations can occur due to actual experience that differs from expected (as discussed in the previous subsection).

Actuarial Assumptions

There are no assumption changes reflected in this report.

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**		**$774,862,000**
2	Total Normal Cost at middle of year		154,954,000
3	Expected employer and member contributions		(261,623,000)
4	Interest		52,631,000
5	Expected Unfunded Actuarial Accrued Liability		$720,824,000
6	Changes due to:		
	a) Investment return less than expected (after "smoothing")	$8,603,000	
	b) Actual contributions more than anticipated in item 3 due to one-year delay in implementing contribution rates from the prior valuation	(33,354,000)	
	c) COLA increases higher than expected	5,278,000	
	d) Individual salary increases higher than expected	6,418,000	
	e) Other experience gain	(4,033,000)	
	Total changes		$(17,088,000)
7	**Unfunded Actuarial Accrued Liability at end of year**		**$703,736,000**

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

F. Recommended Contribution

The recommended contribution is equal to the employer Normal Cost payment and a payment on the Unfunded Actuarial Accrued Liability. As of June 30, 2020, the average recommended employer contribution is 22.22% of compensation.

Under the current funding policy, the Association's required contribution rate decreased as a percentage of pay. This was mainly the result of the effect of the 2005 UAAL amortization layer becoming fully amortized and actual contributions more than expected, partially offset by the investment return (after "smoothing") less than the 7.25% return assumption and expected total payroll growth less than expected.

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	
	All Tiers Combined	**Amount ($ in '000s)**	**% of Projected Compensation**	**Amount ($ in '000s)**	**% of Projected Compensation**
1	Total Normal Cost	$157,552	19.61%	$154,954	19.73%
2	Expected member Normal Cost contributions	(79,629)	(9.91%)	(78,453)	(9.99%)
3	Employer Normal Cost: **(1) + (2)**	$77,923	9.70%	$76,501	9.74%
4	Actuarial Accrued Liability	6,747,772		6,439,388	
5	Valuation Value of Assets	6,044,036		5,664,526	
6	Unfunded Actuarial Accrued Liability (UAAL): **(4) - (5)**	$703,736		$774,862	
7	Payment on UAAL	$100,581	12.52%	106,669	13.58%
8	Total average recommended employer contribution: **3 + 7**	$178,504	22.22%	$183,170	23.32%
9	Projected compensation	$803,381		$785,403	

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

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 of Average Recommended Employer Contribution Rate 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**	**23.32%**	**$183,170**
2	Effect of investment return less than expected (after "smoothing")	0.10%	$803
3	Effect of anticipated one-year delay in implementing the lower contribution rates calculated in the prior valuation	(0.37%)	(2,973)
4	Effect of COLA increases higher than expected	0.06%	482
5	Effect of individual salary increases higher than expected	0.07%	562
6	Effect of amortizing prior year's UAAL over a smaller than expected projected total payroll	0.13%	1,044
7	Effect of changes in demographics of members amongst tiers on Normal Cost	(0.04%)	(321)
8	Effect of the 2005 UAAL layer being fully amortized[2]	(0.94%)	(7,552)
9	Effect of adjustment to UAAL amortization periods[3]	(0.05%)	(402)
10	Effect of other experience gain[4]	(0.06%)	3,691
11	Total change	(1.10%)	$(4,666)
12	**Average Recommended Employer Contribution as of June 30, 2020**	**22.22%**	**$178,504**

[1] Based on projected compensation for each year.
[2] The UAAL amortization layer established as of June 30, 2005 has been fully paid off as of the June 30, 2020 valuation. Reduction is 0.8% of payroll for General and 1.6% of payroll for Safety.
[3] The UAAL amortization layers established as of June 30, 2006, June 30, 2007, and June 30, 2008 have each been re-amortized over a period of 4 years and the UAAL actuarial gain/loss amortization layers established as of June 30, 2014 and June 30, 2015 have each been re-amortized over a period of 12 years.
[4] Other differences in actual versus expected experience including (but not limited to) retirement, mortality, disability, termination and in-service redemption experience. Estimated annual dollar cost also reflects change in payroll from prior valuation.

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 Average Recommended Member Contribution Rate from June 30, 2019 to June 30, 2020

		Contribution Rate[1]	Estimated Annual Dollar Amount[2] ($ in '000s)
1	**Average Recommended Member Contribution as of June 30, 2019**	**9.99%**	**$78,453**
2	Effect of changes in member demographics amongst tiers[3]	(0.08%)	1,176
3	Total change	(0.08%)	$1,176
4	**Average Recommended Member Contribution as of June 30, 2020**	**9.91%**	**$79,629**

[1] Average member contribution rates are after reflecting the impact of the cessation of member contribution after 30 years of service for non-PEPRA tiers.
[2] Based on projected compensation for each year.
[3] Estimated annual dollar cost also reflects change in payroll from prior valuation.

Recommended Employer Contribution Rate

	June 30, 2020 Actuarial Valuation Recommended Rates for FY 2021-22				June 30, 2019 Actuarial Valuation Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)	Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)
General Tier 1 Members								
Normal Cost[2]	8.21%	2.64%	10.85%	$445	8.04%	2.56%	10.60%	$484
UAAL[3]	7.01%	5.71%	12.72%	522	7.45%	6.21%	13.66%	624
Total Contributions	**15.22%**	**8.35%**	**23.57%**	**$967**	**15.49%**	**8.77%**	**24.26%**	**$1,108**
General Tier 2 Members								
Normal Cost	7.30%	0.00%	7.30%	$15,090	7.38%	0.00%	7.38%	$15,862
UAAL[3]	7.01%	0.00%	7.01%	14,493	7.45%	0.00%	7.45%	16,008
Total Contributions	**14.31%**	**0.00%**	**14.31%**	**$29,583**	**14.83%**	**0.00%**	**14.83%**	**$31,870**
General PEPRA Tier 2 Members								
Normal Cost	7.48%	0.00%	7.48%	$6,145	7.49%	0.00%	7.49%	$5,319
UAAL[3]	7.01%	0.00%	7.01%	5,759	7.45%	0.00%	7.45%	5,291
Total Contributions	**14.49%**	**0.00%**	**14.49%**	**$11,904**	**14.94%**	**0.00%**	**14.94%**	**$10,610**
General Tier 2 Members w/ COLA								
Normal Cost[4]	7.30%	0.41%	7.71%	$15,573	7.38%	0.42%	7.80%	$15,856
UAAL[3,5]	7.01%	5.71%	12.72%	25,699	7.45%	6.21%	13.66%	27,769
Total Contributions	**14.31%**	**6.12%**	**20.43%**	**$41,272**	**14.83%**	**6.63%**	**21.46%**	**$43,625**
General PEPRA Tier 2 Members w/ COLA								
Normal Cost[4]	7.48%	0.50%	7.98%	$9,555	7.49%	0.48%	7.97%	$8,436
UAAL[3,5]	7.01%	5.71%	12.72%	15,237	7.45%	6.21%	13.66%	14,458
Total Contributions	**14.49%**	**6.21%**	**20.70%**	**$24,792**	**14.94%**	**6.69%**	**21.63%**	**$22,894**
All General Members[6]								
Normal Cost	7.37%	0.24%	7.61%	$46,808	7.42%	0.24%	7.66%	$45,957
UAAL	7.01%	3.03%	10.04%	61,710	7.45%	3.25%	10.70%	64,150
Total Contributions	**14.38%**	**3.27%**	**17.65%**	**$108,518**	**14.87%**	**3.49%**	**18.36%**	**$110,107**

Note: Applicable footnotes are shown on next page.

Recommended Employer Contribution Rate (continued)

	June 30, 2020 Actuarial Valuation Recommended Rates for FY 2021-22				June 30, 2019 Actuarial Valuation Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)	Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)
Safety Members								
Normal Cost[7]	12.22%	4.79%	17.01%	$25,253	12.15%	4.74%	16.89%	$25,670
UAAL	44.86%	(24.26%)	20.60%	30,583	46.49%	(23.60%)	22.89%	34,788
Total Contributions	**57.08%**	**(19.47%)**	**37.61%**	**$55,836**	**58.64%**	**(18.86%)**	**39.78%**	**$60,458**
Safety PEPRA Members								
Normal Cost	10.45%	4.12%	14.57%	$5,862	10.34%	4.09%	14.43%	$4,874
UAAL	44.86%	(24.26%)	20.60%	8,288	46.49%	(23.60%)	22.89%	7,731
Total Contributions	**55.31%**	**(20.14%)**	**35.17%**	**$14,150**	**56.83%**	**(19.51%)**	**37.32%**	**$12,605**
All Safety Members[6]								
Normal Cost	11.84%	4.65%	16.49%	$31,115	11.82%	4.62%	16.44%	$30,544
UAAL	44.86%	(24.26%)	20.60%	38,871	46.49%	(23.60%)	22.89%	42,519
Total Contributions	**56.70%**	**(19.61%)**	**37.09%**	**$69,986**	**58.31%**	**(18.98%)**	**39.33%**	**$73,063**
All Categories Combined[6]								
Normal Cost	8.42%	1.28%	9.70%	$77,923	8.46%	1.28%	9.74%	$76,501
UAAL	15.90%	(3.38%)	12.52%	100,581	16.68%	(3.10%)	13.58%	106,669
Total Contributions	**24.32%**	**(2.10%)**	**22.22%**	**$178,504**	**25.14%**	**(1.82%)**	**23.32%**	**$183,170**

1 Based on projected compensation for each year shown on next page.
2 The total General Tier 1 employer rate has been adjusted by 0.16% and 0.14% for June 30, 2020 and June 30, 2019, respectively, to account for the cost associated with the cessation of member contributions after 30 years of service.
3 Basic UAAL rates have been calculated on a combined basis for all General Tiers. COLA UAAL rates have been calculated on a combined basis for all General Tiers that have a COLA (excludes General Tier 2 without COLA and General PEPRA Tier 2 without COLA).
4 Reflects General Tier 2 member COLA contribution rate of 2.63% based on current bargaining agreements.
5 Includes 0.31% and 0.71% in COLA UAAL costs for June 30, 2020 and June 30, 2019, respectively, attributed to the first two years of service accrued for the fixed 2% COLA pursuant to Government Code 31627.
6 These aggregated rates are provided for informational purposes only as we understand that the tier specific rates will be implemented.
7 The total Safety employer rate has been adjusted by 1.79% and 1.58% for June 30, 2020 and June 30, 2019, respectively, to account for the cost associated with the cessation of member contributions after 30 years of service.

Recommended Employer Contribution Rate (continued)

The projected compensation that is used to estimate the annual dollar amount shown on the prior pages as of June 30, 2020 and June 30, 2019 are as follows:

	June 30, 2020 Projected Compensation ($ in '000s)	June 30, 2019 Projected Compensation ($ in '000s)
General Tier 1	$4,104	$4,566
General Tier 2	206,711	214,931
General PEPRA Tier 2	82,158	71,020
General Tier 2 w/ COLA	201,979	203,288
General PEPRA Tier 2 w/ COLA	119,732	105,842
Safety	148,462	151,981
Safety PEPRA	40,235	33,775
Total	**$803,381**	**$785,403**

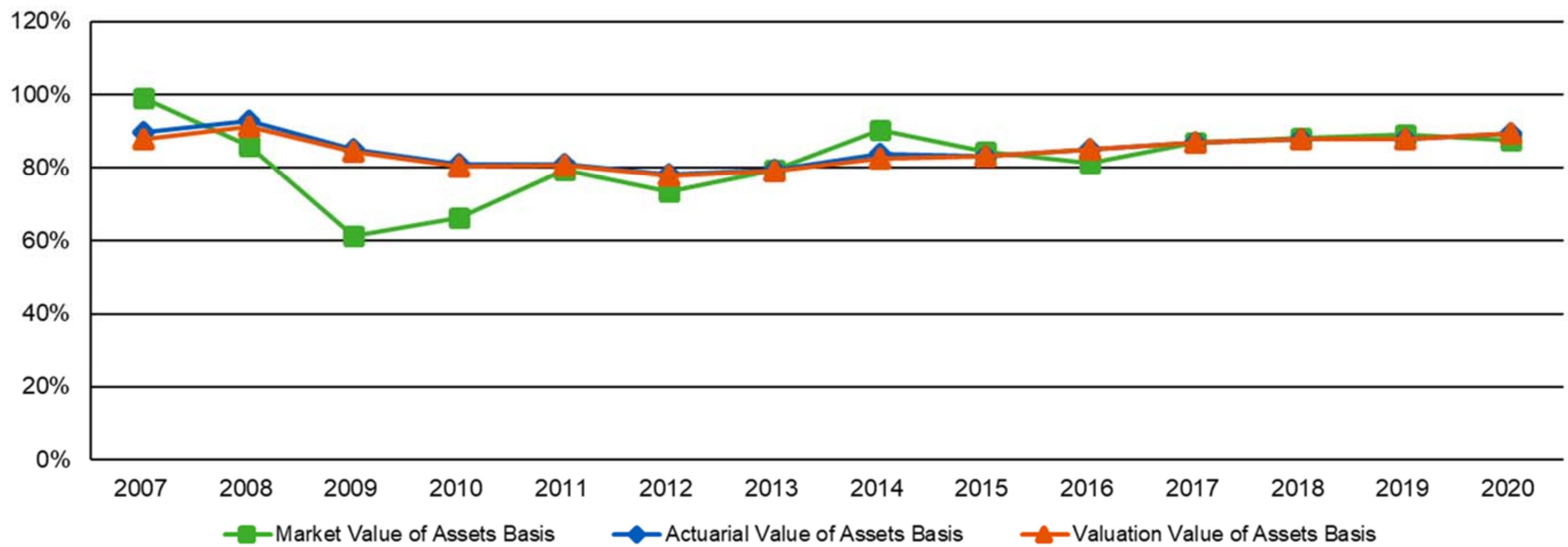
G. Funded Status

A commonly reported piece of information regarding the plan's financial status is the funded ratio. These ratios compare the Market, Actuarial and Valuation 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, Actuarial, or Valuation 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	Valuation Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (%) (a) / (b)	Projected Covered Payroll (c)	UAAL as a Percentage of Projected Covered Payroll (%) [(b) - (a)] / (c)
2011	$3,220,388,000	$3,995,352,000	$774,964,000	80.60%	$637,037,000	121.65%
2012	3,397,360,000	4,373,227,000	975,867,000	77.69%	633,848,000	153.96%
2013	3,621,709,000	4,575,063,000	953,354,000	79.16%	638,764,000	149.25%
2014	3,910,801,000	4,731,016,000	820,215,000	82.66%	648,257,000	126.53%
2015	4,302,330,000	5,178,157,000	875,827,000	83.09%	678,705,000	129.04%
2016	4,585,713,000	5,398,756,000	813,043,000	84.94%	706,000,000	115.16%
2017	4,959,070,000	5,703,396,000	744,326,000	86.95%	744,917,000	99.92%
2018	5,382,777,000	6,129,758,000	746,981,000	87.81%	760,815,000	98.18%
2019	5,664,526,000	6,439,388,000	774,862,000	87.97%	785,403,000	98.66%
2020	6,044,036,000	6,747,772,000	703,736,000	89.57%	803,381,000	87.60%

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

	Year Ended	
	June 30, 2020 ($ in '000s)	**June 30, 2019 ($ in '000s)**
Actuarial Present Value of Future Benefits		
Present value of benefits for retired members and beneficiaries	$3,877,577	$3,682,653
• Present value of benefits for inactive vested members[1]	197,387	184,277
• Present value of benefits for active members	3,950,872	3,835,128
Total Actuarial Present Value of Future Benefits	**$8,025,836**	**$7,702,058**
Current and future assets		
• Total Valuation Value of Assets	$6,044,036	$5,664,526
• Present value of future contributions by members	635,136	618,804
• Present value of future employer contributions for:		
• Entry age Normal Cost	642,928	643,866
• Unfunded Actuarial Accrued Liability	703,736	774,862
Total of current and future assets	**$8,025,836**	**$7,702,058**

[1] Includes inactive members with member contributions on deposit.

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 because it is based on the current level of assets.

The current AVR is about 7.4. This means that a 1% asset gain or loss (relative to the assumed investment return) translates to about 7.4% of one year's payroll. Because actuarial gains and losses are amortized over 15 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 total plan LVR is about 8.4, but is 6.1 for General compared to 15.9 for Safety. This means, for example, that assumption changes will have a greater impact on employer contribution rates for Safety than for General.

Volatility Ratios for Years Ended 2011 – 2020

Year Ended June 30	Asset Volatility Ratio			Liability Volatility Ratio		
	General	Safety	Total	General	Safety	Total
2011	3.9	8.2	5.0	4.7	10.8	6.3
2012	3.8	8.7	5.1	5.1	12.3	6.9
2013	4.3	9.7	5.7	5.3	12.7	7.2
2014	4.9	11.5	6.6	5.4	12.9	7.3
2015	4.8	11.4	6.4	5.6	13.8	7.6
2016	4.5	11.7	6.2	5.5	14.5	7.6
2017	4.8	12.7	6.7	5.5	14.6	7.7
2018	5.1	13.6	7.1	5.9	15.2	8.1
2019	5.2	14.1	7.3	5.9	15.5	8.2
2020	5.2	14.3	7.4	6.1	15.9	8.4

J. Risk Assessment

Because 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.

This report does not contain a detailed analysis of the potential range of future measurements, but does include a concise discussion of some of the primary risks that may affect the plan's future financial condition. We recommend a more detailed assessment of the risks to provide the Board with a better understanding of the risks inherent in the plan that can inform both financial preparation and future decision making. This assessment would enable us to work with the Board to highlight and illustrate particular risks or potential future outcomes they may be interested in discussing and could include scenario testing, sensitivity testing, stress testing and stochastic modeling.

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 condition 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 39, a 1% asset gain or loss (relative to the assumed investment return) translates to about 7.4% of one-year's payroll. Because actuarial gains and losses are amortized over 15 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 0.49% to a high of 24.34%.

- 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, 2018 valuation, the Board has adopted the generational mortality projection approach. We will be discussing the use of public experience mortality tables with the Board as part of the upcoming triennial experience study before we complete the June 30, 2021 valuation.

- 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 Valuation Value of Assets basis has increased from 80.6% to 89.6%. This is primarily due to contributions made to amortize the UAAL (i.e., amortizing each layer of UAAL over 15 years as a level percentage of pay). For a more detailed history see *Section 2, Subsection G, Funded Status* starting on page 36.
- The geometric average investment return on the Valuation Value of Assets over the last 10 years was 7.13%. This includes a high of a 9.82% return and a low of 3.91%. The average over the last 5 years was 7.15%. For more details see the Investment Return table in *Section 2, Subsection C* on page 25.

- The primary source of new UAAL was the strengthening of assumptions through multiple assumption changes. For example, the assumption changes in 2015 reduced the discount rate from 7.75% to 7.50% and updated mortality tables, adding $218 million in unfunded liability. The assumption changes in 2018 reduced the discount rate from 7.50% to 7.25% and again updated mortality tables, adding $149 million in unfunded liability. For more details on the unfunded liability changes see *Section 3, Exhibit H, Table of Amortization Bases* starting on page 65.
- 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 69 and 70.

Maturity Measures

In the last 10 years the ratio of members in pay status to active participants has increased from 0.68 to 0.87. An increased ratio indicates that the plan has grown in maturity over time. This is to be expected, but is also informative to 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 $22 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* on page 39.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage

Total Plan

Category	Year Ended June 30: 2020	Year Ended June 30: 2019	Change From Prior Year
Active members in valuation:			
• Number	8,644	8,696	-0.6%
• Average age	44.9	44.9	0.0
• Average years of service	11.4	11.3	0.1
• Total projected compensation[1]	$803,381,542	$785,402,037	2.3%
• Average projected compensation	$92,941	$90,318	2.9%
• Account balances	$732,382,661	$706,953,325	3.6%
• Total active vested members	5,905	5,886	0.3%
Inactive vested members:[2]			
Number	3,218	3,041	5.8%
Average age	46.1	46.0	0.1
Retired members:			
• Number in pay status	5,639	5,428	3.9%
• Average age	70.8	70.7	0.1
• Average monthly benefit	$3,597	$3,504	2.7%
Disabled members:			
• Number in pay status	812	817	-0.6%
• Average age	66.8	66.5	0.3
• Average monthly benefit[3]	$4,023	$3,899	3.2%
Beneficiaries:			
• Number in pay status	1,070	1,035	3.4%
• Average age	73.0	72.7	0.3
• Average monthly benefit	$2,049	$1,963	4.4%

[1] Calculated by increasing annualized bi-weekly compensation as of valuation date by one-half year of inflation and “across the board” salary increases.
[2] Includes inactive members with member contributions on deposit.
[3] Excludes vested fixed supplemental benefit amount.

Exhibit A: Table of Plan Coverage (continued)

General Tier 1

Category	Year Ended June 30 2020	Year Ended June 30 2019	Change From Prior Year
Active members in valuation:			
• Number	20	25	-20.0%
• Average age	64.7	64.0	0.7
• Average years of service	33.3	33.6	-0.3
• Total projected compensation[1]	$4,103,853	$4,565,842	-10.1%
• Average projected compensation	$205,193	$182,634	12.4%
• Account balances	$6,708,984	$7,848,816	-14.5%
• Total active vested members	20	25	-20.0%
Inactive vested members:[2]			
Number	36	38	-5.3%
Average age	46.8	46.3	0.5
Retired members:			
• Number in pay status	1,232	1,283	-4.0%
• Average age	77.6	77.1	0.5
• Average monthly benefit[3]	$4,507	$4,300	4.8%
Disabled members:			
• Number in pay status	81	85	-4.7%
• Average age	75.2	74.7	0.5
• Average monthly benefit[3]	$2,927	$2,773	5.6%
Beneficiaries:			
• Number in pay status	333	345	-3.5%
• Average age	80.1	79.7	0.4
• Average monthly benefit[3]	$2,042	$1,976	3.3%

[1] Calculated by increasing annualized bi-weekly compensation as of valuation date by one-half year of inflation and “across the board” salary increases.
[2] Includes inactive members with member contributions on deposit.
[3] Excludes vested fixed supplemental benefit amount.

Exhibit A: Table of Plan Coverage (continued)

General Tier 2

Category	Year Ended June 30 2020	Year Ended June 30 2019	Change From Prior Year
Active members in valuation:			
• Number	1,631	1,782	-8.5%
• Average age	51.3	50.9	0.4
• Average years of service	17.1	16.3	0.8
• Total projected compensation[1]	$206,711,701	$214,930,938	-3.8%
• Average projected compensation	$126,739	$120,612	5.1%
• Account balances	$192,421,396	$196,922,010	-2.3%
• Total active vested members	1,602	1,739	-7.9%
Inactive vested members:[2]			
Number	879	885	-0.7%
Average age	51.9	51.7	0.2
Retired members:			
• Number in pay status	1,968	1,862	5.7%
• Average age	70.0	69.8	0.2
• Average monthly benefit[3]	$2,210	$2,091	5.7%
Disabled members:			
• Number in pay status	233	239	-2.5%
• Average age	67.6	66.8	0.8
• Average monthly benefit[3]	$1,560	$1,583	-1.5%
Beneficiaries:			
• Number in pay status	296	276	7.2%
• Average age	72.3	71.9	0.4
• Average monthly benefit[3]	$961	$879	9.3%

[1] Calculated by increasing annualized bi-weekly compensation as of valuation date by one-half year of inflation and “across the board” salary increases.
[2] Includes inactive members with member contributions on deposit.
[3] Excludes vested fixed supplemental benefit amount.

Exhibit A: Table of Plan Coverage (continued)

General Tier 2 w/ COLA

Category	Year Ended June 30 2020	Year Ended June 30 2019	Change From Prior Year
Active members in valuation:			
• Number	2,414	2,570	-6.1%
• Average age	50.0	49.5	0.5
• Average years of service	15.9	15.1	0.8
• Total projected compensation[1]	$201,978,770	$203,287,951	-0.6%
• Average projected compensation	$83,670	$79,100	5.8%
• Account balances	$233,816,981	$228,765,579	2.2%
• Total active vested members	2,357	2,487	-5.2%
Inactive vested members:[2]			
Number	1,048	1,044	0.4%
Average age	47.8	47.2	0.6
Retired members:			
• Number in pay status	1,551	1,440	7.7%
• Average age	68.5	68.3	0.2
• Average monthly benefit[3]	$1,934	$1,885	2.6%
Disabled members:			
• Number in pay status	89	87	2.3%
• Average age	63.9	63.9	0.0
• Average monthly benefit[3]	$1,592	$1,584	0.5%
Beneficiaries:			
• Number in pay status	121	108	12.0%
• Average age	67.4	66.2	1.2
• Average monthly benefit[3]	$1,038	$973	6.7%

1 Calculated by increasing annualized bi-weekly compensation as of valuation date by one-half year of inflation and “across the board” salary increases.
2 Includes inactive members with member contributions on deposit.
3 Excludes vested fixed supplemental benefit amount.

Exhibit A: Table of Plan Coverage (continued)

General PEPRA Tier 1

Category	Year Ended June 30: 2020	Year Ended June 30: 2019	Change From Prior Year
Active members in valuation:			
• Number	0	0	N/A
• Average age	N/A	N/A	N/A
• Average years of service	N/A	N/A	N/A
• Total projected compensation[1]	N/A	N/A	N/A
• Average projected compensation	N/A	N/A	N/A
• Account balances	N/A	N/A	N/A
• Total active vested members	0	0	N/A
Inactive vested members:[2]			
Number	3	3	0.0%
Average age	43.7	42.7	1.0
Retired members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[3]	N/A	N/A	N/A
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[3]	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[3]	N/A	N/A	N/A

[1] Calculated by increasing annualized bi-weekly compensation as of valuation date by one-half year of inflation and “across the board” salary increases.
[2] Includes inactive members with member contributions on deposit.
[3] Excludes vested fixed supplemental benefit amount.

Exhibit A: Table of Plan Coverage (continued)

General PEPRA Tier 2

Category	Year Ended June 30: 2020	Year Ended June 30: 2019	Change From Prior Year
Active members in valuation:			
• Number	975	877	11.2%
• Average age	41.4	41.0	0.4
• Average years of service	3.2	2.7	0.5
• Total projected compensation[1]	$82,157,943	$71,020,134	15.7%
• Average projected compensation	$84,265	$80,981	4.1%
• Account balances	$17,621,507	$12,820,501	37.4%
• Total active vested members	225	117	92.3%
Inactive vested members:[2]			
Number	294	223	31.8%
Average age	41.1	39.9	1.2
Retired members:			
• Number in pay status	8	4	100.0%
• Average age	68.8	70.9	-2.1
• Average monthly benefit[3]	$837	$598	40.0%
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[3]	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[3]	N/A	N/A	N/A

1 Calculated by increasing annualized bi-weekly compensation as of valuation date by one-half year of inflation and “across the board” salary increases.
2 Includes inactive members with member contributions on deposit.
3 Excludes vested fixed supplemental benefit amount.

Exhibit A: Table of Plan Coverage (continued)

General PEPRA Tier 2 w/COLA

Category	Year Ended June 30 2020	Year Ended June 30 2019	Change From Prior Year
Active members in valuation:			
• Number	2,050	1,899	8.0%
• Average age	38.3	37.7	0.6
• Average years of service	3.4	3.0	0.4
• Total projected compensation[1]	$119,732,475	$105,841,534	13.1%
• Average projected compensation	$58,406	$55,735	4.8%
• Account balances	$35,819,884	$28,070,185	27.6%
• Total active vested members	503	313	60.7%
Inactive vested members:[2]			
Number	593	502	18.1%
Average age	39.4	38.8	0.6
Retired members:			
• Number in pay status	10	6	66.7%
• Average age	67.4	67.0	0.4
• Average monthly benefit[3]	$585	$581	0.7%
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[3]	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[3]	N/A	N/A	N/A

[1] Calculated by increasing annualized bi-weekly compensation as of valuation date by one-half year of inflation and “across the board” salary increases.
[2] Includes inactive members with member contributions on deposit.
[3] Excludes vested fixed supplemental benefit amount.

Exhibit A: Table of Plan Coverage (continued)

Safety

Category	Year Ended June 30: 2020	Year Ended June 30: 2019	Change From Prior Year
Active members in valuation:			
• Number	1,089	1,147	-5.1%
• Average age	45.2	44.6	0.6
• Average years of service	18.8	18.0	0.8
• Total projected compensation[1]	$148,461,597	$151,981,001	-2.3%
• Average projected compensation	$136,328	$132,503	2.9%
• Account balances	$229,011,977	$220,417,317	3.9%
• Total active vested members	1,083	1,139	-4.9%
Inactive vested members:[2]			
Number	289	295	-2.0%
Average age	44.7	43.9	0.8
Retired members:			
• Number in pay status	870	833	4.4%
• Average age	67.2	67.0	0.2
• Average monthly benefit[3]	$8,472	$8,267	2.5%
Disabled members:			
• Number in pay status	409	406	0.7%
• Average age	65.2	65.1	0.1
• Average monthly benefit[3]	$6,172	$5,994	3.0%
Beneficiaries:			
• Number in pay status	320	306	4.6%
• Average age	68.5	67.8	0.7
• Average monthly benefit[3]	$3,444	$3,275	5.2%

[1] Calculated by increasing annualized bi-weekly compensation as of valuation date by one-half year of inflation and "across the board" salary increases.
[2] Includes inactive members with member contributions on deposit.
[3] Excludes vested fixed supplemental benefit amount.

Exhibit A: Table of Plan Coverage (continued)

Safety PEPRA

Category	Year Ended June 30 2020	Year Ended June 30 2019	Change From Prior Year
Active members in valuation:			
• Number	465	396	17.4%
• Average age	31.5	30.8	0.7
• Average years of service	3.4	3.0	0.4
• Total projected compensation[1]	$40,235,204	$33,774,637	19.1%
• Average projected compensation	$86,527	$85,289	1.5%
• Account balances	$16,981,932	$12,108,917	40.2%
• Total active vested members	115	66	74.2%
Inactive vested members:[2]			
Number	76	51	49.0%
Average age	31.9	32.2	-0.3
Retired members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[3]	N/A	N/A	N/A
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[3]	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[3]	N/A	N/A	N/A

[1] Calculated by increasing annualized bi-weekly compensation as of valuation date by one-half year of inflation and “across the board” salary increases.
[2] Includes inactive members with member contributions on deposit.
[3] Excludes vested fixed supplemental benefit amount.

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	136	135	1	- -	- -	- -	- -	- -	- -	- -
	$53,077	$53,080	$52,770	- -	- -	- -	- -	- -	- -	- -
25 – 29	713	610	103	- -	- -	- -	- -	- -	- -	- -
	$62,419	$60,033	$76,546	- -	- -	- -	- -	- -	- -	- -
30 – 34	1,161	644	425	92	- -	- -	- -	- -	- -	- -
	$76,605	$66,647	$86,442	$100,870	- -	- -	- -	- -	- -	- -
35 – 39	1,288	442	385	380	81	- -	- -	- -	- -	- -
	$89,109	$69,791	$94,091	$104,120	$100,419	- -	- -	- -	- -	- -
40 – 44	1,111	256	214	293	257	91	- -	- -	- -	- -
	$98,580	$72,105	$91,569	$109,230	$110,964	$120,281	- -	- -	- -	- -
45 – 49	1,120	183	179	207	237	233	77	4	- -	- -
	$104,173	$73,708	$85,967	$105,354	$109,242	$126,011	$134,070	$103,584	- -	- -
50 – 54	1,205	196	141	204	193	192	197	79	3	- -
	$107,501	$75,511	$94,144	$102,541	$103,479	$121,911	$128,502	$145,325	$123,803	- -
55 – 59	1,021	151	115	177	179	127	128	101	43	- -
	$102,015	$75,055	$90,372	$98,449	$103,647	$109,736	$116,650	$122,062	$122,261	- -
60 – 64	660	95	97	115	101	92	66	48	38	8
	$99,581	$79,059	$96,203	$100,850	$93,065	$108,109	$108,289	$113,711	$112,222	$133,498
65 – 69	172	27	40	34	23	19	13	9	5	2
	$98,359	$79,196	$88,009	$90,105	$111,178	$99,156	$129,905	$110,213	$155,381	$148,458
70 & over	57	6	10	16	11	4	3	3	3	1
	$95,002	$59,062	$89,820	$95,212	$125,711	$89,374	$119,031	$98,040	$61,585	$62,864
Total	**8,644**	**2,745**	**1,710**	**1,518**	**1,082**	**758**	**484**	**244**	**92**	**11**
	$92,941	**$67,628**	**$89,650**	**$103,549**	**$105,735**	**$118,518**	**$123,476**	**$126,915**	**$117,986**	**$129,797**

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

General 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	2	- -	- -	- -	- -	1	1	- -	- -	- -
	$325,650	- -	- -	- -	- -	$303,217	$348,082	- -	- -	- -
60 – 64	9	- -	- -	- -	- -	2	- -	1	- -	6
	$178,417	- -	- -	- -	- -	$264,102	- -	$253,702	- -	$137,308
65 – 69	7	- -	- -	- -	2	- -	2	- -	2	1
	$222,855	- -	- -	- -	$231,077	- -	$274,412	- -	$211,995	$125,016
70 & over	2	- -	- -	- -	1	- -	- -	- -	- -	1
	$143,406	- -	- -	- -	$223,948	- -	- -	- -	- -	$62,864
Total	**20**	**- -**	**- -**	**- -**	**3**	**3**	**3**	**1**	**2**	**8**
	$205,193	**- -**	**- -**	**- -**	**$228,701**	**$277,141**	**$298,969**	**$253,702**	**$211,995**	**$126,466**

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

General 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	3	1	2	- -	- -	- -	- -	- -	- -	- -
	$83,379	$55,324	$97,406	- -	- -	- -	- -	- -	- -	- -
30 – 34	44	1	38	5	- -	- -	- -	- -	- -	- -
	$108,662	$120,003	$110,648	$91,301	- -	- -	- -	- -	- -	- -
35 – 39	166	6	57	85	18	- -	- -	- -	- -	- -
	$117,651	$90,898	$130,766	$113,303	$105,572	- -	- -	- -	- -	- -
40 – 44	207	3	38	88	58	20	- -	- -	- -	- -
	$124,759	$126,936	$122,656	$133,085	$122,546	$98,205	- -	- -	- -	- -
45 – 49	271	5	34	77	78	59	16	2	- -	- -
	$126,378	$105,466	$111,405	$130,438	$131,039	$129,046	$111,803	$133,061	- -	- -
50 – 54	341	5	37	88	68	70	56	15	2	- -
	$129,923	$119,772	$129,115	$125,244	$124,197	$139,207	$130,363	$141,707	$145,182	- -
55 – 59	312	4	26	72	65	41	52	31	21	- -
	$131,363	$111,887	$125,638	$124,373	$138,861	$127,687	$141,585	$132,300	$123,407	- -
60 – 64	220	4	28	45	31	46	30	20	16	- -
	$129,522	$126,337	$125,788	$128,683	$121,420	$125,707	$129,008	$149,568	$141,786	- -
65 – 69	51	- -	10	15	8	9	4	4	1	- -
	$120,494	- -	$115,392	$111,290	$118,155	$124,348	$132,588	$133,062	$194,959	- -
70 & over	16	- -	3	4	5	- -	3	1	- -	- -
	$134,222	- -	$124,703	$136,676	$145,218	- -	$119,031	$143,560	- -	- -
Total	**1,631**	**29**	**273**	**479**	**331**	**245**	**161**	**73**	**40**	**- -**
	$126,739	**$109,676**	**$122,329**	**$124,897**	**$127,298**	**$128,405**	**$131,735**	**$139,181**	**$133,636**	**- -**

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

General Tier 2 w/COLA

		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	9	3	6	- -	- -	- -	- -	- -	- -	- -
	$68,641	$53,338	$76,292	- -	- -	- -	- -	- -	- -	- -
30 – 34	127	3	80	44	- -	- -	- -	- -	- -	- -
	$78,239	$60,466	$79,396	$77,347	- -	- -	- -	- -	- -	- -
35 – 39	327	7	117	166	37	- -	- -	- -	- -	- -
	$85,372	$72,379	$89,347	$83,262	$84,728	- -	- -	- -	- -	- -
40 – 44	349	10	68	143	101	27	- -	- -	- -	- -
	$86,642	$73,802	$86,324	$86,614	$88,735	$84,518	- -	- -	- -	- -
45 – 49	352	6	63	104	102	60	15	2	- -	- -
	$84,384	$68,472	$88,809	$81,444	$83,857	$88,198	$82,251	$74,108	- -	- -
50 – 54	408	11	45	110	99	64	63	15	1	- -
	$84,575	$65,157	$78,637	$83,858	$84,616	$87,502	$91,027	$82,262	$81,045	- -
55 – 59	449	14	48	103	107	66	58	41	12	- -
	$82,382	$63,836	$81,335	$80,126	$82,124	$86,889	$84,913	$84,263	$86,430	- -
60 – 64	295	3	32	69	68	43	34	26	19	1
	$81,766	$77,762	$80,089	$81,689	$79,911	$81,586	$87,964	$80,012	$85,093	$58,389
65 – 69	69	- -	14	18	13	10	7	5	2	- -
	$81,321	- -	$80,856	$74,301	$88,439	$76,483	$87,084	$91,934	$78,980	- -
70 & over	29	- -	3	12	5	4	- -	2	3	- -
	$80,632	- -	$78,687	$81,391	$86,555	$89,374	- -	$75,281	$61,585	- -
Total	**2,414**	**57**	**476**	**769**	**532**	**274**	**177**	**91**	**37**	**1**
	$83,670	**$67,380**	**$84,247**	**$82,586**	**$84,269**	**$85,909**	**$87,535**	**$82,719**	**$83,181**	**$58,389**

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

General PEPRA 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	18	18	- -	- -	- -	- -	- -	- -	- -	- -
	$53,665	$53,665	- -	- -	- -	- -	- -	- -	- -	- -
25 – 29	136	123	13	- -	- -	- -	- -	- -	- -	- -
	$65,060	$65,158	$64,138	- -	- -	- -	- -	- -	- -	- -
30 – 34	198	157	41	- -	- -	- -	- -	- -	- -	- -
	$79,110	$77,130	$86,691	- -	- -	- -	- -	- -	- -	- -
35 – 39	173	127	46	- -	- -	- -	- -	- -	- -	- -
	$85,852	$81,870	$96,845	- -	- -	- -	- -	- -	- -	- -
40 – 44	113	83	29	- -	1	- -	- -	- -	- -	- -
	$90,131	$90,395	$90,868	- -	$46,836	- -	- -	- -	- -	- -
45 – 49	95	66	29	- -	- -	- -	- -	- -	- -	- -
	$88,748	$89,261	$87,578	- -	- -	- -	- -	- -	- -	- -
50 – 54	101	73	28	- -	- -	- -	- -	- -	- -	- -
	$95,040	$96,085	$92,314	- -	- -	- -	- -	- -	- -	- -
55 – 59	64	52	12	- -	- -	- -	- -	- -	- -	- -
	$97,062	$97,560	$94,908	- -	- -	- -	- -	- -	- -	- -
60 – 64	52	37	15	- -	- -	- -	- -	- -	- -	- -
	$97,877	$101,092	$89,947	- -	- -	- -	- -	- -	- -	- -
65 – 69	21	14	6	1	- -	- -	- -	- -	- -	- -
	$94,762	$96,662	$96,659	$56,774	- -	- -	- -	- -	- -	- -
70 & over	4	2	2	- -	- -	- -	- -	- -	- -	- -
	$80,301	$77,083	$83,521	- -	- -	- -	- -	- -	- -	- -
Total	**975**	**752**	**221**	**1**	**1**	**- -**	**- -**	**- -**	**- -**	**- -**
	$84,265	**$82,735**	**$89,764**	**$56,774**	**$46,836**	**- -**	**- -**	**- -**	**- -**	**- -**

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

General PEPRA Tier 2 w/COLA

		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	77	76	1	- -	- -	- -	- -	- -	- -	- -
	$43,406	$43,283	$52,770	- -	- -	- -	- -	- -	- -	- -
25 – 29	382	337	45	- -	- -	- -	- -	- -	- -	- -
	$50,648	$49,832	$56,761	- -	- -	- -	- -	- -	- -	- -
30 – 34	530	379	151	- -	- -	- -	- -	- -	- -	- -
	$59,704	$57,834	$64,399	- -	- -	- -	- -	- -	- -	- -
35 – 39	373	264	108	- -	1	- -	- -	- -	- -	- -
	$62,761	$60,466	$68,093	- -	$92,683	- -	- -	- -	- -	- -
40 – 44	214	151	63	- -	- -	- -	- -	- -	- -	- -
	$62,656	$59,291	$70,723	- -	- -	- -	- -	- -	- -	- -
45 – 49	144	97	47	- -	- -	- -	- -	- -	- -	- -
	$60,151	$60,559	$59,310	- -	- -	- -	- -	- -	- -	- -
50 – 54	129	102	27	- -	- -	- -	- -	- -	- -	- -
	$60,592	$58,082	$70,072	- -	- -	- -	- -	- -	- -	- -
55 – 59	103	77	26	- -	- -	- -	- -	- -	- -	- -
	$57,670	$55,626	$63,725	- -	- -	- -	- -	- -	- -	- -
60 – 64	69	51	18	- -	- -	- -	- -	- -	- -	- -
	$63,802	$59,442	$76,153	- -	- -	- -	- -	- -	- -	- -
65 – 69	23	13	10	- -	- -	- -	- -	- -	- -	- -
	$62,587	$60,386	$65,449	- -	- -	- -	- -	- -	- -	- -
70 & over	6	4	2	- -	- -	- -	- -	- -	- -	- -
	$53,533	$50,052	$60,496	- -	- -	- -	- -	- -	- -	- -
Total	**2,050**	**1,551**	**498**	**- -**	**1**	**- -**	**- -**	**- -**	**- -**	**- -**
	$58,406	**$56,103**	**$65,509**	**- -**	**$92,683**	**- -**	**- -**	**- -**	**- -**	**- -**

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

Safety

		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	8	- -	8	- -	- -	- -	- -	- -	- -	- -
	$123,655	- -	$123,655	- -	- -	- -	- -	- -	- -	- -
30 – 34	102	1	58	43	- -	- -	- -	- -	- -	- -
	$123,351	$102,324	$121,710	$126,054	- -	- -	- -	- -	- -	- -
35 – 39	192	1	37	129	25	- -	- -	- -	- -	- -
	$123,628	$100,415	$122,069	$124,911	$120,241	- -	- -	- -	- -	- -
40 – 44	219	1	15	62	97	44	- -	- -	- -	- -
	$132,489	$145,536	$124,117	$127,535	$127,846	$152,261	- -	- -	- -	- -
45 – 49	249	2	4	26	57	114	46	- -	- -	- -
	$140,034	$118,069	$116,557	$126,707	$124,841	$144,342	$158,713	- -	- -	- -
50 – 54	219	- -	2	6	26	58	78	49	- -	- -
	$148,649	- -	$134,558	$112,077	$121,118	$139,005	$157,435	$165,737	- -	- -
55 – 59	86	1	1	2	7	19	17	29	10	- -
	$148,038	$285,000	$129,129	$108,831	$105,662	$140,177	$135,045	$164,557	$162,853	- -
60 – 64	13	- -	2	1	2	1	2	1	3	1
	$139,493	- -	$165,305	$170,436	$100,814	$127,085	$143,030	$132,756	$126,365	$185,745
65 – 69	1	- -	- -	- -	- -	- -	- -	- -	- -	1
	$171,900	- -	- -	- -	- -	- -	- -	- -	- -	$171,900
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	**1,089**	**6**	**127**	**269**	**214**	**236**	**143**	**79**	**13**	**2**
	$136,328	**$144,902**	**$123,006**	**$125,635**	**$124,361**	**$144,099**	**$154,983**	**$164,886**	**$154,433**	**$178,823**

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

Safety PEPRA

		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	41	41	- -	- -	- -	- -	- -	- -	- -	- -
	$70,983	$70,983	- -	- -	- -	- -	- -	- -	- -	- -
25 – 29	175	146	29	- -	- -	- -	- -	- -	- -	- -
	$82,581	$79,433	$98,428	- -	- -	- -	- -	- -	- -	- -
30 – 34	160	103	57	- -	- -	- -	- -	- -	- -	- -
	$89,575	$82,410	$102,522	- -	- -	- -	- -	- -	- -	- -
35 – 39	57	37	20	- -	- -	- -	- -	- -	- -	- -
	$93,456	$90,124	$99,620	- -	- -	- -	- -	- -	- -	- -
40 – 44	9	8	1	- -	- -	- -	- -	- -	- -	- -
	$94,568	$92,349	$112,315	- -	- -	- -	- -	- -	- -	- -
45 – 49	9	7	2	- -	- -	- -	- -	- -	- -	- -
	$84,494	$78,391	$105,854	- -	- -	- -	- -	- -	- -	- -
50 – 54	7	5	2	- -	- -	- -	- -	- -	- -	- -
	$108,358	$109,212	$106,223	- -	- -	- -	- -	- -	- -	- -
55 – 59	5	3	2	- -	- -	- -	- -	- -	- -	- -
	$129,590	$116,907	$148,616	- -	- -	- -	- -	- -	- -	- -
60 – 64	2	- -	2	- -	- -	- -	- -	- -	- -	- -
	$98,081	- -	$98,081	- -	- -	- -	- -	- -	- -	- -
65 – 69	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	**465**	**350**	**115**	**- -**	**- -**	**- -**	**- -**	**- -**	**- -**	**- -**
	$86,527	**$81,471**	**$101,917**	**- -**	**- -**	**- -**	**- -**	**- -**	**- -**	**- -**

Exhibit C: Reconciliation of Member Data

	Active Members	Inactive Vested Members[1]	Retired Members	Disabled Members	Beneficiaries	Total
Number as of June 30, 2019	**8,696**	**3,041**	**5,428**	**817**	**1,035**	**19,017**
• New members	612	59	0	0	84	755
• Terminations – with vested rights	(316)	316	0	0	0	0
• Contribution refunds	(105)	(66)	0	0	0	(171)
• Retirements	(249)	(93)	342	0	0	0
• New disabilities	(10)	(9)	(2)	21	0	0
• Return to work	27	(26)	0	(1)	0	0
• Died with or without beneficiary	(10)	(4)	(128)	(25)	(46)	(213)
• Data adjustments	(1)	0	(1)	0	(3)	(5)
Number as of June 30, 2020	**8,644**	**3,218**	**5,639**	**812**	**1,070**	**19,383**

[1] Includes inactive members with member contributions on deposit.

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		**$5,735,360,159**		**$5,396,462,523**
Contribution income:				
• Employer contributions	$214,587,909		$199,932,498	
• Member contributions	79,242,637		75,157,256	
Net contribution income		$293,830,545		$275,089,754
Investment income:				
• Interest, dividends, asset appreciation and other income	$234,236,162		$390,702,277	
• Less investment and administrative fees	(30,368,128)		(27,378,983)	
• Less other expenses	(2,582,517)		(2,396,874)	
Net investment income		$201,285,517		$360,926,420
Total income available for benefits		**$495,116,062**		**$636,016,174**
Less benefit payments:				
• Benefits paid	$(310,133,402)		$(292,775,308)	
• Member refunds	(5,490,749)		(4,343,230)	
Net benefit payments		$(315,624,151)		$(297,118,538)
Change in net assets at market value		**$179,491,911**		**$338,897,636**
Net assets at market value at the end of the year		**$5,914,852,070**		**$5,735,360,159**

Note: Results may not total due to rounding.

Exhibit E: Summary Statement of Plan Assets

	June 30, 2020		June 30, 2019	
Cash equivalents		$166,625,397		$110,410,529
Net assets, net of accumulated depreciation and amortization		11,094,788		11,643,686
Accounts receivable:				
• Member and employer contributions	$13,756,382		$11,562,565	
• Accrued interest and dividends	4,148,771		5,058,394	
• Securities sold	18,845,677		14,569,520	
• All other	33,753		43,633	
Total accounts receivable		$36,784,583		$31,234,112
Investments:				
• Equities	$3,711,280,380		$3,619,478,132	
• Fixed income	1,146,517,652		1,117,653,469	
• Investments received on securities lending	34,829,944		120,907,332	
• Others	877,009,093		880,892,084	
Total investments at market value		$5,769,637,069		$5,738,931,017
Total assets		$5,984,141,837		$5,892,219,344
Liabilities:				
• Securities lending	$(34,829,944)		$(120,907,332)	
• Security purchases	(28,729,922)		(30,300,997)	
• Account payable	(5,697,555)		(5,623,037)	
• Prepaid contributions	(32,346)		(27,819)	
Total liabilities		$(69,289,767)		$(156,859,185)
Net assets at market value		**$5,914,852,070**		**$5,735,360,159**
Net assets at actuarial value		**$6,044,101,781**		**$5,664,610,099**
Net assets at valuation value		**$6,044,035,808**		**$5,664,526,062**

Note: Results may not total due to rounding.

Exhibit F: Summary of Reported Reserve Information

	June 30, 2020	June 30, 2019
Used in Development of Valuation Value of Assets:		
• Member contributions reserve	$825,923,366	$793,803,493
• Employer advance reserve	3,377,093,757	3,071,594,239
• Offset: Interest crediting shortfall tracking account	(1,447,595,207)	(1,327,148,830)
• Retiree reserve	3,123,805,473	2,963,426,996
• Supplemental death benefit reserve	16,914,472	16,355,116
• Vested fixed supplemental ($108.44) reserve	147,893,947	146,495,048
• Undistributed earnings	0	0
Subtotal: Valuation Value of Assets	$6,044,035,808	$5,664,526,062
Not Used in Development of Valuation Value of Assets:		
• Non-vested supplemental ($27.50) reserve	$65,973	$84,037
• Contingency reserve	0	0
Subtotal	$65,973	$84,037
Subtotal: Actuarial Value of Assets	$6,044,101,781	$5,664,610,099
• Market stabilization reserve	(129,249,711)	70,750,060
Total: Gross Market Value of Assets	**$5,914,852,070**	**$5,735,360,159**

Note: Results may not total due to rounding.

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	Valuation Value of Assets at Year-End	Valuation Value as a Percent of Market Value
2011	$120,053,545	$44,237,695	$622,940,029	$184,458,061	$3,172,325,063	$3,220,387,920	101.52%
2012	140,772,726	44,486,749	47,147,363	195,114,694	3,209,617,207	3,397,359,919	105.85%
2013	150,687,842	44,463,983	432,694,392	209,957,957	3,627,505,467	3,621,708,536	99.84%
2014	169,703,083	46,674,443	654,535,161	223,532,290	4,274,885,864	3,910,800,797	91.48%
2015	175,099,550	63,678,770	84,826,217	233,695,213	4,364,795,188	4,302,330,424	98.57%
2016	177,709,688	69,469,771	21,265,100	246,403,038	4,386,836,709	4,585,712,958	104.53%
2017	190,759,001	72,394,542	575,001,597	260,745,073	4,964,246,776	4,959,070,151	99.90%
2018	197,682,857	74,044,246	438,207,040	277,718,396	5,396,462,523	5,382,777,075	99.75%
2019	199,932,498	75,157,256	360,926,420	297,118,538	5,735,360,159	5,664,526,062	98.76%
2020	214,587,909	79,242,637	201,285,517	315,624,151	5,914,852,070	6,044,035,808	102.18%

Note: Results may not total due to rounding.

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

Exhibit H: Table of Amortization Bases

General Tier 1

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining	Annual Payment ($ in '000s)
Actuarial loss	June 30, 2005	$22,085	15	$0	0	$0
Actuarial loss	June 30, 2006	7,048	15	1,023	4[1]	281
Assumption change	June 30, 2006	41,538	15	6,021	4[1]	1,654
Actuarial gain	June 30, 2007	(19,901)	15	(5,436)	4[1]	(1,493)
Actuarial gain	June 30, 2008	(18,128)	15	(7,003)	4[1]	(1,923)
Actuarial loss	June 30, 2009	55,190	15	26,802	4	7,361
Assumption change	June 30, 2009	18,574	15	9,016	4	2,476
Actuarial loss	June 30, 2010	50,018	15	28,613	5	6,404
Actuarial loss	June 30, 2011	36,225	15	23,455	6	4,455
Actuarial loss	June 30, 2012	29,865	15	21,265	7	3,526
Demographic assumption change	June 30, 2012	38,104	20	34,746	12	3,675
Economic assumption change	June 30, 2012	19,517	20	17,788	12	1,881
Actuarial loss	June 30, 2013	31,670	15	24,363	8	3,599
Actuarial loss	June 30, 2014	16,119	15	13,198	12[1]	1,396
Actuarial loss	June 30, 2015	8,457	15	7,265	12[1]	768
Assumption change	June 30, 2015	47,959	20	46,252	15	4,123
Actuarial loss	June 30, 2016	45,451	15	40,805	11	4,626
Actuarial loss	June 30, 2017	53,640	15	49,888	12	5,276
Actuarial loss	June 30, 2018	51,584	15	49,335	13	4,901
Assumption change	June 30, 2018	3,972	20	3,936	18	308
Actuarial loss	June 30, 2019	80,777	15	79,195	14	7,434
Actuarial loss	June 30, 2020	71,845	15	71,845	15	6,404
Subtotal				**$542,372**		**$67,132**

[1] Reflects the adjustment to UAAL amortization periods made in 2020.

Exhibit H: Table of Amortization Bases (continued)

General Tier 2

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining	Annual Payment ($ in '000s)
Actuarial loss	June 30, 2005	$7,622	15	$0	0	$0
Actuarial gain	June 30, 2006	(9,108)	15	(1,321)	4[1]	(363)
Assumption change	June 30, 2006	19,085	15	2,767	4[1]	760
Plan provision change	June 30, 2006	14,731	15	2,134	4[1]	586
Actuarial gain	June 30, 2007	(39,508)	15	(10,794)	4[1]	(2,964)
Actuarial gain	June 30, 2008	(34,794)	15	(13,438)	4[1]	(3,690)
Actuarial loss	June 30, 2009	71,253	15	34,596	4	9,501
Assumption change	June 30, 2009	22,696	15	11,016	4	3,025
Actuarial loss	June 30, 2010	47,615	15	27,248	5	6,098
Actuarial gain	June 30, 2011	(6,949)	15	(4,506)	6	(856)
Actuarial gain	June 30, 2012	(18,106)	15	(12,896)	7	(2,138)
Demographic assumption change	June 30, 2012	29,420	20	26,809	12	2,835
Economic assumption change	June 30, 2012	32,874	20	29,991	12	3,172
Actuarial gain	June 30, 2013	(23,823)	15	(18,346)	8	(2,710)
Actuarial gain	June 30, 2014	(49,125)	15	(40,211)	12[1]	(4,253)
Actuarial gain	June 30, 2015	(62,406)	15	(53,673)	12[1]	(5,676)
Assumption change	June 30, 2015	50,090	20	48,314	15	4,307
Actuarial gain	June 30, 2016	(28,842)	15	(25,904)	11	(2,936)
Actuarial gain	June 30, 2017	(41,622)	15	(38,709)	12	(4,094)
Actuarial gain	June 30, 2018	(86,831)	15	(83,059)	13	(8,252)
Assumption change	June 30, 2018	111,232	20	110,349	18	8,627
Actuarial gain	June 30, 2019	(8,940)	15	(8,766)	14	(823)
Actuarial gain	June 30, 2020	(62,406)	15	(62,406)	15	(5,563)
Subtotal				**$(80,805)**		**$(5,407)**

[1] Reflects the adjustment to UAAL amortization periods made in 2020.

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)
Actuarial loss	June 30, 2005	$19,142	15	$0	0	$0
Actuarial loss	June 30, 2006	3,418	15	494	4[1]	136
Assumption change	June 30, 2006	42,167	15	6,112	4[1]	1,679
Actuarial gain	June 30, 2007	(37,489)	15	(10,240)	4[1]	(2,812)
Actuarial gain	June 30, 2008	(22,443)	15	(8,667)	4[1]	(2,380)
Actuarial loss	June 30, 2009	78,157	15	37,953	4	10,423
Assumption change	June 30, 2009	49,982	15	24,272	4	6,666
Actuarial loss	June 30, 2010	108,448	15	62,066	5	13,890
Actuarial loss	June 30, 2011	8,879	15	5,756	6	1,093
Actuarial gain	June 30, 2012	(7,501)	15	(5,330)	7	(884)
Demographic assumption change	June 30, 2012	55,513	20	50,620	12	5,354
Economic assumption change	June 30, 2012	51,887	20	47,291	12	5,001
Actuarial loss	June 30, 2013	7,588	15	5,850	8	864
Actuarial gain	June 30, 2014	(54,478)	15	(44,597)	12[1]	(4,717)
Actuarial gain	June 30, 2015	(55,657)	15	(47,874)	12[1]	(5,063)
Assumption change	June 30, 2015	119,953	20	115,694	15	10,313
Actuarial gain	June 30, 2016	(17,062)	15	(15,320)	11	(1,737)
Actuarial gain	June 30, 2017	(9,288)	15	(8,630)	12	(913)
Actuarial gain	June 30, 2018	(29,088)	15	(27,822)	13	(2,764)
Assumption change	June 30, 2018	33,306	20	33,045	18	2,583
Actuarial loss	June 30, 2019	48,977	15	48,023	14	4,508
Actuarial gain	June 30, 2020	(26,527)	15	(26,527)	15	(2,365)
Subtotal				**$242,169**		**$38,875**

[1] Reflects the adjustment to UAAL amortization periods made in 2020.

Exhibit H: Table of Amortization Bases (continued)

Total VCERA

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining	Annual Payment ($ in '000s)
Actuarial loss	June 30, 2005	$48,849	15	$0	0	$0
Actuarial loss	June 30, 2006	1,358	15	196	4[1]	54
Assumption change	June 30, 2006	102,790	15	14,900	4[1]	4,093
Plan provision change	June 30, 2006	14,731	15	2,134	4[1]	586
Actuarial gain	June 30, 2007	(96,898)	15	(26,470)	4[1]	(7,269)
Actuarial gain	June 30, 2008	(75,365)	15	(29,108)	4[1]	(7,993)
Actuarial loss	June 30, 2009	204,600	15	99,351	4	27,285
Assumption change	June 30, 2009	91,252	15	44,304	4	12,167
Actuarial loss	June 30, 2010	206,081	15	117,927	5	26,392
Actuarial loss	June 30, 2011	38,155	15	24,705	6	4,692
Actuarial loss	June 30, 2012	4,258	15	3,039	7	504
Demographic assumption change	June 30, 2012	123,037	20	112,175	12	11,864
Economic assumption change	June 30, 2012	104,278	20	95,070	12	10,054
Actuarial loss	June 30, 2013	15,435	15	11,867	8	1,753
Actuarial gain	June 30, 2014	(87,484)	15	(71,610)	12[1]	(7,574)
Actuarial gain	June 30, 2015	(109,606)	15	(94,282)	12[1]	(9,971)
Assumption change	June 30, 2015	218,002	20	210,260	15	18,743
Actuarial gain	June 30, 2016	(453)	15	(419)	11	(47)
Actuarial loss	June 30, 2017	2,730	15	2,549	12	269
Actuarial gain	June 30, 2018	(64,335)	15	(61,546)	13	(6,115)
Assumption change	June 30, 2018	148,510	20	147,330	18	11,518
Actuarial loss	June 30, 2019	120,814	15	118,452	14	11,119
Actuarial gain	June 30, 2020	(17,088)	15	(17,088)	15	(1,524)
Total				**$703,736**		**$100,600**

[1] Reflects the adjustment to UAAL amortization periods made in 2020.

Exhibit I: Projection of UAAL Balances and Payments

Outstanding Balance of $704 Million in Net UAAL as of June 30, 2020

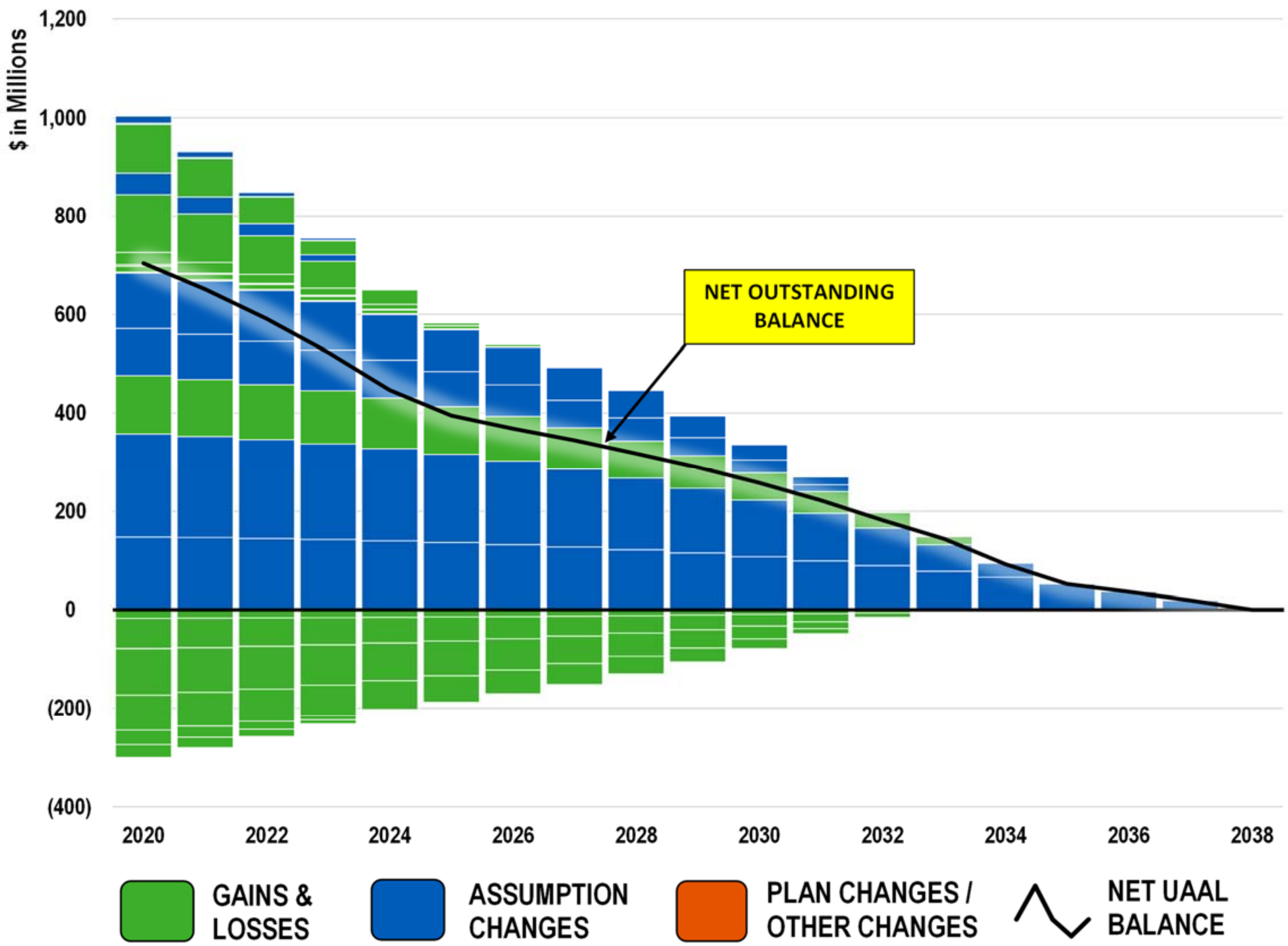


Exhibit I: Projection of UAAL Balances and Payments (continued)

Annual Payments Required to Amortize $704 Million in Net UAAL as of June 30, 2020

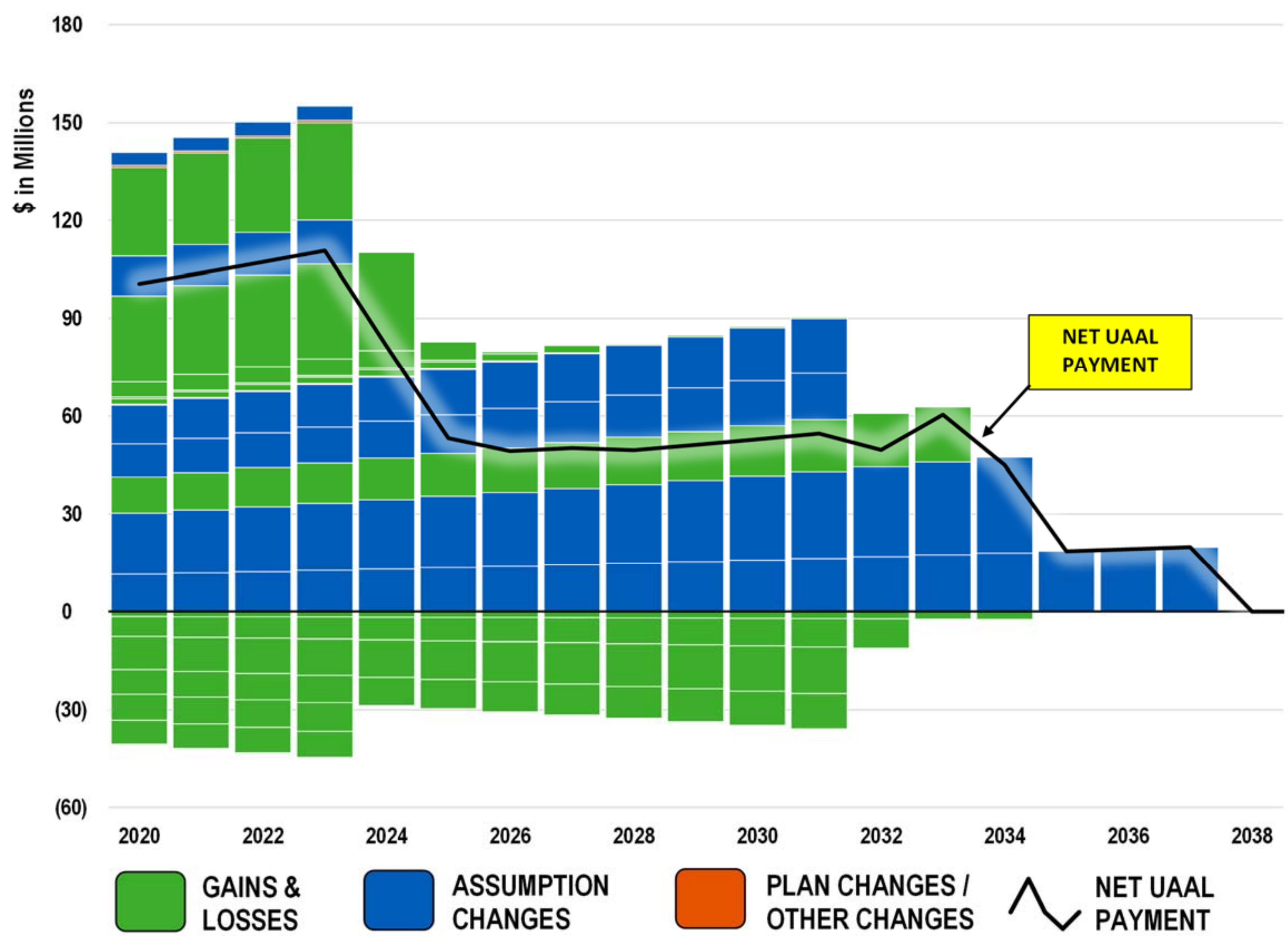


Exhibit J: Definition of Pension Terms

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:	The single-sum 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 in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.
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, withdrawal, 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.

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 (ADC) and the Net Pension Liability (NPL).
Actuarial Value of Assets (AVA):	The value of the Fund'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 ADC.
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 plan.
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 UAAL. 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 UAAL. 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 designed to pay interest on and to amortize the UAAL.

Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Fund is calculated, including: Investment return - the rate of investment yield that the Fund will earn over the long-term future; Mortality rates - the death rates of employees and pensioners; life expectancy is based on these rates; Retirement rates - the rate or probability of retirement at a given age or service; Disability rates - the probability of disability retirement at a given age; Termination rates - the rates 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 and productivity growth.
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 30 years, it is 29 years at the end of one year, 28 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 Fund 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.

Normal Cost:	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment with respect to an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee 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 determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the actuarial assumptions are realized.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Actuarial 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.
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, 2014 through June 30, 2017 Actuarial Experience Study dated May 24, 2018. Unless otherwise noted, all actuarial assumptions and methods shown below apply to members for all tiers. These assumptions were adopted by the Board.
Economic Assumptions	
Net Investment Return:	7.25%; net of investment and administrative expenses. Based on the Actuarial Experience Study reference above, expected investment expenses represent about 0.2% of the Actuarial Value of Assets.
Member Contribution Crediting Rate:	2.75% (Actual rate is based on projected long term ten-year Treasury rate).
Consumer Price Index:	Increase of 2.75% per year. Retiree COLA increases due to CPI are subject to a 3.00% maximum change per year for both PEPRA and Non-PEPRA General Tier 1 and both PEPRA and Non-PEPRA Safety. For both PEPRA and non-PEPRA General Tier 2, members represented by SEIU receive a fixed 2% cost-of-living adjustment, not subject to changes in the CPI, that applies to future service after March 2003.
Payroll Growth:	Inflation of 2.75% per year plus “across the board” real salary increases of 0.50% per year, used to amortize the UAAL as a level percentage of payroll.
Increase in Internal Revenue Code Section 401(a)(17) Compensation Limit:	Increase of 2.75% per year from the valuation date.
Increase in Section 7522.10 Compensation Limit:	Increase of 2.75% per year from the valuation date.

Salary Increases:

The annual rate of compensation increase includes: inflation at 2.75%, plus "across the board" salary increases of 0.50% per year, plus the following merit and promotion increases:

Years of Service	Rate (%) General	Rate (%) Safety
Less than 1	7.00	8.50
1 – 2	5.25	6.50
2 – 3	4.00	5.00
3 – 4	3.50	4.25
4 – 5	2.75	3.75
5 – 6	2.25	3.50
6 – 7	2.00	2.50
7 – 8	1.75	1.50
8 – 9	1.50	1.25
9 – 10	1.25	1.00
10 – 11	1.00	0.95
11 – 12	0.95	0.90
12 – 13	0.90	0.85
13 – 14	0.85	0.80
14 – 15	0.80	0.70
15 – 16	0.75	0.70
16 – 17	0.70	0.70
17 – 18	0.65	0.70
18 – 19	0.60	0.70
19 – 20	0.55	0.70
20 & Over	0.50	0.70

Demographic Assumptions:

Post-Retirement Mortality Rates:

Healthy

- **General Members and All Beneficiaries:** Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females) times 90% for males and 100% for females, projected generationally with the two-dimensional mortality improvement scale MP-2017.
- **Safety Members:** Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females) times 75% for males and 85% for females, projected generationally with the two-dimensional mortality improvement scale MP-2017.

Disabled

- **General Members:** Headcount-Weighted RP-2014 Disabled Retiree Mortality Table (separate tables for males and females) times 85% for males and 100% for females, projected generationally with the two-dimensional mortality improvement scale MP-2017.
- **Safety Members:** Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females) times 100% for males and 115% for females, projected generationally with the two-dimensional mortality improvement scale MP-2017.

The RP-2014 mortality tables and adjustments as shown above reflect the mortality experience as of the measurement date. The generational projection is a provision for future mortality improvement.

Pre-Retirement Mortality Rates:

General and Safety Members: Headcount-Weighted RP-2014 Employee Mortality Table times 80%, projected generationally with the two-dimensional MP-2017 projection scale.

	Rate (%)			
	General[1]		Safety[1]	
Age	**Male**	**Female**	**Male**	**Female**
25	0.05	0.02	0.05	0.02
30	0.05	0.02	0.05	0.02
35	0.05	0.03	0.05	0.03
40	0.06	0.04	0.06	0.04
45	0.10	0.07	0.10	0.07
50	0.17	0.11	0.17	0.11
55	0.27	0.17	0.27	0.17
60	0.45	0.24	0.45	0.24
65	0.78	0.36	0.78	0.36
70	1.27	0.59	1.27	0.59

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

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

Mortality Rates for Member Contributions:

General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females) times 90% for males and 100% for females, projected 20 years with the two-dimensional mortality improvement scale MP-2017, weighted one-third male and two-thirds female.

Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females) times 75% for males and 85% for females, projected 20 years with the two-dimensional mortality improvement scale MP-2017, weighted 80% male and 20% female.

Disability Incidence:

	Rate (%)	
Age	**General**	**Safety**
20	0.01	0.05
25	0.02	0.11
30	0.03	0.24
35	0.06	0.36
40	0.11	0.52
45	0.17	0.84
50	0.23	1.30
55	0.31	2.76
60	0.41	5.64
65	0.54	2.80
70	0.69	0.00

25% of General disabilities are assumed to be service connected (duty) disabilities and the other 75% are assumed to be non-service connected (ordinary) disabilities.

90% of Safety disabilities are assumed to be service connected (duty) disabilities and the other 10% are assumed to be non-service connected (ordinary) disabilities.

Termination:

	Rate (%)	
Years of Service	**General**	**Safety**
Less than 1	14.00	11.00
1 – 2	10.00	6.00
2 – 3	8.25	5.75
3 – 4	7.25	4.50
4 – 5	6.00	4.25
5 – 6	5.00	3.00
6 – 7	4.00	2.50
7 – 8	3.50	2.25
8 – 9	3.50	1.80
9 – 10	3.25	1.60
10 – 11	3.25	1.40
11 – 12	3.00	1.20
12 – 13	3.00	1.00
13 – 14	2.75	0.95
14 – 15	2.75	0.90
15 – 16	2.50	0.85
16 – 17	2.50	0.80
17 – 18	2.25	0.75
18 – 19	2.00	0.70
19 – 20	2.00	0.65
20 & Over	2.00	0.60

The member is assumed to receive the greater of the member's contribution balance or a deferred retirement benefit.

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

Retirement Rates:

	General Tier 1 and 2		Safety Non-PEPRA			
Age	**Less than 30 Years of Service**	**30 or More Years of Service**	**Less than 30 Years of Service**	**30 or More Years of Service**	**General PEPRA Tier 1 and 2**	**Safety PEPRA**
Under 50	0.00	50.00	1.00	1.00	0.00	0.00
50	2.00	2.00	2.00	2.00	0.00	4.00
51	2.00	2.00	2.25	2.25	0.00	2.25
52	2.50	2.50	2.50	2.50	1.50	3.50
53	3.00	3.00	3.50	3.50	1.50	5.50
54	3.25	3.25	13.00	13.00	2.00	13.00
55	4.75	4.75	20.00	30.00	4.00	20.00
56	5.00	5.00	20.00	30.00	4.50	20.00
57	5.50	5.50	18.00	27.00	5.00	18.00
58	7.00	7.00	22.00	33.00	5.50	18.00
59	7.50	7.50	22.00	33.00	6.00	25.00
60	10.50	15.75	25.00	37.50	9.00	25.00
61	14.00	21.00	28.00	42.00	11.00	25.00
62	25.00	37.50	35.00	45.00	22.50	40.00
63	20.00	30.00	35.00	45.00	20.00	40.00
64	20.00	30.00	35.00	45.00	18.00	40.00
65	28.00	42.00	100.00	100.00	20.00	100.00
66	35.00	52.50	100.00	100.00	30.00	100.00
67	30.00	45.00	100.00	100.00	30.00	100.00
68	30.00	45.00	100.00	100.00	25.00	100.00
69	22.50	22.50	100.00	100.00	35.00	100.00
70	22.50	22.50	100.00	100.00	50.00	100.00
71	20.00	20.00	100.00	100.00	50.00	100.00
72	20.00	20.00	100.00	100.00	50.00	100.00
73	20.00	20.00	100.00	100.00	50.00	100.00
74	20.00	20.00	100.00	100.00	50.00	100.00
75	100.00	100.00	100.00	100.00	100.00	100.00

Retirement Age and Benefit for Deferred Vested Members:

General 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 General and Safety if they decide to leave their contributions on deposit.

45% of future General and 60% of future Safety deferred vested members are assumed to continue to work for a reciprocal employer. For reciprocals, 3.75% and 3.95% compensation increases are assumed per annum for General and Safety, respectively.

Section 4: Actuarial Valuation Basis

Future Benefit Accruals:	1.0 year of service per year of employment.
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Definition of Active Members:	All active members of VCERA 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, 70% 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.
In-Service Redemptions:	The following assumptions for in-service redemptions pay as a percentage of final average compensation are used: General Tier 1: 7.50% General Tier 2: 3.50% Safety: 7.00% General PEPRA: 0.00% Safety PEPRA: 0.00% For determining the cost of the basic benefit (i.e., non-COLA component), the cost of this pay element is currently recognized in the valuation as an employer only cost and does not affect member contribution rates.
Average Entry Age for Member Contribution Rates:	For non-PEPRA members hired after November 1974 who are not contributing fifty percent of Normal Cost, they will pay a contribution corresponding to a General and Safety member hired at entry age 35 and 27, respectively.
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, as if the current benefit formula for each individual has always been in effect (i.e., "replacement life within a tier").
Actuarial Value of Assets:	Market Value of Assets (MVA) less unrecognized returns in each of the last ten semi-annual accounting periods. Unrecognized returns are equal to the difference between the actual market return and the expected return on the market value, and are recognized annually over a five-year period.
Valuation Value of Assets:	Actuarial Value of Assets, reduced by the value of the non-vested supplemental benefit reserve and statutory contingency reserve.

Amortization Policy:	The UAAL as of June 30, 2011 shall continue to be amortized over separate 15-year period amortization layers based on the valuations during which each separate layer was previously established. 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 15 years. Any new UAAL as a result of change in actuarial assumptions or methods will be amortized over a period of 20 years. Unless an alternative amortization period is recommended by the Actuary and accepted by the Board based on the results of an actuarial analysis: • With the exception noted below, the increase in UAAL as a result of any plan amendments will be amortized over a period of 15 years; • The increase in UAAL resulting from a temporary retirement incentive, including the impact of benefits resulting from additional service permitted in Section 31641.04 of the 1937 CERL (Golden Handshake), will be funded over a period of up to 5 years. The UAAL will be amortized over "closed" amortization periods so that the amortization period for each layer decreases by one year with each actuarial valuation. The UAAL will be amortized as a level percentage of payroll so that the amortization amount in each year during the amortization period shall be expected to be a level percentage of covered payroll, taking into consideration the current assumption for general payroll increase (i.e., wage inflation). If an overfunding or "surplus" exists (i.e., the VVA exceeds the AAL, so that the total of all UAAL amortization layers becomes negative), any prior UAAL amortization layers will be considered fully amortized, and any subsequent UAAL will be amortized as the first of a new series of amortization layers, using the above amortization periods. If the surplus exceeds 20% of the AAL per Section 7522.52 of the Government Code, then the amount of surplus in excess of 20% of the AAL (and any subsequent surpluses in excess of that amount) will be amortized over an "open" amortization period of 30 years, but only if the other conditions of Section 7522.52 have also been met. If those conditions are not met, then the surplus will not be amortized and the full Normal Cost will be contributed. These amortization policy components will apply separately to each of VCERA's UAAL cost groups. Basic UAAL contribution rates have been calculated on a combined basis for all General Tiers. COLA UAAL contribution rates have been calculated on a combined basis for all General Tiers that have a COLA. In April 2020, the Board directed Segal to adjust the remaining amortization periods for certain amortization layers in order to minimize the contribution rate tail volatility associated with the UAAL layers that were first established in 2006, 2007 and 2008, and in 2014 and 2015. Effective with the 2020 actuarial valuation the remaining amortization periods for the 2006, 2007, and 2008 UAAL amortization layers were set to 4 years and those for the 2014 and 2015 UAAL actuarial gain/loss amortization layers were set to 12 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 Association) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the annual rate of 3.25% (i.e., 2.75% inflation plus 0.50% "across the board" salary increase). The amortization policy is described on the previous page. The recommended employer contributions shown in *Section 2, Subsection F* are calculated based on a 50/50 sharing of Normal Cost for non-PEPRA Tiers. For purposes of these calculations, we have been previously directed by VCERA to assume that the cessation of member contributions after 30 years of service for non-PEPRA members continues per the County Employees Retirement Law (CERL) and that the cost associated with this provision is to be paid for by employers. The employer contributions shown in *Section 4, Exhibit IV* are calculated under the prior method (i.e., without 50/50 sharing of Normal Cost for non-PEPRA tiers).

Section 4: Actuarial Valuation Basis

Member Contributions:	The member contribution rates for all members are provided in *Section 4, Exhibit III*, which are calculated based on a 50/50 sharing of Normal Cost. Member contributions accumulate with interest at the lesser of the assumed investment earning rate or the rate on ten year U.S. Treasury notes. Any difference between the assumed investment earning rate and the actual interest crediting rate will be credited to the County Advance reserve. Please note that in calculating the basic member rate, we follow the Board's past practice and have not included any in-service pay redemptions that may potentially increase a member's final average compensation and hence retirement benefit. The member rates provided in the report are the full rate before reflecting any employer pickup. General Tier 2 members eligible for the fixed 2% cost-of-living benefit contribute a negotiated 2.63% of compensation per year towards the cost of that benefit that is reflected in this report. **Non-PEPRA Members (Prior Methodology)** The member contributions shown in *Section 4, Exhibit V* are calculated under the prior method (i.e., <u>without</u> 50/50 sharing of Normal Cost for non-PEPRA tiers). The basic member contribution rate is determined so that the accumulation of a member's basic contributions made in a given year until a certain age will be sufficient to fund an annuity at that age that is equal to 1/120 of Final Average Compensation for General members and 1/100 of Final Average Compensation for Safety members. That age is 55 for General Tier 1 members, 60 for General Tier 2 members and 50 for Safety members. It is assumed that contributions are made annually at the same rate, starting at entry age. In addition to their basic contributions, General Tier 1 and Safety members pay one-half of the total Normal Cost necessary to fund their cost-of-living benefits. **PEPRA Members** Pursuant to Section 7522.30(a) of the Government Code, members under PEPRA tiers are required to contribute at least 50% of the Normal Cost. 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 the requirements of Section 7522.30(e). The only exception to this is that we have also shown the PEPRA Tier 2 with COLA contribution rates including the member COLA contribution rate of 2.63% of compensation based on current bargaining agreements. Also of note is that based on our discussions with VCERA, we have used the discretion made available by AB1380 to not round the PEPRA member's contribution rates to the nearest one quarter of one percent as was previously required by PEPRA.
Tier 2 COLA Procedures	This benefit has been valued consistent with the methodologies described in our October 9, 2006 report entitled "Funding Policies and Procedures for General Tier 2 COLA Benefit".

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-PEPRA 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 actuarial gains as they occur.
Changed Actuarial Assumptions:	There have been no changes in actuarial assumptions since the last valuation.

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:	All regular employees of the County of Ventura or contracting district, scheduled to work 64 or more hours biweekly, are eligible to become a member of the plan subject to classification below:
General Tier 1	All General members with membership dates before June 30, 1979, plus Deputy Sheriff trainees and certain executive management with membership dates before January 1, 2013.
General Tier 2	All General members with membership dates on or after June 30, 1979 and before January 1, 2013, except as noted above for General Tier 1.
General PEPRA Tier 1	Deputy Sheriff trainees with membership dates on or after January 1, 2013 and before April 17, 2014.
General PEPRA Tier 2	All General members with membership dates on or after January 1, 2013, except as noted above for General PEPRA Tier 1.
Safety	All Safety members with membership dates before January 1, 2013.
Safety PEPRA	All Safety members with membership dates on or after January 1, 2013.
Final Compensation for Benefit Determination:	
General Tier 1 and Safety	Highest consecutive twelve months of compensation earnable (§31462.1) (FAS1).
General Tier 2	Highest consecutive thirty-six months of compensation earnable (§31462) (FAS3).
General PEPRA Tier 1, General PEPRA Tier 2 and Safety PEPRA	Highest consecutive thirty-six months of pensionable compensation (§7522.10(c), §7522.32 and §7522.34) (FAS3).
Compensation Limit:	
General Tier 1, General Tier 2 and Safety	For members with membership dates on or after July 1, 1996, Compensation Earnable is limited to Internal Revenue Code Section 401(a)(17). The limit as of July 1, 2020 is $285,000. The limit is indexed for inflation on an annual basis.
General PEPRA Tier 1, General PEPRA Tier 2 and Safety PEPRA	Pensionable Compensation is limited to $126,291 for 2020 ($151,549, if not enrolled in Social Security). The limit is indexed for inflation on an annual basis.
Service:	Years of service. (Yrs).

Service Retirement Eligibility:	
General	Age 50 with 10 years of service, or age 70 regardless of service, or after 30 years regardless of age (§31672).
Safety	Age 50 with 10 years of service, or age 70 regardless of service, or after 20 years regardless of age (§31663.25).
General PEPRA	Age 52 with 5 years of service (§7522.20(a)) or age 70 regardless of service (§31672.3).
Safety PEPRA	Age 50 with 5 years of service (§7522.25(d)) or age 70 regardless of service (§31672.3).

Benefit Formula:

	Retirement Age	Benefit Formula
General Tier 1 (§31676.11)	**Retirement Age**	**Benefit Formula**
	50	1.24% x (FAS1 – $1,400) x Yrs
	55	1.67% x (FAS1 – $1,400) x Yrs
	60	2.18% x (FAS1 – $1,400) x Yrs
	62	2.35% x (FAS1 – $1,400) x Yrs
	65 and over	2.61% x (FAS1 – $1,400) x Yrs
General Tier 2 (§31676.1)	**Retirement Age**	**Benefit Formula**
	50	1.18% x (FAS3 – $1,400) x Yrs
	55	1.49% x (FAS3 – $1,400) x Yrs
	60	1.92% x (FAS3 – $1,400) x Yrs
	62	2.09% x (FAS3 – $1,400) x Yrs
	65 and over	2.43% x (FAS3 – $1,400) x Yrs
General PEPRA Tier 1 and General PEPRA Tier 2 (§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 and over	2.50% x FAS3 x Yrs

Benefit Formula (continued)

	Retirement Age	Benefit Formula
Safety (§31664)	**Retirement Age**	**Benefit Formula**
	50	2.00% x FAS1 x Yrs
	55 and over	2.62% x FAS1 x Yrs
Safety PEPRA (§7522.25(d))	**Retirement Age**	**Benefit Formula**
	50	2.00% x FAS3 x Yrs
	55	2.50% x FAS3 x Yrs
	57 and over	2.70% x FAS3 x Yrs

Maximum Benefit:	
General Tier 1, General Tier 2 and Safety	100% of Highest Average Compensation (§31676.1, §31664.11, §31664).
General PEPRA Tier 1, General PEPRA Tier 2 and Safety PEPRA	There is no final compensation limit on the maximum retirement benefit.
Ordinary Disability:	
General	
Eligibility	Five years of service (§31720).
Benefit	1.5% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 65, but the total benefit cannot be more than one-third of Final Compensation (§31727). For all members, 100% of the Service Retirement benefit will be paid, if greater.
Safety	
Eligibility	Five years of service (§31720).
Benefit	1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 55, but the total benefit cannot be more than one-third of Final Compensation (§31727.2). For all members, 100% of the Service Retirement benefit will be paid, if greater.
Line-of-Duty Disability:	
Eligibility	No age or service requirements (§31720).
Benefit	50% of the Final Compensation or 100% of Service Retirement benefit, if greater (§31727.4).

Pre-Retirement Death:	
All Members	
Eligibility	None.
Basic lump sum benefit	Refund of member contributions with interest, plus one month's compensation for each year of service, to a maximum of six months' compensation (§31781).
Line-of-Duty Death	50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor children (§31787). An additional lump sum payment of one-year of compensation is paid if Line-of-Duty death for Safety member (§31787.6).
Vested Members	
Eligibility	Five years of service.
Basic benefit	60% of the greater of Service Retirement or Ordinary Disability Retirement benefit payable to surviving eligible spouse or eligible children (§31765.1, §31781.1), in lieu of the basic lump sum benefit above (§31781). An additional lump sum payment of one-year of compensation is paid if Line-of-Duty death for Safety member (§31787.6).
Death After Retirement:	
All Members	
Service Retirement or Ordinary Disability Retirement	Unless another option was selected at retirement, 60% of member's unmodified allowance continued to eligible spouse (§31760.1). An eligible spouse is a surviving spouse who was married to the member one year prior to the effective retirement date or at least two years prior to the date of death and has attained age 55 on or prior to the date of death (§31760.2, §31785.1).
Line-of-Duty Disability	Unless another option was selected at retirement, 100% of member's unmodified allowance continued to eligible spouse (§31786). An eligible spouse is a surviving spouse who was married to the member one year prior to the effective retirement date or at least two years prior to the date of death and has attained age 55 on or prior to the date of death (§31786.1).
Additional Death Benefit	A lump sum benefit of $5,000 lump sum benefit payable to member's beneficiary (§31789.3).
Withdrawal Benefits:	
Less than Five Years of Service	Refund of accumulated member contributions with interest (§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, a member is entitled to earned benefits commencing at any time after eligible to retire (§31700). Service for eligibility includes service credited as an employee of a reciprocal system.

Post-retirement Cost-of-Living Benefits:	
General Tier 1, Safety, General PEPRA Tier 1 and Safety PEPRA	Future changes based on changes to the Consumer Price Index to a maximum of 3% per year, excess "banked" (§31870.1).
General Tier 2 and General PEPRA Tier 2	Members represented by SEIU receive a fixed 2% cost-of-living adjustment, not subject to changes in the CPI, that applies to future service after March, 2003. This benefit has been valued consistent with the methodologies described in our October 9, 2006 report entitled "Funding Policies and Procedures for General Tier II COLA Benefit".
Supplemental Benefit:	A supplemental benefit in the amount of $108.44 per month is paid to retirees and their survivors.
Member Contributions:	Please refer to Section 4, Exhibit III for the specific rates.
General Tier 1, Safety and Safety PEPRA	Provide for 50% of total Normal Cost.
General Tier 2 and General PEPRA Tier 2	Provide for 50% of total basic Normal Cost. In addition, for General Tier 2 with COLA members, the current member COLA contribution rate of 2.63% of compensation has been reflected.
Other Information:	For Non-PEPRA members hired after November 1974, they will pay a contribution corresponding to a General and Safety member hired at entry age 35 and 27, respectively. Safety Non-PEPRA members with 30 or more years of service are exempt from paying member contributions. The same applies for Non-General PEPRA members hired on or before March 7, 1973.
Plan Provisions Not Valued:	The Board of Retirement has approved a non-vested supplemental benefit. This benefit is funded from Undistributed Excess Earnings, paid from a reserve that is not included in the Valuation Value of Assets and is subject at all times to the availability of funds. The non-vested supplemental benefit of $27.50 per month paid to retirees and their survivors terminated upon issuance of the June 2019 payment. This was due to the depletion of the funds in this reserve.
Changed 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 Association should find the plan summary not in accordance with the actual provisions, the Association should alert the actuary so they can both be sure the proper provisions are valued.

Exhibit III: Member Contribution Rates

50/50 Sharing of Normal Cost for Non-PEPRA Tiers

	Basic		COLA		Total	
	First $350	**Over $350**	**First $350**	**Over $350**	**First $350**	**Over $350**
General Tier 1	5.44%	8.16%	1.73%	2.60%	7.17%	10.76%
General Tier 2	4.93%	7.40%	0.00%	0.00%	4.93%	7.40%
General Tier 2 w/ COLA[1]	4.93%	7.40%	2.63%	2.63%	7.56%	10.03%
Safety	10.93%	10.93%	4.29%	4.29%	15.22%	15.22%

[1] General Tier 2 members with COLA are required to pay COLA contributions of 2.63% of compensation based on current bargaining agreements.

Exhibit III: Member Contribution Rates (continued)

Member Contribution Rates for PEPRA Members

	Basic	COLA	Total
General Tier 2	7.48%	0.00%	7.48%
General Tier 2 w/ COLA[1]	7.48%	2.63%	10.11%
Safety	10.45%	4.12%	14.57%

[1] General Tier 2 members with COLA are required to pay COLA contributions of 2.63% of compensation based on current bargaining agreements.

Exhibit IV: Employer Contribution Rates Without 50/50 Sharing of Normal Cost for Non-PEPRA Tiers

	June 30, 2020 Actuarial Valuation Recommended Rates for FY 2021-22				June 30, 2019 Actuarial Valuation Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)	Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)
General Tier 1 Members								
Normal Cost	8.89%	2.66%	11.55%	$474	8.56%	2.54%	11.10%	$507
UAAL[2]	7.01%	5.71%	12.72%	522	7.45%	6.21%	13.66%	624
Total Contributions	**15.90%**	**8.37%**	**24.27%**	**$996**	**16.01%**	**8.75%**	**24.76%**	**$1,131**
General Tier 2 Members								
Normal Cost	8.52%	0.00%	8.52%	$17,612	8.67%	0.00%	8.67%	$18,635
UAAL[2]	7.01%	0.00%	7.01%	14,493	7.45%	0.00%	7.45%	16,008
Total Contributions	**15.53%**	**0.00%**	**15.53%**	**$32,105**	**16.12%**	**0.00%**	**16.12%**	**$34,643**
General PEPRA Tier 2 Members								
Normal Cost	7.48%	0.00%	7.48%	$6,145	7.49%	0.00%	7.49%	$5,319
UAAL[2]	7.01%	0.00%	7.01%	5,759	7.45%	0.00%	7.45%	5,291
Total Contributions	**14.49%**	**0.00%**	**14.49%**	**$11,904**	**14.94%**	**0.00%**	**14.94%**	**$10,610**
General Tier 2 Members w/ COLA								
Normal Cost[3]	8.52%	0.41%	8.93%	$18,037	8.67%	0.42%	9.09%	$18,479
UAAL[2, 4]	7.01%	5.71%	12.72%	25,699	7.45%	6.21%	13.66%	27,769
Total Contributions	**15.53%**	**6.12%**	**21.65%**	**$43,736**	**16.12%**	**6.63%**	**22.75%**	**$46,248**
General PEPRA Tier 2 Members w/ COLA								
Normal Cost[3]	7.48%	0.50%	7.98%	$9,555	7.49%	0.48%	7.97%	$8,436
UAAL[2, 4]	7.01%	5.71%	12.72%	15,237	7.45%	6.21%	13.66%	14,458
Total Contributions	**14.49%**	**6.21%**	**20.70%**	**$24,792**	**14.94%**	**6.69%**	**21.63%**	**$22,894**
All General Members[5]								
Normal Cost	8.18%	0.25%	8.43%	$51,823	8.32%	0.25%	8.57%	$51,376
UAAL	7.01%	3.03%	10.04%	61,710	7.45%	3.25%	10.70%	64,150
Total Contributions	**15.19%**	**3.28%**	**18.47%**	**$113,533**	**15.77%**	**3.50%**	**19.27%**	**$115,526**

Note: Applicable footnotes are shown on next page.

Exhibit IV: Employer Contribution Rates Without 50/50 Sharing of Normal Cost for Non-PEPRA Tiers (continued)

	June 30, 2020 Actuarial Valuation Recommended Rates for FY 2021-22				June 30, 2019 Actuarial Valuation Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)	Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)
Safety Members								
Normal Cost	13.98%	4.26%	18.24%	$27,079	14.00%	4.23%	18.23%	$27,706
UAAL	44.86%	(24.26%)	20.60%	30,583	46.49%	(23.60%)	22.89%	34,788
Total Contributions	**58.84%**	**(20.00%)**	**38.84%**	**$57,662**	**60.49%**	**(19.37%)**	**41.12%**	**$62,494**
Safety PEPRA Members								
Normal Cost	10.45%	4.12%	14.57%	$5,862	10.34%	4.09%	14.43%	$4,874
UAAL	44.86%	(24.26%)	20.60%	8,288	46.49%	(23.60%)	22.89%	7,731
Total Contributions	**55.31%**	**(20.14%)**	**35.17%**	**$14,150**	**56.83%**	**(19.51%)**	**37.32%**	**$12,605**
All Safety Members[5]								
Normal Cost	13.23%	4.23%	17.46%	$32,941	13.33%	4.21%	17.54%	$32,580
UAAL	44.86%	-24.26%	20.60%	38,871	46.49%	(23.60%)	22.89%	42,519
Total Contributions	**58.09%**	**(20.03%)**	**38.06%**	**$71,812**	**59.82%**	**(19.39%)**	**40.43%**	**$75,099**
All Categories Combined[5]								
Normal Cost	9.37%	1.18%	10.55%	$84,764	9.51%	1.18%	10.69%	$83,956
UAAL	15.90%	(3.38%)	12.52%	100,581	16.68%	(3.10%)	13.58%	106,669
Total Contributions	**25.27%**	**(2.20%)**	**23.07%**	**$185,345**	**26.19%**	**(1.92%)**	**24.27%**	**$190,625**

1 Based on projected compensation for each year shown on page 35.
2 Basic UAAL rates have been calculated on a combined basis for all General Tiers. COLA UAAL rates have been calculated on a combined basis for all General Tiers that have a COLA (excludes General Tier 2 without COLA and General PEPRA Tier 2 without COLA).
3 Reflects General Tier 2 member COLA contribution rate of 2.63% based on current bargaining agreements.
4 Includes 0.31% and 0.71% in COLA UAAL costs for June 30, 2020 and June 30, 2019, respectively, attributed to the first two years of service accrued for the fixed 2% COLA pursuant to Government Code 31627.
5 These aggregated rates are provided for informational purposes only as we understand that the tier specific rates will be implemented.

Exhibit V: Member Contribution Rates Without 50/50 Sharing of Normal Cost for Non-PEPRA Tiers

General Tier 1

	Basic		COLA		Total	
Entry Age	**First $350**	**Over $350**	**First $350**	**Over $350**	**First $350**	**Over $350**
16	3.37%	5.06%	1.15%	1.73%	4.52%	6.79%
17	3.44%	5.16%	1.17%	1.76%	4.61%	6.92%
18	3.51%	5.27%	1.20%	1.80%	4.71%	7.07%
19	3.59%	5.38%	1.22%	1.84%	4.81%	7.22%
20	3.66%	5.49%	1.25%	1.88%	4.91%	7.37%
21	3.74%	5.61%	1.28%	1.92%	5.02%	7.53%
22	3.81%	5.72%	1.31%	1.96%	5.12%	7.68%
23	3.89%	5.84%	1.34%	2.00%	5.23%	7.84%
24	3.97%	5.96%	1.36%	2.04%	5.33%	8.00%
25	4.06%	6.08%	1.38%	2.08%	5.44%	8.16%
26	4.14%	6.21%	1.41%	2.12%	5.55%	8.33%
27	4.22%	6.34%	1.45%	2.17%	5.67%	8.51%
28	4.31%	6.47%	1.48%	2.21%	5.79%	8.68%
29	4.40%	6.60%	1.51%	2.26%	5.91%	8.86%
30	4.49%	6.74%	1.54%	2.30%	6.03%	9.04%
31	4.59%	6.88%	1.56%	2.35%	6.15%	9.23%
32	4.68%	7.02%	1.60%	2.40%	6.28%	9.42%
33	4.78%	7.17%	1.63%	2.45%	6.41%	9.62%
34	4.88%	7.32%	1.67%	2.50%	6.55%	9.82%
35	4.98%	7.47%	1.70%	2.55%	6.68%	10.02%
36	5.08%	7.63%	1.74%	2.61%	6.82%	10.24%
37	5.19%	7.78%	1.77%	2.66%	6.96%	10.44%
38	5.29%	7.94%	1.81%	2.71%	7.10%	10.65%

Exhibit V: Member Contribution Rates Without 50/50 Sharing of Normal Cost for Non-PEPRA Tiers (continued)

General Tier 1 (continued)

	Basic		COLA		Total	
Entry Age	**First $350**	**Over $350**	**First $350**	**Over $350**	**First $350**	**Over $350**
39	5.40%	8.09%	1.84%	2.77%	7.24%	10.86%
40	5.50%	8.25%	1.88%	2.82%	7.38%	11.07%
41	5.61%	8.41%	1.91%	2.87%	7.52%	11.28%
42	5.72%	8.58%	1.95%	2.93%	7.67%	11.51%
43	5.83%	8.74%	1.99%	2.99%	7.82%	11.73%
44	5.94%	8.92%	2.04%	3.05%	7.98%	11.97%
45	6.05%	9.08%	2.07%	3.10%	8.12%	12.18%
46	6.16%	9.23%	2.10%	3.15%	8.26%	12.38%
47	6.25%	9.38%	2.13%	3.20%	8.38%	12.58%
48	6.34%	9.51%	2.17%	3.25%	8.51%	12.76%
49	6.43%	9.64%	2.19%	3.29%	8.62%	12.93%
50	6.50%	9.75%	2.22%	3.33%	8.72%	13.08%
51	6.54%	9.81%	2.23%	3.35%	8.77%	13.16%
52	6.57%	9.85%	2.24%	3.36%	8.81%	13.21%
53	6.54%	9.82%	2.24%	3.35%	8.78%	13.17%
54 & Over	6.46%	9.68%	2.20%	3.31%	8.66%	12.99%

Interest:	7.25% per annum
COLA:	2.75%
Mortality:	See *Section 4, Exhibit I*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
COLA Loading Factor:	34.17%

Note: All members hired after November 1974, will pay a contribution corresponding to entry age 35. These rates are determined before any pickups by the employer.

Exhibit V: Member Contribution Rates Without 50/50 Sharing of Normal Cost for Non-PEPRA Tiers (continued)

General Tier 2

	Basic		COLA		Total	
Entry Age	First $350	Over $350	First $350	Over $350	First $350	Over $350
16	2.78%	4.17%	0.00%	0.00%	2.78%	4.17%
17	2.84%	4.26%	0.00%	0.00%	2.84%	4.26%
18	2.90%	4.35%	0.00%	0.00%	2.90%	4.35%
19	2.96%	4.44%	0.00%	0.00%	2.96%	4.44%
20	3.02%	4.53%	0.00%	0.00%	3.02%	4.53%
21	3.08%	4.63%	0.00%	0.00%	3.08%	4.63%
22	3.15%	4.72%	0.00%	0.00%	3.15%	4.72%
23	3.21%	4.82%	0.00%	0.00%	3.21%	4.82%
24	3.28%	4.92%	0.00%	0.00%	3.28%	4.92%
25	3.35%	5.02%	0.00%	0.00%	3.35%	5.02%
26	3.42%	5.13%	0.00%	0.00%	3.42%	5.13%
27	3.49%	5.23%	0.00%	0.00%	3.49%	5.23%
28	3.56%	5.34%	0.00%	0.00%	3.56%	5.34%
29	3.64%	5.45%	0.00%	0.00%	3.64%	5.45%
30	3.71%	5.57%	0.00%	0.00%	3.71%	5.57%
31	3.79%	5.68%	0.00%	0.00%	3.79%	5.68%
32	3.87%	5.80%	0.00%	0.00%	3.87%	5.80%
33	3.95%	5.92%	0.00%	0.00%	3.95%	5.92%
34	4.03%	6.04%	0.00%	0.00%	4.03%	6.04%
35	4.11%	6.17%	0.00%	0.00%	4.11%	6.17%
36	4.20%	6.29%	0.00%	0.00%	4.20%	6.29%
37	4.28%	6.42%	0.00%	0.00%	4.28%	6.42%
38	4.37%	6.56%	0.00%	0.00%	4.37%	6.56%
39	4.46%	6.69%	0.00%	0.00%	4.46%	6.69%
40	4.55%	6.83%	0.00%	0.00%	4.55%	6.83%

Exhibit V: Member Contribution Rates Without 50/50 Sharing of Normal Cost for Non-PEPRA Tiers (continued)

General Tier 2 (continued)

	Basic		COLA		Total	
Entry Age	**First $350**	**Over $350**	**First $350**	**Over $350**	**First $350**	**Over $350**
41	4.64%	6.97%	0.00%	0.00%	4.64%	6.97%
42	4.74%	7.10%	0.00%	0.00%	4.74%	7.10%
43	4.83%	7.24%	0.00%	0.00%	4.83%	7.24%
44	4.92%	7.38%	0.00%	0.00%	4.92%	7.38%
45	5.02%	7.52%	0.00%	0.00%	5.02%	7.52%
46	5.11%	7.67%	0.00%	0.00%	5.11%	7.67%
47	5.21%	7.81%	0.00%	0.00%	5.21%	7.81%
48	5.30%	7.96%	0.00%	0.00%	5.30%	7.96%
49	5.40%	8.09%	0.00%	0.00%	5.40%	8.09%
50	5.48%	8.22%	0.00%	0.00%	5.48%	8.22%
51	5.56%	8.34%	0.00%	0.00%	5.56%	8.34%
52	5.64%	8.45%	0.00%	0.00%	5.64%	8.45%
53	5.70%	8.55%	0.00%	0.00%	5.70%	8.55%
54	5.75%	8.62%	0.00%	0.00%	5.75%	8.62%
55	5.77%	8.66%	0.00%	0.00%	5.77%	8.66%
56	5.77%	8.66%	0.00%	0.00%	5.77%	8.66%
57	5.73%	8.59%	0.00%	0.00%	5.73%	8.59%
58	5.92%	8.88%	0.00%	0.00%	5.92%	8.88%
59 & Over	6.12%	9.19%	0.00%	0.00%	6.12%	9.19%

Interest: 7.25% per annum
COLA: Members represented by SEIU contribute a negotiated 2.63% for a fixed 2% COLA pursuant to Government Code 31627.
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)

Note: All members hired after November 1974, will pay a contribution corresponding to entry age 35. These rates are determined before any pickups by the employer.

Exhibit V: Member Contribution Rates Without 50/50 Sharing of Normal Cost for Non-PEPRA Tiers (continued)

Safety			
Entry Age	Basic	COLA	Total
16	7.24%	3.96%	11.20%
17	7.38%	4.04%	11.42%
18	7.53%	4.12%	11.65%
19	7.67%	4.20%	11.87%
20	7.82%	4.28%	12.10%
21	7.97%	4.36%	12.33%
22	8.12%	4.44%	12.56%
23	8.28%	4.53%	12.81%
24	8.44%	4.62%	13.06%
25	8.60%	4.70%	13.30%
26	8.76%	4.79%	13.55%
27	8.93%	4.89%	13.82%
28	9.11%	4.98%	14.09%
29	9.29%	5.08%	14.37%
30	9.47%	5.18%	14.65%
31	9.66%	5.28%	14.94%
32	9.85%	5.39%	15.24%
33	10.05%	5.50%	15.55%
34	10.26%	5.61%	15.87%
35	10.48%	5.73%	16.21%

Exhibit V: Member Contribution Rates Without 50/50 Sharing of Normal Cost for Non-PEPRA Tiers (continued)

Safety (continued)

Entry Age	Basic	COLA	Total
37	10.91%	5.97%	16.88%
38	11.14%	6.10%	17.24%
39	11.38%	6.23%	17.61%
40	11.64%	6.37%	18.01%
41	11.89%	6.50%	18.39%
42	12.14%	6.64%	18.78%
43	12.30%	6.73%	19.03%
44	12.39%	6.78%	19.17%
45	12.46%	6.82%	19.28%
46	12.51%	6.84%	19.35%
47	12.51%	6.85%	19.36%
48	12.41%	6.79%	19.20%
49 & Over	12.16%	6.65%	18.81%

Interest:	7.25% per annum
COLA:	2.75%
Mortality:	See *Section 4, Exhibit I*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
COLA Loading Factor:	54.71%

Note: All members hired after November 1974, will pay a contribution corresponding to entry age 27. These rates are determined before any pickups by the employer.

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