Los Angeles City Employees' Retirement System

Actuarial Valuation and Review of Retirement and Health Benefits as of June 30, 2019

Segal Consulting

Segal Consulting

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November 6, 2019

Board of Administration
Los Angeles City Employees' Retirement System
202 W. 1st Street, Suite 500
Los Angeles, CA 90012-4401

Re: June 30, 2019 Actuarial Valuations

Dear Board Members:

Enclosed please find the June 30, 2019 actuarial valuations for the retirement, health, and family death benefit plans.

As requested by the System, we have attached the following supplemental schedules:

- Exhibit A – Summary of significant results for the retirement and health plans.
- Exhibit B – History of computed contribution rates for the retirement and health plans.
- Exhibit C – Schedule of funded liabilities by type for the retirement plan.[1]
- Exhibit D – Schedule of retirees and beneficiaries added to and removed from the rolls for the retirement plan.[2]

We look forward to discussing the reports and the enclosed schedules with the Board.

Sincerely,

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

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

DNA/jl

5598717v3/05806.002

[1] For the health plan, a similar schedule is provided in Exhibit I of Section 3 of the health valuation report.

[2] For the health plan, a similar schedule is provided in Exhibit C of the health valuation report.

Exhibit A

Los Angeles City Employees' Retirement System
Summary of Significant Valuation Results

		June 30, 2019	June 30, 2018	Percent Change
I.	**Total Membership**			
	A. Active Members	26,632	26,042	2.3%
	B. Pensioners and Beneficiaries	20,034	19,379	3.4%
II.	**Valuation Salary**			
	A. Total Annual Projected Payroll	$2,225,412,831	$2,177,687,102	2.2%
	B. Average Projected Monthly Salary	6,963	6,969	-0.1%
III.	**Benefits to Current Retirees and Beneficiaries**[1]			
	A. Total Annual Benefits	$947,588,609	$880,071,707	7.7%
	B. Average Monthly Benefit Amount	3,942	3,784	4.2%
IV.	**Total System Assets**[2]			
	A. Actuarial Value	$17,711,461,636	$16,687,907,767	6.1%
	B. Market Value	17,707,909,933	16,989,616,344	4.2%
V.	**Unfunded Actuarial Accrued Liability (UAAL)**			
	A. Retirement Benefits	$5,974,856,716	$5,962,143,593	0.2%
	B. Health Subsidy Benefits	521,636,655	627,984,336	-16.9%

(1) *Includes July COLA.*

(2) *Includes assets for Retirement, Health, Family Death, and Larger Annuity Benefits.*

Exhibit A (continued)

Los Angeles City Employees' Retirement System
Summary of Significant Valuation Results

VI. Budget Items (as a Percent of Pay)	FY 2020-2021[1]		FY 2019-2020		Difference	
	Beginning of Year	July 15	Beginning of Year	July 15	Beginning of Year	July 15
A. Retirement Benefits (Tier 1 and Tier 3 Combined)						
1. Normal Cost	6.23%	6.25%	6.38%	6.41%	(0.15)%	(0.16)%
2. Amortization of UAAL	18.33%	18.38%	18.29%	18.34%	0.04%	0.04%
3. Total Retirement Contribution	24.56%	24.63%	24.67%	24.75%	(0.11)%	(0.12)%
B. Health Subsidy Benefits (Tier 1 and Tier 3 Combined)						
1. Normal Cost	3.43%	3.44%	3.42%	3.44%	0.01%	0.00%
2. Amortization of UAAL	1.04%	1.05%	1.47%	1.47%	(0.43)%	(0.42)%
3. Total Health Subsidy Contribution	4.47%	4.49%	4.89%	4.91%	(0.42)%	(0.42)%
C. Total Contribution (A + B)	29.03%	29.12%	29.56%	29.66%	(0.53)%	(0.54)%

VII. Funded Ratio	June 30, 2019	June 30, 2018	Difference
(Based on Valuation Value of Assets)			
A. Retirement Benefits	71.3%	70.1%	1.2%
B. Health Subsidy Benefits	84.4%	80.7%	3.7%
C. Total	73.1%	71.6%	1.5%
(Based on Market Value of Assets)			
D. Retirement Benefits	71.3%	71.4%	(0.1)%
E. Health Subsidy Benefits	84.3%	82.2%	2.1%
F. Total	73.1%	72.9%	0.2%

(1) *Alternative contribution payment date for FY 2020-2021:*

	Retirement	*Health*	*Total*
End of Pay Periods	*25.43%*	*4.64%*	*30.07%*

Exhibit B

Los Angeles City Employees' Retirement System
Computed Contribution Rates[1] – Historical Comparison

Valuation Date	Retirement	Health	Total	Projected Valuation Payroll (thousands)
06/30/1994	12.07%	2.99%	15.06%	$884,951
06/30/1995	7.34%	2.30%	9.64%	911,292
06/30/1996	6.51%	3.18%	9.69%	957,423
06/30/1997	6.57%	1.85%	8.42%	990,616
06/30/1998	6.43%	1.27%	7.70%	1,011,857
06/30/1999	4.93%	0.67%	5.60%	1,068,124
06/30/2000	2.54%	2.17%	4.71%	1,182,203
06/30/2001	3.84%	1.98%	5.82%	1,293,350
06/30/2002	9.22%	1.85%	11.07%	1,334,335
06/30/2003	11.95%	4.02%	15.97%	1,405,058
06/30/2004	14.76%	4.94%	19.70%	1,575,285
06/30/2005	17.51%	7.27%	24.78%	1,589,306
06/30/2006	17.18%	6.49%	23.67%	1,733,340
06/30/2007	15.52%	5.38%	20.90%	1,896,609
06/30/2008	14.65%	5.48%	20.13%	1,977,645
06/30/2009	18.73%	6.62%	25.35%	1,816,171
06/30/2010				
Before Additional Employee Contributions	21.19%	7.45%	28.64%	1,817,662
After Additional Employee Contributions	18.67%	6.94%	25.61%	1,817,662
06/30/2011[2]				
Before Additional Employee Contributions	24.31%	4.49%	28.80%	1,833,392
After Additional Employee Contributions	21.64%	4.49%	26.13%	1,833,392
06/30/2012[3]	21.34%	5.74%	27.08%	1,819,270
06/30/2013	22.24%	5.80%	28.04%	1,846,970
06/30/2014	24.05%	5.81%	29.86%	1,898,064
06/30/2015	23.65%	4.90%	28.55%	1,907,665
06/30/2016	22.96%	5.09%	28.05%	1,968,703
06/30/2017[4]	23.81%	5.26%	29.07%	2,062,316
06/30/2018	25.56%	5.07%	30.63%	2,177,687
06/30/2019	25.43%	4.64%	30.07%	2,225,413

[1] *Contributions are assumed to be made at the end of the pay period. For the 6/30/2014 and 6/30/2015 valuations, the contribution rates are the combined rates for Tiers 1 and 2. Beginning with the 6/30/2016 valuation, the contribution rates are the combined rates for Tiers 1 and 3 (Tier 2 was rescinded effective February 21, 2016).*

[2] *Beginning with the 6/30/2011 valuation date, the contribution rates are before adjustments to phase in over five years the impact of new actuarial assumptions (as a result of the June 30, 2011 Triennial Experience Study) on the City's contributions. Those adjustments no longer apply after the June 30, 2014 valuation.*

[3] *Beginning with the 6/30/2012 valuation date, the contribution rates are after additional employee contributions.*

[4] *Beginning with the 6/30/2017 valuation date, the contribution rates are after reflecting enhanced benefits for Airport Peace Officers effective January 7, 2018.*

Exhibit C

Los Angeles City Employees' Retirement System
Schedule of Funded Liabilities by Type for Retirement Benefits
For Years Ended June 30

($ In Thousands)

	Aggregate Actuarial Accrued Liabilities For				Portion of Aggregate Accrued Liabilities Covered by Reported Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
Valuation Date	Member Contributions	Retirees, Beneficiaries, & Inactive/Vested	Active Members	Valuation Value of Assets	Member Contributions	Retirees, Beneficiaries, & Inactive/Vested	Active Members
06/30/1996	$637,737	$2,357,798	$1,480,489	$4,468,433	100.0%	100.0%	99.5%
06/30/1997	683,048	2,598,432	1,604,857	4,802,509	100.0	100.0	94.8
06/30/1998	733,680	2,772,712	1,806,526	5,362,923	100.0	100.0	100.0
06/30/1999	776,617	2,989,218	1,918,751	5,910,948	100.0	100.0	100.0
06/30/2000	827,729	3,149,392	2,035,810	6,561,365	100.0	100.0	100.0
06/30/2001	889,658	3,444,240	2,134,168	6,988,782	100.0	100.0	100.0
06/30/2002	950,002	3,756,935	2,545,181	7,060,188	100.0	100.0	92.5
06/30/2003	1,005,888	4,021,213	2,632,745	6,999,647	100.0	100.0	74.9
06/30/2004	1,062,002	4,348,252	3,123,610	7,042,108	100.0	100.0	52.2
06/30/2005	1,128,101	4,858,932	3,334,492	7,193,142	100.0	100.0	36.2
06/30/2006	1,210,246	5,149,385	3,511,031	7,674,999	100.0	100.0	37.5
06/30/2007	1,307,008	5,365,437	3,854,429	8,599,700[(1)]	100.0	100.0	50.0
06/30/2008	1,408,074	5,665,130	4,113,200	9,438,318	100.0	100.0	57.5
06/30/2009	1,282,663	7,356,302	3,403,019	9,577,747	100.0	100.0	27.6
06/30/2010	1,379,098	7,507,945	3,707,982	9,554,027	100.0	100.0	18.0
06/30/2011	1,474,824	7,765,071	4,151,809	9,691,011	100.0	100.0	10.9
06/30/2012	1,625,207	7,893,684	4,875,068	9,934,959	100.0	100.0	8.5
06/30/2013	1,757,195	8,066,564	5,057,904	10,223,961	100.0	100.0	7.9
06/30/2014	1,900,068	8,700,896	5,647,889	10,944,751	100.0	100.0	6.1
06/30/2015	2,012,378	9,118,166	5,779,452	11,727,161	100.0	100.0	10.3
06/30/2016	2,137,269	9,439,001	5,848,726	12,439,250	100.0	100.0	14.8
06/30/2017	2,255,048	10,164,403	6,038,737	13,178,334	100.0	100.0	12.6
06/30/2018	2,354,026	11,079,053	6,511,500	13,982,435	100.0	100.0	8.4
06/30/2019	2,469,761	11,933,703	6,389,957	14,818,564	100.0	100.0	6.5

[(1)] *Excludes assets transferred for Port Police.*

Exhibit D

Los Angeles City Employees' Retirement System
Retirees and Beneficiaries Added To and Removed From the Rolls[1]
For Years Ended June 30

Year Ended	No. of New Retirees/ Beneficiaries	Annual Allowances Added[2]	No. of Retirees/ Beneficiaries Removed	Annual Allowances Removed	No. of Retirees/ Beneficiaries at 6/30	Annual Allowances at 6/30	Percent Increase in Annual Allowances	Average Annual Allowance
06/30/2002	844	$23,740,829	620	$11,316,344	13,589	$336,437,038	6.4%	$24,758
06/30/2003	827	24,729,535	611	12,008,132	13,805	359,036,215	6.7%	26,008
06/30/2004	986	53,452,133	654	13,220,316	14,137	399,268,032	11.2%	28,243
06/30/2005	934	43,454,836	749	14,769,736	14,322	427,953,132	7.2%	29,881
06/30/2006	890	42,821,079	642	15,061,287	14,570	455,712,924	6.5%	31,277
06/30/2007	821	34,131,744	555	13,210,740	14,836	476,633,928	4.6%	32,127
06/30/2008	748	40,680,279	609	14,956,623	14,975	502,357,584	5.4%	33,546
06/30/2009	632	36,887,854	616	17,386,042	14,991	521,859,396	3.9%	34,812
06/30/2010	2,893	144,594,918	620	17,604,486	17,264	648,849,828	24.3%	37,584
06/30/2011	528	24,282,965	595	16,585,589	17,197	656,547,204	1.2%	38,178
06/30/2012	620	38,314,256	594	17,986,700	17,223	676,874,760	3.1%	39,301
06/30/2013	772	40,966,952	633	18,776,770	17,362	699,064,942	3.3%	40,264
06/30/2014	831	38,666,905	661	21,175,777	17,532	716,556,070	2.5%	40,871
06/30/2015	1,083	55,849,106	683	22,013,426	17,932	750,391,750	4.7%	41,847
06/30/2016	1,082	51,056,286	657	23,092,610	18,357	778,355,426	3.7%	42,401
06/30/2017	1,142	65,583,105	694	24,422,619	18,805	819,515,912	5.3%	43,580
06/30/2018	1,312	86,917,553	738	26,361,758	19,379	880,071,707	7.4%	45,414
06/30/2019	1,341	93,946,126	686	26,429,224	20,034	947,588,609	7.7%	47,299

(1) *Does not include Family Death Benefit Plan members. Table based on valuation data.*

(2) *Effective 06/30/2004, also includes the COLA granted in July.*

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Segal Consulting

Los Angeles City Employees' Retirement System

Actuarial Valuation and Review of Retirement Benefits as of June 30, 2019

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

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November 6, 2019

Board of Administration
Los Angeles City Employees' Retirement System
202 W. 1st Street, Suite 500
Los Angeles, CA 90012-4401

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2019. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for fiscal year 2020/2021.

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

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

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

Sincerely,

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

By:

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

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Table of Contents

Los Angeles City Employees' Retirement System Actuarial Valuation and Review as of June 30, 2019

Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal Consulting ("Segal") to present a valuation of the Los Angeles City Employees' Retirement System ("the System") as of June 30, 2019. 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 Administration;
- The characteristics of covered active members, inactive vested members, and retired members and beneficiaries as of June 30, 2019, provided by the System;
- The assets of the Plan as of June 30, 2019, provided by the System;
- Economic assumptions regarding future salary increases and investment earnings;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. that the Board has adopted for the June 30, 2019 valuation; and
- The funding policy adopted by the Board of Administration.

Significant Issues

Ref: Pgs. 36, 28, & 53-55

1. The ratio of the valuation value of assets to actuarial accrued liabilities increased from 70.11% to 71.27%. On a market value of assets basis, the funded ratio decreased from 71.37% to 71.25%. The UAAL increased from $5.962 billion to $5.975 billion. The increase was due to: (i) actual contributions less than expected as a result of the anticipated one-year delay in implementing the higher contribution rate in the prior valuation, (ii) lower than expected mortality for payees, and (iii) other miscellaneous actuarial losses, offset somewhat by (iv) lower than expected salary increases for continuing active members, and (v) a higher than expected return on the valuation value of assets (after smoothing). A reconciliation of the System's UAAL is provided in *Section 2, Subsection E*. A schedule of the current UAAL amortization amounts is provided in *Section 3, Exhibit G*. Note that a graphical projection of the UAAL amortization bases and payments has been provided as *Exhibit H in Section 3*.

Ref: Pg. 30

2. The aggregate employer rate (if received on July 15) calculated in this valuation has decreased from 24.75% of payroll to 24.63% of payroll. The annual dollar employer contributions calculated in this valuation increased from about $539.0 million to $548.1 million. The decrease in the employer rate was due to: (i) a decrease in the normal cost rate due, in part, to the enrollment of new employees in Tier 3, (ii) a higher than expected return on the valuation value of assets (after smoothing), (iii) lower than expected salary increases for continuing active members, and (iv) the 40-year minimum GASB 25/27 amortization layer in 2003/2004 being fully amortized, offset somewhat by (v) actual contributions less than expected as a result of the anticipated one-year delay in implementing the higher contribution rate calculated in the prior valuation, (vi) amortizing the prior year's UAAL over a smaller than expected projected total payroll, (vii) lower than expected mortality for payees, and (viii) other miscellaneous actuarial losses. A complete reconciliation of the aggregate employer contribution is provided in *Section 2, Subsection F*.

Ref: Pg. 20

3. As indicated in *Section 2, Subsection B* of this report, the total net unrecognized investment loss as of June 30, 2019 is $3,551,703[1] for the assets for Retirement, Health, Family Death, and Larger Annuity Benefits. This net investment loss will be recognized in the determination of the actuarial value of assets for funding purposes in the next several years. This implies that earning the assumed rate of investment return of 7.25% per year (net of investment and administrative expenses) on a market value basis will result in a net investment loss on the actuarial value of assets after June 30, 2019. Item 9 in the chart in *Subsection B of Section 2* shows how, under the asset smoothing method, the $3.6 million net unrecognized loss will be recognized in the next six years.

[1] For comparison purposes, the total net unrecognized investment gain as of June 30, 2018 was $301,708,577.

The net deferred loss of $3.6 million represents less than 0.1% of the market value of assets as of June 30, 2019. Unless offset by future investment gains or other favorable experience, the recognition of the net $3.6 million market loss is expected to have an impact on the System's future funded percentage and contribution rate requirements. This potential impact may be illustrated as follows:

a. If the retirement plan component of the net deferred loss was recognized immediately in the valuation value of assets, the funded percentage would decrease from 71.27% to 71.25%.

   For comparison purposes, if the net deferred gain for the retirement plan in the June 30, 2018 valuation had been recognized immediately in the June 30, 2018 valuation, the funded percentage would have increased from 70.11% to 71.37%.

b. If the retirement plan component of the net deferred loss was recognized immediately in the valuation value of assets, the aggregate employer rate (if received on July 15, 2020) would remain at about 24.63% of payroll.

   For comparison purposes, if the net deferred gain for the retirement plan in the June 30, 2018 valuation had been recognized immediately in the June 30, 2018 valuation, the aggregate employer rate (if received on July 15, 2019) would have decreased from 24.75% of payroll to about 23.77% of payroll.

4. As in prior years, the employer contribution rates provided in this report have been developed assuming they will be received by LACERS on any of the following dates:
   a. The beginning of the fiscal year, or
   b. On July 15, 2020, or
   c. Throughout the year (i.e., LACERS will receive contributions at the end of every pay period).

Ref: Pg. 53

5. Carrying over the prior instructions from the Board of Administration, the recommended contribution is set equal to the contributions under the current funding policy plus an additional contribution due to the application of the 40-year minimum amortization requirement for fiscal year 2004/2005. The amortization of the 40-year minimum for 2004/2005 will be fully completed in the next valuation. (The amortization of the 40-year minimum for 2003/2004 was fully completed in this valuation.)

6. The actuarial valuation report as of June 30, 2019 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected. Declines in asset values will increase the actuarial cost of the Plan, while increases will decrease the actuarial cost of the Plan.

Ref: Pg. 40

7. The Actuarial Standards Board approved a new Actuarial Standard of Practice No. 51 (ASOP 51) regarding risk assessment. ASOP 51 is effective with LACERS' 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 LACERS are asset/liability mismatch risk, investment risk, and longevity risk. The standard also requires an actuary to consider if there is any ongoing contribution risk to the plan, however it does not require the actuary to evaluate the particular ability or willingness of contributing entities to make contributions when due, nor does it require the actuary to assess the likelihood or consequences of future changes in applicable law.

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

   Since the actuarial valuation results are dependent on a fixed set of assumptions and data as of a specific date, there is risk that emerging results may differ, perhaps significantly, as actual experience is fluid and will not exactly track current assumptions. This potential divergence may have a significant impact on the future financial condition of the plan. We are in discussion with the System's staff regarding specific content for a more detailed analysis of the potential range of the impact of risk relative to the System's future financial condition to be provided later in a stand-alone report. Therefore, in this valuation report, we have only included a brief discussion of key risks that may affect the System in *Section 2, Subsection J*. The more detailed assessment of the risks tailored to specific interests or concerns of the Board will provide the Board with a better understanding of the inherent risks and is recommended. This assessment will further discuss and highlight information and risks particular to LACERS 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.

Summary of Key Valuation Results

		June 30, 2019	June 30, 2018
		% of Payroll	% of Payroll
Employer Contribution Rates:[1]	Tier 1		
	• At the beginning of the year	25.00%	24.98%
	• On July 15	25.08%	25.06%
	• At the end of each pay period	25.90%	25.88%
	Tier 3		
	• At the beginning of the year	22.13%	22.05%
	• On July 15	22.20%	22.12%
	• At the end of each pay period	22.92%	22.85%
	Combined		
	• At the beginning of the year	24.56%	24.67%
	• On July 15	24.63%	24.75%
	• At the end of each pay period	25.43%	25.56%

(1) There is a 12-month delay until the rate is effective.

Summary of Key Valuation Results (continued)

		June 30, 2019	June 30, 2018
Actuarial Accrued Liability:	• Retired members and beneficiaries	$11,620,004,477	$10,778,202,813
	• Inactive vested members	516,719,939	485,374,682
	• Active members	8,656,696,727	8,681,001,563
	• Total Actuarial Accrued Liability	20,793,421,143	19,944,579,058
	• Normal Cost for plan year beginning June 30	374,967,243	370,409,073
Assets:	• Market Value of Assets (MVA)(1)	$17,707,909,933	$16,989,616,344
	• Actuarial Value of Assets (AVA)(1)	17,711,461,636	16,687,907,767
	• AVA as a percentage of MVA	100.0%	98.2%
	• Valuation Value of Retirement Assets (VVA)	$14,818,564,427	$13,982,435,465
	• Market Value of Retirement Assets (MVA)	14,815,592,841	14,235,230,528
Funded status:	• Unfunded Actuarial Accrued Liability (UAAL) on VVA basis	$5,974,856,716	$5,962,143,593
	• Funded ratio on VVA basis for retirement (VVA/AAL)	71.27%	70.11%
	• UAAL on MVA basis	$5,977,828,302	$5,709,348,530
	• Funded ratio on MVA basis for retirement (MVA/AAL)	71.25%	71.37%
Key assumptions:	• Net investment return	7.25%	7.25%
	• Price Inflation	3.00%	3.00%
	• Payroll growth	3.50%	3.50%

(1) Includes assets for Retirement, Health, Family Death, and Larger Annuity Benefits.

Summary of Key Valuation Results (continued)

		June 30, 2019	June 30, 2018	Change From Prior Year
Demographic data:	**Active Members:**			
	• Number of members	26,632	26,042	2.3%
	• Average age	47.0	47.4	-0.4
	• Average employment service	13.2	13.7	-0.5
	• Total projected compensation[1]	$2,225,412,831	$2,177,687,102	2.2%
	• Average projected compensation[1]	$83,562	$83,622	-0.1%
	Retired Members and Beneficiaries:			
	• Number of members:			
	– Service retired	15,165	14,583	4.0%
	– Disability retired	888	894	-0.7%
	– Beneficiaries	3,981	3,902	2.0%
	– Total	20,034	19,379	3.4%
	• Average age	72.5	72.5	0.0
	• Average monthly benefit	$3,942	$3,784	4.2%
	Inactive Vested Members:			
	• Number of members[2]	8,588	8,028	7.0%
	• Average Age	44.5	44.6	-0.1
	Total Members:	55,254	53,449	3.4%

(1) Reflects annualized salaries for part-time members.

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

Important Information About Actuarial Valuations

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

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the Market Value of Assets as of the valuation date, as provided by the System. The System uses an "Actuarial Value of Assets" that differs from market value to gradually reflect year-to-year changes in the Market Value of Assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan's assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

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

- The actuarial valuation is prepared at the request of LACERS. 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.
- If LACERS 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. LACERS 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 LACERS, it is not a fiduciary in its capacity as actuaries and consultants with respect to LACERS.

Actuarial Certification

November 6, 2019

This is to certify that Segal Consulting (Segal) has conducted an actuarial valuation of the Los Angeles City Employees' Retirement System (LACERS or the System) retirement program as of June 30, 2019, in accordance with generally accepted actuarial principles and practices. In particular, it is our understanding that the assumptions and methods used for funding purposes meet the parameters set by the Actuarial Standards of Practice (ASOPs). Actuarial valuations are performed annually for this retirement program with the last valuation completed on June 30, 2018. The actuarial calculations presented in this report have been made on a basis consistent with our understanding of the historical funding methods used in determination of the liability for retirement benefits.

The actuarial valuation is based on the plan of benefits verified by LACERS and on participant and financial data provided by LACERS. Segal did not audit LACERS' financial statements, but we conducted an examination of all participant data for reasonableness and we concluded that it was reasonable and consistent with the prior year's data.

One of the general goals of an actuarial valuation is to establish contributions that fully fund the System's liabilities, and that, as a percentage of payroll, remain as level as possible for each generation of active members. Both the Normal Cost and the Actuarial Accrued Liability are determined under the Entry Age cost method.

The actuarial computations made are for funding plan benefits. Accordingly, additional determinations will be needed for other purposes, such as satisfying financial accounting requirements under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 and judging benefit security at termination of the plan.

Segal prepared all of the supporting schedules in the Actuarial Section of the Comprehensive Annual Financial Report (CAFR) and certain supporting schedules in the Financial Section, based on the results of the June 30, 2019 actuarial valuation. A listing of the supporting schedules Segal prepared for inclusion in the Financial Section as Required Supplementary Information prescribed by GASB, and in the Actuarial Section, is provided below:

<u>Financial Section</u>

1) Schedule of Net Pension Liability*
2) Schedule of Changes in Net Pension Liability and Related Ratios*
3) Schedule of Contribution History*

Actuarial Certification (continued)

November 6, 2019

<u>Actuarial Section</u>

4) Summary of Significant Valuation Results
5) Active Member Valuation Data
6) Retirees and Beneficiaries Added to and Removed from Retiree Payroll
7) Schedule of Funded Liabilities by Type
8) Schedule of Funding Progress
9) Actuarial Analysis of Financial Experience
10) Actuarial Balance Sheet
11) Schedule of Changes in Net Pension Liability and Related Ratios*
12) Projection of Pension Plan's Fiduciary Net Position for use in Calculation of Discount Rate of 7.25% and Preparation of GASB 67 Report as of June 30, 2019*

* Source: Segal's GASB Statement No. 67 valuation report as of June 30, 2019.

LACERS' staff prepared other trend data schedules in the Statistical Section based on information supplied in Segal's valuation report.

To the best of our knowledge, this report is complete and accurate and in our opinion presents the plan's current funding information. The undersigned is a member of the American Academy of Actuaries and is qualified to render the actuarial opinion contained herein.

Andy Yeung

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

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: 2010 – 2019

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
2010	26,245	5,344	17,264	22,608	0.86	0.66
2011	25,449	5,623	17,197	22,820	0.90	0.68
2012	24,917	5,808	17,223	23,031	0.92	0.69
2013	24,441	5,799	17,362	23,161	0.95	0.71
2014	24,009	6,031	17,532	23,563	0.98	0.73
2015	23,895	6,507	17,932	24,439	1.02	0.75
2016	24,446	6,895	18,357	25,252	1.03	0.75
2017	25,457	7,428	18,805	26,233	1.03	0.74
2018	26,042	8,028	19,379	27,407	1.05	0.74
2019	26,632	8,588	20,034	28,622	1.07	0.75

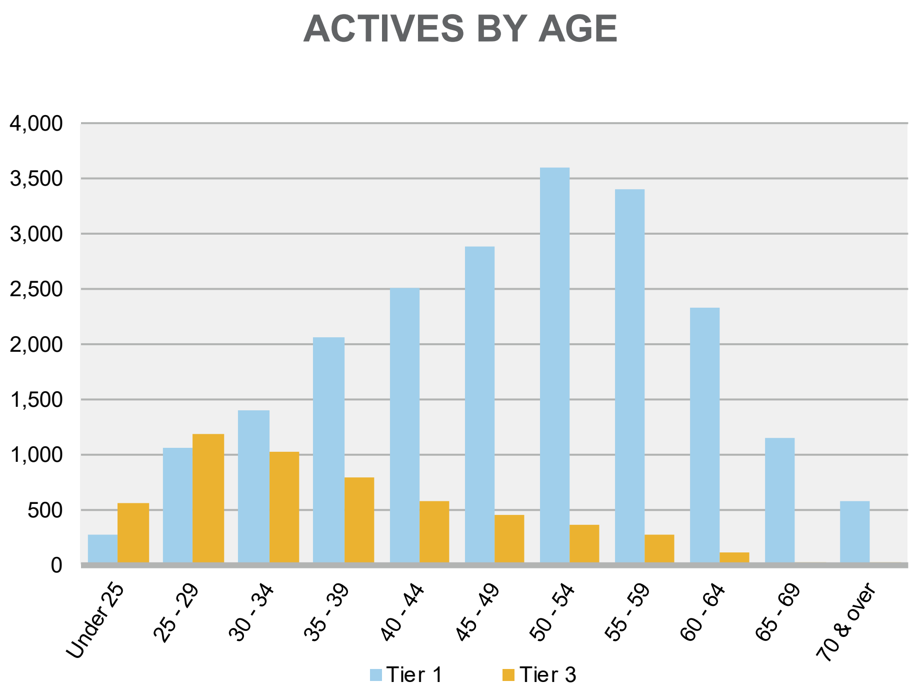
(1) Includes terminated members due a refund of employee contributions.

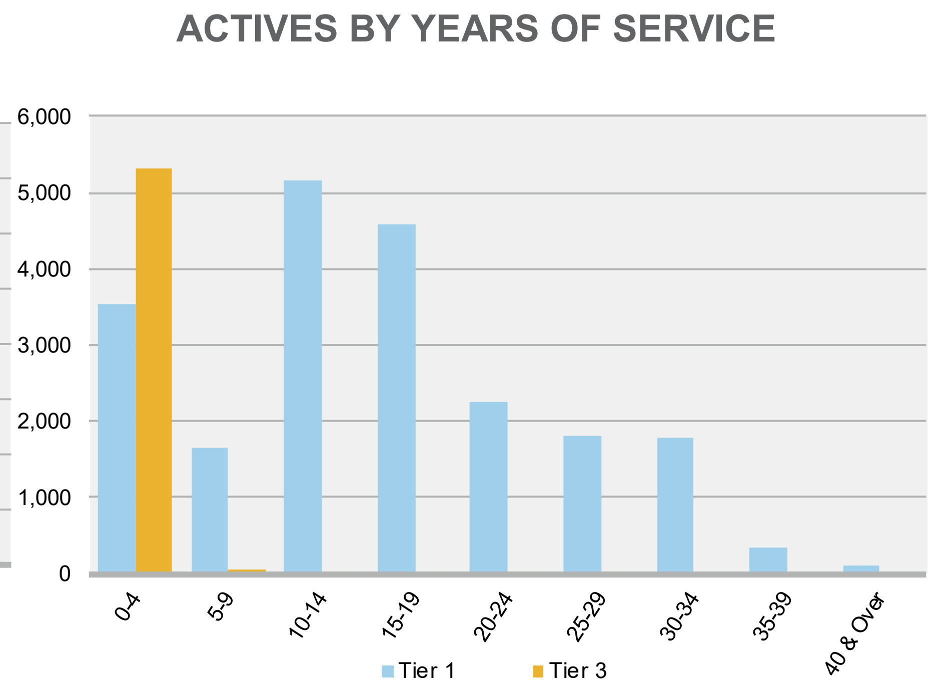
Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 26,632 active members with an average age of 47.0, average years of employment service of 13.2 years and average compensation of $83,562. The 26,042 active members in the prior valuation had an average age of 47.4, average employment service of 13.7 years and average compensation of $83,622.

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

Distribution of Active Members as of June 30, 2019





Inactive Members

In this year's valuation, there were 8,588 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 8,028 in the prior valuation.

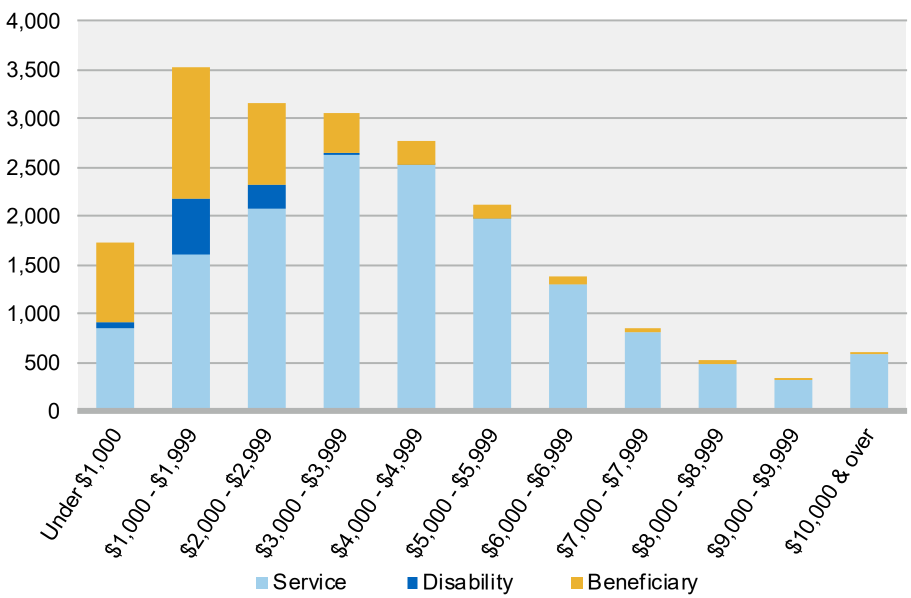
Retired Members and Beneficiaries

As of June 30, 2019, 16,053 retired members and 3,981 beneficiaries were receiving total monthly benefits of $78,965,717. For comparison, in the previous valuation, there were 15,477 retired members and 3,902 beneficiaries receiving monthly benefits of $73,339,309.

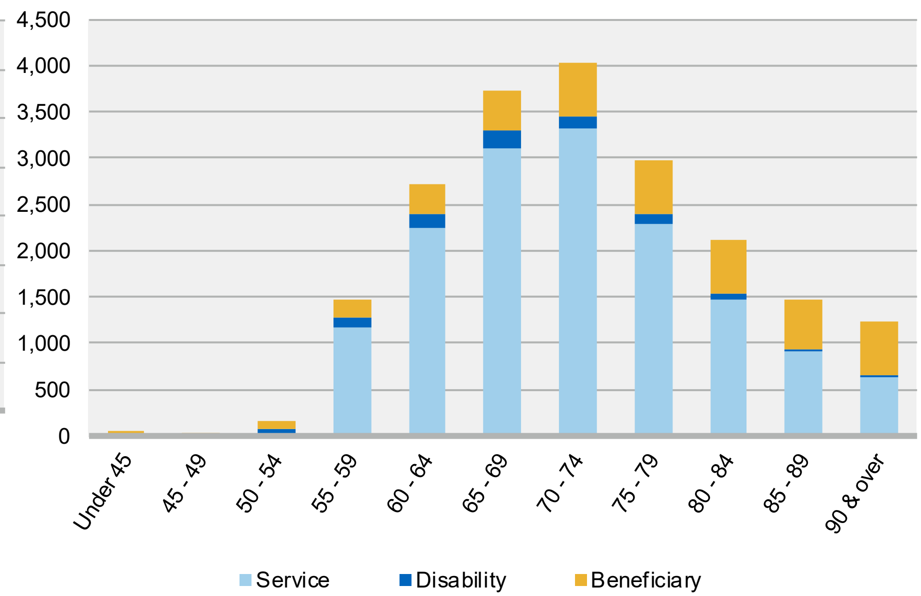
As of June 30, 2019, the average monthly benefit for retired members and beneficiaries is $3,942, compared to $3,784 in the previous valuation. The average age for retired members and beneficiaries is 72.5 in the current valuation, compared with 72.5 in the prior valuation.

Distribution of Retired Members and Beneficiaries as of June 30, 2019

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 changes among the retired population over the same time period.

MEMBER STATISTICS: 2010 – 2019

	Active Members			Retired Members and Beneficiaries		
Year Ended June 30	Count	Average Age	Average Employment Service	Count	Average Age	Average Monthly Amount
2010	26,245	46.1	12.1	17,264	71.1	3,132
2011	25,449	47.0	13.0	17,197	71.5	3,181
2012	24,917	47.8	13.9	17,223	71.9	3,275
2013	24,441	48.3	14.5	17,362	72.2	3,355
2014	24,009	48.8	15.0	17,532	72.4	3,406
2015	23,895	48.8	15.0	17,932	72.5	3,487
2016	24,446	48.6	14.7	18,357	72.5	3,533
2017	25,457	48.0	14.1	18,805	72.6	3,632
2018	26,042	47.4	13.7	19,379	72.5	3,784
2019	26,632	47.0	13.2	20,034	72.5	3,942

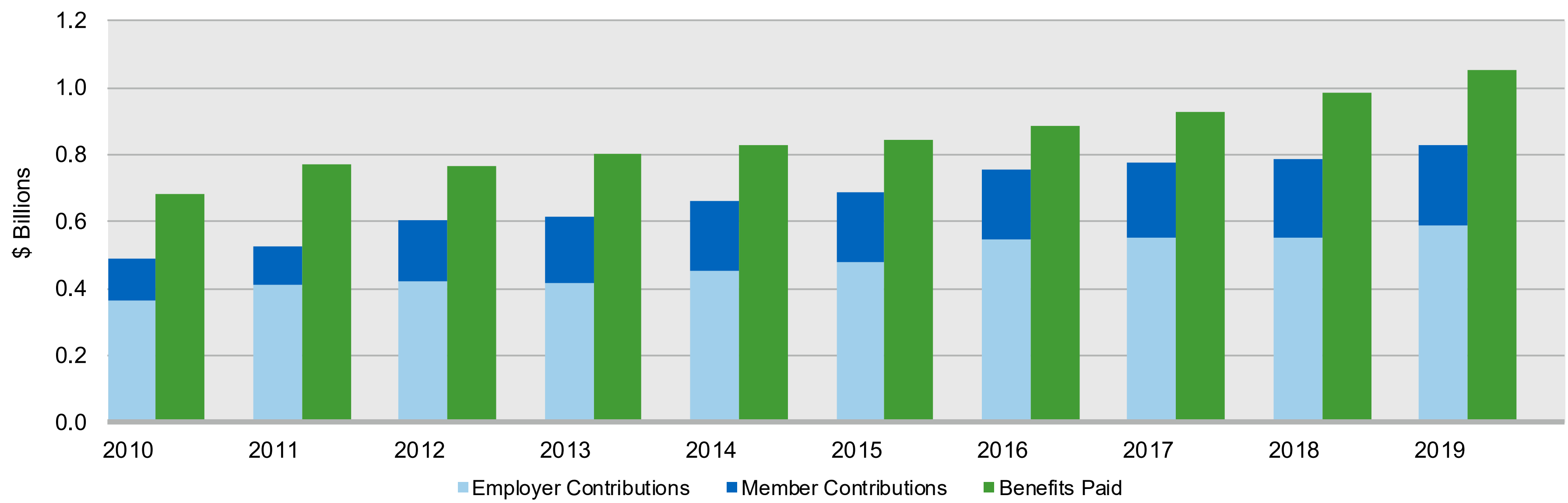
B. Financial Information

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, and F*.

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board of Administration 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 valuation 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 WITH BENEFITS FOR YEARS ENDED JUNE 30, 2010 – 2019



DETERMINATION OF ACTUARIAL VALUE OF ASSETS

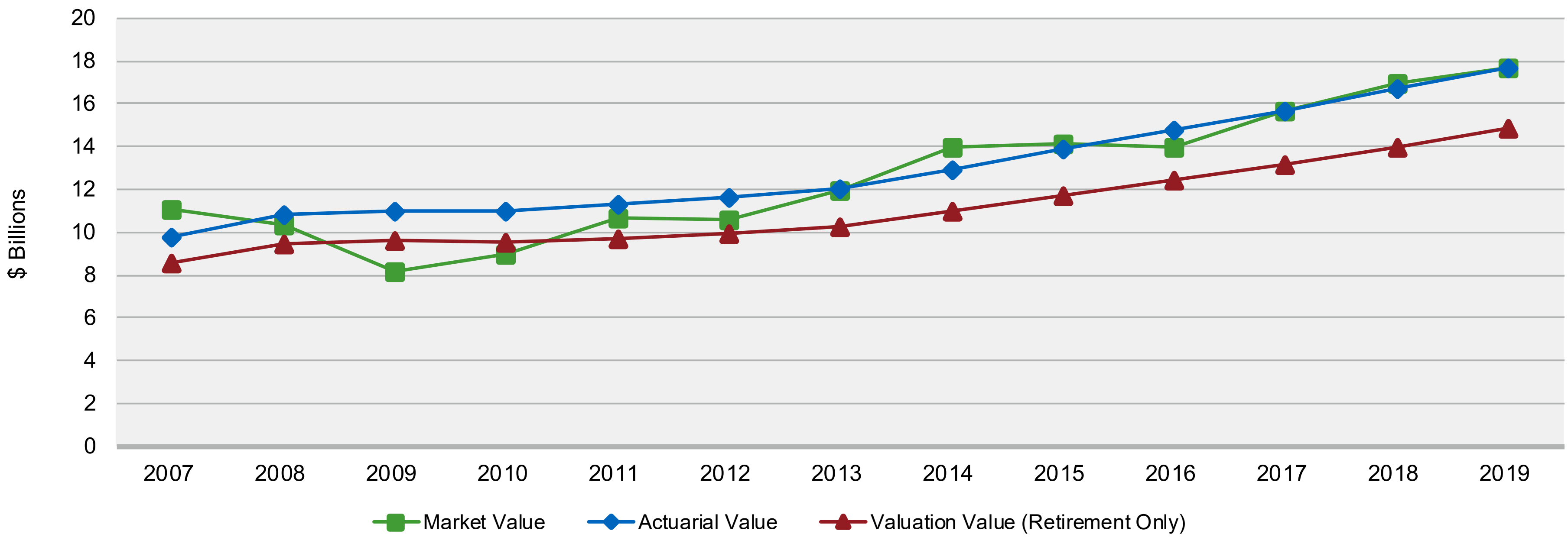
		Actual Return	Expected Return	Investment Gain (Loss)	Portion Not Recognized	Unrecognized Amount
1	**Market Value of Assets**					**$17,707,909,933**
2	Calculation of unrecognized return[1]					
a)	Year ended June 30, 2019	$945,590,839	$1,242,978,109	-$297,387,270	6/7	-$254,903,374
b)	Year ended June 30, 2018	1,498,100,177	1,148,631,872	349,468,305	5/7	249,620,218
c)	Year ended June 30, 2017	1,834,657,728	1,063,688,256	770,969,472		
d)	Year ended June 30, 2016	7,190,895	1,072,214,464	-1,065,023,569	see footnote (2) below	
e)	Year ended June 30, 2015	348,113,908	1,055,874,448	-707,760,540		
f)	Year ended June 30, 2014	2,180,005,303	933,719,722	1,246,285,581		
g)	Combined net deferred loss as of June 30, 2013			-81,571,421	4/6	1,731,453
h)	Total unrecognized return					-$3,551,703
3	Preliminary Actuarial Value of Assets **1 – 2h**					17,711,461,636
4	Adjustment to be within 40% corridor					0
5	**Final Actuarial Value of Assets 3 + 4**					**$17,711,461,636**
6	Actuarial Value of Assets as a percentage of Market Value of Assets **5 ÷ 1**					100.0%
7	Market value of retirement assets					14,815,592,841
8	**Valuation value of retirement assets 5 ÷ 1 x 7**					**$14,818,564,427**
9	Deferred return recognized in each of the next 6 years:					
a)	Amount recognized on 6/30/2020					$7,873,011
b)	Amount recognized on 6/30/2021					7,873,011
c)	Amount recognized on 6/30/2022					7,873,011
d)	Amount recognized on 6/30/2023					7,873,011
e)	Amount recognized on 6/30/2024					7,440,148
f)	Amount recognized on 6/30/2025					-42,483,896
g)	Subtotal (may not total exactly due to rounding)					-$3,551,703

(1) Total return minus expected return on a market value basis.

(2) Based on action taken by the Board on July 24, 2018, the net unrecognized gain as of June 30, 2017 (i.e., $2,597,179) has been recognized in six level amounts, with four years of recognition remaining after the June 30, 2019 valuation.

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 portion of the total actuarial value of assets allocated for retirement benefits, based on a prorated share of market value, is shown as the Valuation Value of Assets. 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 (RETIREMENT ONLY) OF ASSETS AS OF JUNE 30, 2007 – 2019



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 assumption changes reflected in this report.

The total loss is $0.4 million, which includes $13.1 million from investment gains (after smoothing), a loss of $59.5 million from contribution experience and $46.0 million in gains from all other sources. The net experience variation from individual sources other than investments and contributions was 0.22% 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, 2019

1	Net gain from investments[(1)]	$13,111,129
2	Net loss from scheduled one-year delay in implementing the higher contribution rate calculated in the June 30, 2018 valuation until fiscal year 2019/2020	-59,540,384
3	Net gain from other experience[(2)]	46,035,243
4	Net experience loss:[(3)] **1 + 2 + 3**	-$394,012

(1) Details on next page.

(2) See *Subsection E* for further details.

(3) The net loss is attributed to actual liability experience from July 1, 2018 through June 30, 2019 compared to the projected experience based on the actuarial assumptions as of June 30, 2018. Does not include the effect of plan or assumption changes as of June 30, 2019, 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 LACERS' investment policy. The rate of return on the Market Value of Assets was 5.52% for the year ended June 30, 2019.

For valuation purposes, the assumed rate of return on the Valuation Value of Assets was 7.25% for the June 30, 2018 valuation. The actual rate of return on the valuation value basis for the 2019 plan year was 7.34%. Since the actual return for the year was more than the assumed return, the Plan experienced an actuarial gain during the year ended June 30, 2019 with regard to its investments.

INVESTMENT EXPERIENCE FOR YEAR ENDED JUNE 30, 2019

		Market Value (Includes assets for Retirement, Health, Family Death, and Larger Annuity Benefits)	Actuarial Value (Includes assets for Retirement, Health, Family Death, and Larger Annuity Benefits)	Valuation Value (Includes assets for Retirement Only)
1	Net investment income	$945,590,839	$1,250,851,119	$1,035,517,241
2	Average value of assets	17,144,525,642	16,842,817,065	14,102,153,262
3	Rate of return: **1 ÷ 2**	5.52%	7.43%	7.34%
4	Assumed rate of return	7.25%	7.25%	7.25%
5	Expected investment income: **2 x 4**	$1,242,978,109	$1,221,104,237	$1,022,406,112
6	Actuarial gain/(loss): **1 – 5**	-$297,387,270	$29,746,882	$13,111,129

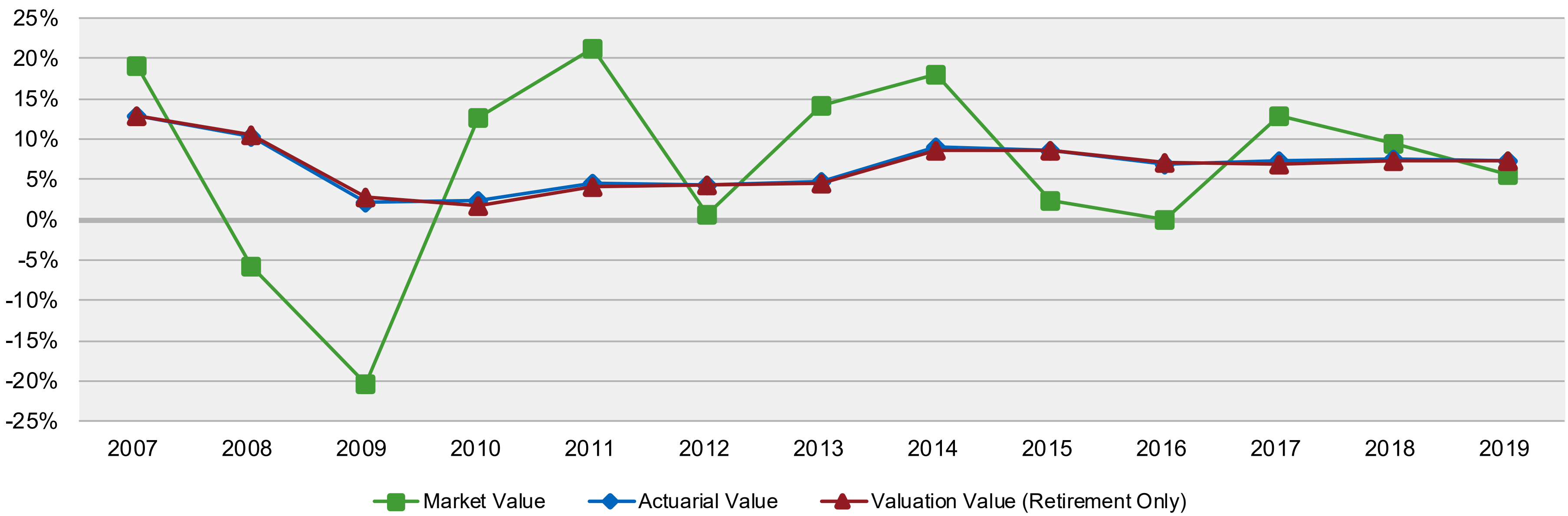
Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis compared to the actual market value investment return for Retirement, Health, Family Death, and Larger Annuity Benefits the last ten years, including the five-year average.

INVESTMENT RETURN – ACTUARIAL VALUE VS. MARKET VALUE: 2010 – 2019

Year Ended June 30	Net Interest and Dividend Income		Recognition of Capital Appreciation		Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
2010	$190,583,695	1.73%	$71,009,369	0.64%	$261,593,064	2.37%	$1,049,769,484	12.79%
2011	211,685,408	1.91%	291,263,922	2.63%	502,949,330	4.54%	1,934,130,562	21.33%
2012	213,980,878	1.88%	290,831,650	2.55%	504,812,528	4.43%	67,093,447	0.62%
2013	253,877,178	2.17%	315,633,473	2.69%	569,510,651	4.86%	1,512,696,071	14.14%
2014	225,147,763	1.86%	873,017,519	7.19%	1,098,165,282	9.05%	2,180,005,303	18.09%
2015	231,942,743	1.77%	887,268,617	6.79%	1,119,211,360	8.56%	348,113,908	2.47%
2016	240,916,934	1.71%	742,488,219	5.28%	983,405,153	6.99%	7,190,895	0.05%
2017	277,724,021	1.86%	807,293,418	5.41%	1,085,017,439	7.27%	1,834,657,728	12.94%
2018	291,385,736	1.84%	907,603,043	5.73%	1,198,988,779	7.57%	1,498,100,177	9.46%
2019	308,498,344	1.83%	942,352,775	5.60%	1,250,851,119	7.43%	945,590,839	5.52%
			Most recent five-year geometric average return:			7.56%		5.99%
			Most recent ten-year geometric average return:			6.29%		9.52%

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 (RETIREMENT ONLY) RATES OF RETURN FOR YEARS ENDED JUNE 30, 2007 – 2019



Contributions

Contributions for the year ended June 30, 2019, when adjusted for timing, totaled $757.7 million, compared to the projected amount of $817.2 million (also adjusted for timing). This resulted in a loss of $59.5 million for the year.

Other Experience

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

- 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 gain from this other experience for the year ended June 30, 2019 amounted to $46.0 million, which is 0.22% of the Actuarial Accrued Liability. This gain was mainly due to lower than expected individual salary increases for actives offset to some extent by losses due to lower than expected mortality for payees and other losses on demographic experience. See *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, 2019 is $20.8 billion, an increase of $0.8 billion, or 4.3%, from the liability as of the prior valuation date. The Actuarial Accrued 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/(Overfunded) Actuarial Accrued Liability

DEVELOPMENT FOR YEAR ENDED JUNE 30, 2019

1	**Unfunded Actuarial Accrued Liability at beginning of year**		**$5,962,143,593**
2	Total Normal Cost at beginning of year		370,409,073
3	Expected employer and member contributions at beginning of year[1]		-761,958,070
4	Interest		403,868,108
5	Expected Unfunded Actuarial Accrued Liability at end of year		$5,974,462,704
6	Changes due to:[2]		
	a) Investment gain on smoothed value of assets	-$13,111,129	
	b) Loss due to actual contributions less than expected	59,540,384	
	c) Gain due to lower than expected salary increases for continuing actives	-120,498,219	
	d) Loss due to lower than expected mortality for payees	40,662,931	
	e) Other losses on demographic experience	33,800,045	
	Total loss		$394,012
7	**Unfunded Actuarial Accrued Liability at end of year**		**$5,974,856,716**

(1) Net of the additional expected employer contributions due to the application of the 40-year minimum amortization required for the two GASB 25/27 layers, since the beginning of year UAAL was developed without the liability associated with those two layers. These additional contributions will serve to reduce the contribution loss (if any) from the scheduled one-year delay in implementing the higher contribution rates calculated in the prior valuation.

(2) The “net gain from other experience” of $46,035,243 from Subsection C is equal to the sum of items 6c, 6d, and 6e.

F. Recommended Contribution

The amount of annual contribution required to fund the Retirement Plan is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability. This total amount, adjusted with interest for timing, is then divided by the projected payroll for active members to determine the funding rate of 24.63% of payroll, if received by LACERS on July 15, 2020. The recommended contribution is set equal to the contributions under the current funding policy plus an additional contribution due to the application of the 40-year minimum amortization requirement for fiscal year 2004/2005. The amortization of the 40-year minimum for 2004/2005 will be fully completed in the next valuation. (The amortization of the 40-year minimum for 2003/2004 was fully completed in this valuation.)

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 for the June 30, 2019 valuation 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.

A reconciliation of the average recommended employer contribution from June 30, 2018 to June 30, 2019 is shown on the next page. A summary of the recommended contributions by tier is shown on pages 31 through 33.

Reconciliation of Average Recommended Employer Contribution Rate

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

RECONCILIATION OF AVERAGE RECOMMENDED EMPLOYER CONTRIBUTION RATE[1] FROM JUNE 30, 2018 TO JUNE 30, 2019

	Contribution Rate
Average Recommended Employer Contribution as of June 30, 2018	**24.75%**
• Effect of decrease in employer normal cost due to payroll and demographic changes (including the enrollment of new employees in Tier 3)	-0.16%
• Effect of anticipated one-year delay in implementing the higher combined contribution rate calculated in the prior valuation	0.23%
• Effect of investment return greater than expected on smoothed value of assets	-0.05%
• Effect of individual salary increases lower than expected for continuing active members	-0.46%
• Effect of amortizing prior year's UAAL over a smaller than expected projected total payroll	0.24%
• Effect of lower than expected mortality for payees	0.15%
• Effect of the 40-year minimum GASB 25/27 amortization layer in 2003/2004 being fully amortized	-0.20%
• Effect of other demographic experience losses on accrued liability	0.13%
Total change	-0.12%
Average Recommended Employer Contribution as of June 30, 2019	**24.63%**

(1) If received on July 15.

Recommended Employer Contribution Rates

		June 30, 2019 Actuarial Valuation		June 30, 2018 Actuarial Valuation	
		Amount	% of Payroll	Amount	% of Payroll
Tier 1					
	Before Reflecting Increase in Contribution Rates due to Enhanced Benefits for APO				
1.	Total normal cost	$323,584,701	17.23%	$336,013,540	17.26%
2.	Expected employee contributions[1]	199,392,948	10.63%	206,802,784	10.63%
3.	Employer normal cost: **1 - 2**	$124,191,753	6.60%	$129,210,756	6.63%
4.	Actuarial accrued liability	20,683,276,763		19,878,462,120	
5.	Valuation value of assets	14,647,297,473		13,908,770,325	
6.	Unfunded actuarial accrued liability: **4 - 5**	$6,035,979,290		$5,969,691,795	
7.	Amortization of unfunded actuarial accrued liability	342,147,940	18.22%[2],[3]	354,180,665	18.19%[2]
8.	Total recommended contribution, beginning of year: **3 + 7**	$466,339,693	24.82%	$483,391,421	24.82%
9.	Total recommended contribution, July 15	467,683,003	24.90%	484,783,849	24.90%
10.	Total recommended contribution, end of pay periods	482,948,735	25.72%	500,607,773	25.71%
	Increase in Contribution Rates due to Enhanced Benefits for APO				
11.	Employer normal cost, July 15		0.07%		0.06%
12.	Unfunded actuarial accrued liability, July 15		0.11%		0.10%
13.	Total recommended contribution, July 15		0.18%		0.16%
	After Reflecting Increase in Contribution Rates due to Enhanced Benefits for APO				
14.	Total recommended contribution, beginning of year	$469,505,178	25.00%	$486,645,060	24.98%
15.	Total recommended contribution, July 15	470,857,606	25.08%	488,046,860	25.06%
16.	Total recommended contribution, end of pay periods	486,226,961	25.90%	503,977,293	25.88%
17.	Projected payroll	$1,877,504,719		$1,947,223,478	

(1) Discounted to beginning of year. The average employee rate for contributions made at the end of each pay period is actually 11.01% for the June 30, 2018 and June 30, 2019 valuations.

(2) In developing the UAAL contribution rate, we have combined the UAAL for Tiers 1 and 3 and amortized that total UAAL over the total payroll for Tiers 1 and 3.

(3) For purposes of purchasing service with the Water and Power Employees' Retirement Plan (WPERP) for Tier 1, the UAAL rate as of June 30, 2019 is 18.22% before reflecting enhanced benefits for APO, plus an additional 0.11% for the cost increase for the enhanced APO benefits for a total of 18.33%, if received at the beginning of the year. If received on July 15, the total UAAL rate of 18.33% increases to 18.38%.

Recommended Employer Contribution Rates (continued)

		June 30, 2019 Actuarial Valuation		June 30, 2018 Actuarial Valuation	
		Amount	% of Payroll	Amount	% of Payroll
Tier 3					
	Before Reflecting Increase in Contribution Rates due to Enhanced Benefits for APO				
1.	Total normal cost	$50,176,576	14.42%	$33,148,485	14.38%
2.	Expected employee contributions[1]	36,931,138	10.62%	24,471,538	10.62%
3.	Employer normal cost: 1 - 2	$13,245,438	3.80%	$8,676,947	3.76%
4.	Actuarial accrued liability	84,801,657		40,943,716	
5.	Valuation value of assets	171,266,954		73,665,140	
6.	Unfunded/(overfunded) actuarial accrued liability: 4 - 5	-$86,465,297		-$32,721,424	
7.	Amortization of unfunded actuarial accrued liability	63,401,196	18.22%[2],[3]	41,919,051	18.19%[2]
8.	Total recommended contribution, beginning of year: 3 + 7	$76,646,634	22.02%	$50,595,998	21.95%
9.	Total recommended contribution, July 15	76,867,418	22.09%	50,741,742	22.02%
10.	Total recommended contribution, end of pay periods	79,376,462	22.81%	52,398,013	22.74%
	Increase in Contribution Rates due to Enhanced Benefits for APO				
11.	Employer normal cost, July 15		0.00%		0.00%
12.	Unfunded actuarial accrued liability, July 15		0.11%		0.10%
13.	Total recommended contribution, July 15		0.11%		0.10%
	After Reflecting Increase in Contribution Rates due to Enhanced Benefits for APO				
14.	Total recommended contribution, beginning of year	$77,009,739	22.13%	$50,833,488	22.05%
15.	Total recommended contribution, July 15	77,231,569	22.20%	50,979,916	22.12%
16.	Total recommended contribution, end of pay periods	79,752,499	22.92%	52,643,961	22.85%
17.	Projected payroll	$347,908,112		$230,463,624	

(1) Discounted to beginning of year. The average employee rate for contributions made at the end of each pay period is actually 11.00% for the June 30, 2018 and June 30, 2019 valuations.

(2) In developing the UAAL contribution rate, we have combined the UAAL for Tiers 1 and 3 and amortized that total UAAL over the total payroll for Tiers 1 and 3.

(3) For purposes of Government Service Buybacks for Tier 3, the cost of the purchase is based, in part, on the "City Contribution Rate," pursuant to the Administrative Code. As Tier 3 has no UAAL as of June 30, 2019, the City's normal cost rate of 3.80% (beginning of year) is used for purposes of these buybacks.

Recommended Employer Contribution Rates (continued)

		June 30, 2019 Actuarial Valuation		June 30, 2018 Actuarial Valuation	
		Amount	% of Payroll	Amount	% of Payroll
Combined					
	Before Reflecting Increase in Contribution Rates due to Enhanced Benefits for APO				
1.	Total normal cost	$373,761,277	16.80%	$369,162,025	16.95%
2.	Expected employee contributions	236,324,086	10.62%	231,274,322	10.63%
3.	Employer normal cost: **1 - 2**	$137,437,191	6.18%	$137,887,703	6.32%
4.	Actuarial accrued liability	20,768,078,420		19,919,405,836	
5.	Valuation value of assets	14,818,564,427		13,982,435,465	
6.	Unfunded actuarial accrued liability: **4 - 5**	$5,949,513,993		$5,936,970,371	
7.	Amortization of unfunded actuarial accrued liability	405,549,136	18.22%	396,099,716	18.19%
8.	Total recommended contribution, beginning of year: **3 + 7**	$542,986,327	24.40%	$533,987,419	24.51%
9.	Total recommended contribution, July 15	544,550,421	24.47%	535,525,591	24.59%
10.	Total recommended contribution, end of pay periods	562,325,197	25.27%	553,005,786	25.39%
	Increase in Contribution Rates due to Enhanced Benefits for APO				
11.	Employer normal cost, July 15		0.05%		0.06%
12.	Unfunded actuarial accrued liability, July 15		0.11%		0.10%
13.	Total recommended contribution, July 15		0.16%		0.16%
	After Reflecting Increase in Contribution Rates due to Enhanced Benefits for APO				
14.	Total normal cost	$374,967,243	16.85%	$370,409,073	17.01%
15.	Expected employee contributions	236,324,086	10.62%	231,274,322	10.63%
16.	Employer normal cost: **14 - 15**	$138,643,157	6.23%	$139,134,751	6.38%
17.	Actuarial accrued liability	20,793,421,143		19,944,579,058	
18.	Valuation value of assets	14,818,564,427		13,982,435,465	
19.	Unfunded actuarial accrued liability: **17 - 18**	$5,974,856,716		$5,962,143,593	
20.	Amortization of unfunded actuarial accrued liability	407,871,760	18.33%	398,343,797	18.29%
21.	Total recommended contribution, beginning of year: **16 + 20**	$546,514,917	24.56%	$537,478,548	24.67%
22.	Total recommended contribution, July 15	548,089,175	24.63%	539,026,776	24.75%
23.	Total recommended contribution, end of pay periods	565,979,460	25.43%	556,621,254	25.56%
24.	Projected payroll	$2,225,412,831		$2,177,687,102	

Recommended Employer Contribution Rates (continued)

		Tier 1	Tier 3	Combined
	Before Reflecting Increase in Contribution Rates due to Enhanced Benefits for APO			
1.	Total normal cost	$323,584,701	$50,176,576	$373,761,277
2.	Expected employee contributions[(1)]	199,392,948	36,931,138	236,324,086
3.	Employer normal cost: **1 - 2**	$124,191,753	$13,245,438	$137,437,191
4.	Payment on unfunded actuarial accrued liability	342,147,940	63,401,196	405,549,136
5.	Total recommended contribution: beginning of year: **3 + 4**	$466,339,693	$76,646,634	$542,986,327
6.	Total recommended contribution: adjusted for July 15 timing	467,683,003	76,867,418	544,550,421
7.	Total recommended contribution: adjusted for biweekly timing	482,948,735	79,376,462	562,325,197
8.	Item 5 (beginning of year contribution) as a % of projected payroll: **5 ÷ 17**	24.82%	22.02%	24.40%
9.	Item 6 (July 15 contribution) as a % of projected payroll: **6 ÷ 17**	24.90%	22.09%	24.47%
10.	Item 7 (biweekly contribution) as a % of projected payroll: **7 ÷ 17**	25.72%	22.81%	25.27%
	After Reflecting Increase in Contribution Rates due to Enhanced Benefits for APO			
11.	Total recommended contribution: beginning of year	$469,505,178	$77,009,739	$546,514,917
12.	Total recommended contribution: adjusted for July 15 timing	470,857,606	77,231,569	548,089,175
13.	Total recommended contribution: adjusted for biweekly timing	486,226,961	79,752,499	565,979,460
14.	Item 11 (beginning of year contribution) as a % of projected payroll: **11 ÷ 17**	25.00%	22.13%	24.56%
15.	Item 12 (July 15 contribution) as a % of projected payroll: **12 ÷ 17**	25.08%	22.20%	24.63%
16.	Item 13 (biweekly contribution) as a % of projected payroll: **13 ÷ 17**	25.90%	22.92%	25.43%
17.	Projected payroll	$1,877,504,719	$347,908,112	$2,225,412,831

(1) Discounted to beginning of year.

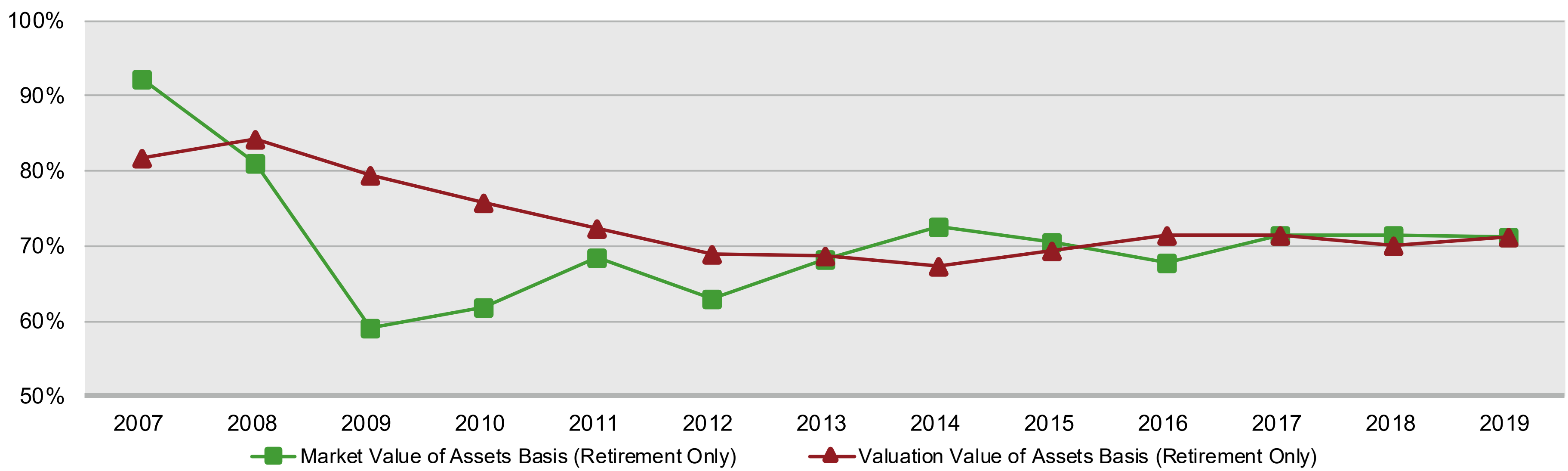
G. Funded Status

A commonly reported piece of information regarding the Plan's financial status is the funded ratio. These ratios compare the Valuation Value and Market 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 Valuation Value or Market Value of Assets is used.

FUNDED RATIO
FOR YEARS ENDING JUNE 30, 2007 – 2019



SCHEDULE OF FUNDING PROGRESS
FOR YEARS ENDING JUNE 30, 2010 – 2019

Actuarial Valuation Date as of June 30	Valuation Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b) - (a)] / (c)
2010	$9,554,027,411	$12,595,025,119	$3,040,997,708	75.86%	$1,817,662,284	167.30%
2011	9,691,011,496	13,391,704,000	3,700,692,504	72.37%	1,833,392,381	201.85%
2012	9,934,959,310	14,393,958,574	4,458,999,264	69.02%	1,819,269,630	245.10%
2013	10,223,960,886	14,881,663,162	4,657,702,276	68.70%	1,846,970,474	252.18%
2014	10,944,750,574	16,248,853,099	5,304,102,525	67.36%	1,898,064,175	279.45%
2015	11,727,161,378	16,909,996,380	5,182,835,002	69.35%	1,907,664,598	271.68%
2016	12,439,250,206	17,424,996,329	4,985,746,123	71.39%	1,968,702,630	253.25%
2017	13,178,333,884	18,458,187,953	5,279,854,069	71.40%	2,062,316,129	256.02%
2018	13,982,435,465	19,944,579,058	5,962,143,593	70.11%	2,177,687,102	273.78%
2019	14,818,564,427	20,793,421,143	5,974,856,716	71.27%	2,225,412,831	268.48%

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, 2019	June 30, 2018
Actuarial Present Value of Future Benefits		
• Present value of benefits for retired members and beneficiaries	$11,620,004,477	$10,778,202,813
• Present value of benefits for inactive vested members	516,719,939	485,374,682
• Present value of benefits for active members	11,598,917,004	11,563,485,382
Total Actuarial Present Value of Future Benefits	**$23,735,641,420**	**$22,827,062,877**
Current and future assets		
• Total Valuation Value of Assets	$14,818,564,427	$13,982,435,465
• Present value of future contributions by members	1,848,423,280	1,791,352,447
• Present value of future employer contributions for:		
» Entry age Normal Cost	1,093,796,997	1,091,131,372
» Unfunded Actuarial Accrued Liability	5,974,856,716	5,962,143,593
Present Value of Current and Future Assets	**$23,735,641,420**	**$22,827,062,877**

I. Volatility Ratios

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

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

The current AVR is about 6.7. This means that a 1% asset gain or loss (relative to the assumed investment return) translates to about 6.7% of one-year's payroll. Since actuarial gains and losses are amortized over 15 years, there would be a 0.6% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

The Liability Volatility Ratio (LVR), which is equal to the Actuarial Accrued Liability divided by payroll, provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. This is because, over an extended period of time, the plan's assets should track the plan's liabilities.

The LVR also indicates how volatile contributions will be in response to changes in the Actuarial Accrued Liability due to actual experience or to changes in actuarial assumptions. The current LVR is about 9.3. This is about 39% higher than the AVR. Therefore, we would expect that contribution volatility will increase over the long term.

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

VOLATILITY RATIOS FOR YEARS ENDED 2010 – 2019

Year Ended June 30	Asset Volatility Ratio	Liability Volatility Ratio
2010	4.3	6.9
2011	5.0	7.3
2012	5.0	7.9
2013	5.5	8.1
2014	6.2	8.6
2015	6.2	8.9
2016	6.0	8.9
2017	6.4	9.0
2018	6.5	9.2
2019	6.7	9.3

J. Risk Assessment

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

This section 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 it may be interested in discussing and could include tailored scenario testing, sensitivity testing, stress testing and stochastic modeling. As noted in the Significant Issues section of this report, we are in discussion with the System's staff regarding specific content for a detailed analysis of the potential range of the impact of risk relative to the System's future financial condition to be provided later in a stand-alone report.

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 changes in the expected experience of asset growth rates.

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

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

  The investment return assumption is a long-term, static assumption for valuation purposes even though in reality market experience can be quite volatile in any given year. That volatility can cause significant changes in the financial health of the system, 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 38, a 1% asset gain or loss (relative to the assumed investment return) translates to about 6.7% of one-year's payroll. Since actuarial gains and losses are amortized over 15 years, there would be a 0.6% 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 0.05% to a high of 21.33%.

- 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. We will be discussing the use of such mortality tables with the Board for the upcoming triennial experience study before we complete our next valuation as of June 30, 2020.

- 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 pension plans.

Some plans also carry significant contribution risk, defined as the potential for actual future contributions deviating from expected future contributions. However, the employer has 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 decreased from 75.86% to 71.27%. This is primarily due to changes in the actuarial assumptions. For a more detailed history see *Section 2, Subsection G, Funded Status* starting on page 35.
- The average geometric investment return on the Actuarial Value of Assets over the last 10 years was 6.29%. This includes a high of a 9.05% return and a low of 2.37%. The average over the last 5 years was 7.56%. For more details see the Investment Return table in *Section 2, Subsection C* on page 24.

- The primary source of new UAAL was the strengthening of assumptions through multiple assumption changes. For example, the assumption changes in 2014 changed the discount rate from 7.75% to 7.50% and updated mortality tables, adding $785 million in unfunded liability; the assumption changes in 2017 changed the discount rate from 7.50% to 7.25%, adding $341 million in unfunded liability; and the assumption changes in 2018 included the use of generational mortality tables to better reflect future mortality improvement, adding $484 million in unfunded liability. For more details on the unfunded liability changes see *Section 3, Exhibit G, Table of Amortization Bases* starting on page 53. A graphical representation of historical changes in UAAL by source will be included in the stand-alone risk assessment report.
- The plan's funding policy effectively deals with these unfunded liabilities over time. This can be seen most clearly in *Section 3, Exhibit H, Projection of UAAL Balances and Payments* provided on pages 54 and 55.

Maturity Measures

In the last 10 years the ratio of retired members and beneficiaries to active members has increased from 0.66 to 0.75. An increased ratio indicates that the plan has grown in maturity over time. This is to be expected, but is also informative for understanding plan sensitivity to particular risks. For more details see *Section 2, Subsection A, Member Data* on page 15.

As pension plans mature, the cash needed to fulfill benefit obligations will increase over time. Therefore, cash flow projections and analysis should be performed to assure that the Plan's asset allocation is aligned to meet emerging pension liabilities. For the prior year, benefits paid were $199 million more than contributions received. Plans with high levels of negative cash flows may have a need for a larger allocation to income generating assets, which can create a drag on investment return. However, this plan currently has relatively low levels of negative cash flows. For more details on historical cash flows see the Comparison of Contributions with Benefits in *Section 2, Subsection B, Financial Information* on page 19.

A further discussion of plan maturity measures and how they relate to changes in assets and liabilities is included in *Section 2, Subsection I, Volatility Ratios* starting on page 38.

Section 3: Supplemental Information

EXHIBIT A – TABLE OF PLAN COVERAGE: TOTAL PLAN

Category	Year Ended June 30 2019	Year Ended June 30 2018	Change From Prior Year
Active members in valuation:			
• Number	26,632	26,042	2.3%
• Average age	47.0	47.4	-0.4
• Average years of employment service	13.2	13.7	-0.5
• Total projected compensation[1]	$2,225,412,831	$2,177,687,102	2.2%
• Average projected compensation[1]	$83,562	$83,622	-0.1%
• Account balances	$2,266,740,475	$2,169,501,745	4.5%
• Total active vested members	17,812	18,460	-3.5%
Inactive vested members:			
• Number	8,588	8,028	7.0%
• Average age	44.5	44.6	-0.1
• Average contribution balance for those with under 5 years of service	$6,819	$6,121	11.4%
• Average monthly benefit at age 60 for those with 5 or more years of service[2]	$1,616	$1,538	5.1%
Retired members:			
• Number in pay status	15,165	14,583	4.0%
• Average service at retirement	26.5	26.6	-0.1
• Average age at retirement	60.4	60.3	0.1
• Average age	71.9	71.8	0.1
• Average monthly benefit (includes July COLA)	$4,489	$4,326	3.8%
Disabled members:			
• Number in pay status	888	894	-0.7%
• Average service at retirement	11.6	11.6	0.0
• Average age at retirement	47.6	47.3	0.3
• Average age	67.1	66.5	0.6
• Average monthly benefit (includes July COLA)	$1,762	$1,714	2.8%
Beneficiaries:			
• Number in pay status	3,981	3,902	2.0%
• Average age	76.3	76.2	0.1
• Average monthly benefit (includes July COLA)	$2,342	$2,236	4.7%

(1) Reflects annualized salaries for part-time members.

(2) For June 30, 2018, reflects the average monthly benefit at age 60 provided by LACERS. For June 30, 2019, this was refined to reflect the average monthly benefit at age 60 provided by LACERS, but only for members with a final average monthly compensation also provided by LACERS. Otherwise, Segal's calculation of the benefit (based on prior data provided by LACERS) was used in the average.

EXHIBIT A – TABLE OF PLAN COVERAGE (CONTINUED): TIER 1[1]

Category	Year Ended June 30 2019	Year Ended June 30 2018	Change From Prior Year
Active members in valuation:			
• Number	21,226	22,409	-5.3%
• Average age	49.6	49.2	0.4
• Average years of employment service	16.2	15.7	0.5
• Total projected compensation[2]	$1,877,504,719	$1,947,223,478	-3.6%
• Average projected compensation[2]	$88,453	$86,895	1.8%
• Account balances	$2,213,161,075	$2,143,199,216	3.3%
• Total active vested members	17,715	18,406	-3.8%
Inactive vested members:			
• Number	7,638	7,490	2.0%
• Average age	45.5	45.3	0.2
• Average contribution balance for those with under 5 years of service	$6,941	$6,329	9.7%
• Average monthly benefit at age 60 for those with 5 or more years of service[3]	$1,617	$1,538	5.1%
Retired members:			
• Number in pay status	15,165	14,583	4.0%
• Average service at retirement	26.5	26.6	-0.1
• Average age at retirement	60.4	60.3	0.1
• Average age	71.9	71.8	0.1
• Average monthly benefit (includes July COLA)	$4,489	$4,326	3.8%
Disabled members:			
• Number in pay status	888	894	-0.7%
• Average service at retirement	11.6	11.6	0.0
• Average age at retirement	47.6	47.3	0.3
• Average age	67.1	66.5	0.6
• Average monthly benefit (includes July COLA)	$1,762	$1,714	2.8%
Beneficiaries:			
• Number in pay status	3,981	3,902	2.0%
• Average age	76.3	76.2	0.1
• Average monthly benefit (includes July COLA)	$2,342	$2,236	4.7%

(1) Includes the following number of Airport Peace Officers eligible for enhanced benefits:

	June 30, 2019	June 30, 2018
Active Members	433	457
Inactive Members	17	7
Retired Members	43	31

(2) Reflects annualized salaries for part-time members.

(3) For June 30, 2018, reflects the average monthly benefit at age 60 provided by LACERS. For June 30, 2019, this was refined to reflect the average monthly benefit at age 60 provided by LACERS, but only for members with a final average monthly compensation also provided by LACERS. Otherwise, Segal's calculation of the benefit (based on prior data provided by LACERS) was used in the average.

EXHIBIT A – TABLE OF PLAN COVERAGE (CONTINUED): TIER 3

Category	Year Ended June 30 2019	Year Ended June 30 2018	Change From Prior Year
Active members in valuation:			
• Number	5,406	3,633	48.8%
• Average age	37.0	36.6	0.4
• Average years of employment service	1.6	1.2	0.4
• Total projected compensation[1]	$347,908,112	$230,463,624	51.0%
• Average projected compensation[1]	$64,356	$63,436	1.5%
• Account balances	$53,579,400	$26,302,529	103.7%
• Total active vested members	97	54	79.6%
Inactive vested members:			
• Number	950	538	76.6%
• Average age	36.3	36.1	0.2
• Average contribution balance for those with under 5 years of service	$6,152	$4,152	48.2%
• Average monthly benefit at age 60 for those with 5 or more years of service	$438	N/A	N/A
Retired members:			
• Number in pay status	N/A	N/A	N/A
• Average service at retirement	N/A	N/A	N/A
• Average age at retirement	N/A	N/A	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit (includes July COLA)	N/A	N/A	N/A
Disabled members:			
• Number in pay status	N/A	N/A	N/A
• Average service at retirement	N/A	N/A	N/A
• Average age at retirement	N/A	N/A	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit (includes July COLA)	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	N/A	N/A	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit (includes July COLA)	N/A	N/A	N/A

(1) Reflects annualized salaries for part-time members.

EXHIBIT B – MEMBERS IN ACTIVE SERVICE AS OF JUNE 30, 2019
BY AGE, YEARS OF SERVICE,[1] AND AVERAGE PROJECTED COMPENSATION[2]
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	829	829	- -	- -	- -	- -	- -	- -	- -	- -
	$46,369	$46,369	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	2,245	2,125	116	4	- -	- -	- -	- -	- -	- -
	57,030	56,400	$68,608	$55,955	- -	- -	- -	- -	- -	- -
30 - 34	2,425	1,730	363	327	5	- -	- -	- -	- -	- -
	67,698	63,980	77,456	76,757	$52,898	- -	- -	- -	- -	- -
35 - 39	2,843	1,225	346	973	290	9	- -	- -	- -	- -
	80,394	70,026	86,814	89,659	85,288	$85,243	- -	- -	- -	- -
40 - 44	3,085	892	214	936	859	169	15	- -	- -	- -
	87,489	71,918	85,475	91,462	97,318	99,792	$92,706	- -	- -	- -
45 - 49	3,337	702	186	786	916	545	183	19	- -	- -
	90,378	71,476	84,978	85,739	96,893	107,113	105,099	$97,582	- -	- -
50 - 54	3,970	560	156	696	811	576	608	540	23	- -
	94,533	73,496	82,459	81,708	91,618	106,167	115,436	104,648	$98,065	- -
55 - 59	3,683	434	134	600	723	492	534	629	134	3
	93,807	69,577	78,884	78,772	89,596	101,847	110,114	111,162	99,946	$153,994
60 - 64	2,452	252	97	496	532	242	311	364	129	29
	91,240	68,231	73,378	78,999	86,241	95,349	106,848	109,987	115,321	107,923
65 - 69	1,181	68	46	251	296	139	123	173	50	35
	89,146	66,164	84,930	74,105	83,253	101,263	102,928	99,668	110,634	117,773
70 & over	582	32	33	112	169	81	41	68	18	28
	77,201	55,351	66,918	58,350	70,969	88,168	97,396	95,428	94,046	110,916
Total	**26,632**	**8,849**	**1,691**	**5,181**	**4,601**	**2,253**	**1,815**	**1,793**	**354**	**95**
	$83,562	**$63,725**	**$80,944**	**$83,770**	**$91,055**	**$102,779**	**$109,913**	**$107,112**	**$106,636**	**$113,889**

(1) Based on employment service. Average employment service is 13.2 years compared to average benefit service of 12.6 years.

(2) Limited by Internal Revenue Code Section 401(a)(17) compensation limit.

EXHIBIT B – MEMBERS IN ACTIVE SERVICE AS OF JUNE 30, 2019 (CONTINUED)
BY AGE, YEARS OF SERVICE,[1] AND AVERAGE PROJECTED COMPENSATION[2]
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	269	269	- -	- -	- -	- -	- -	- -	- -	- -
	$43,194	$43,194	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	1,058	939	115	4	- -	- -	- -	- -	- -	- -
	58,093	56,839	$68,406	$55,955	- -	- -	- -	- -	- -	- -
30 - 34	1,400	722	349	324	5	- -	- -	- -	- -	- -
	69,627	63,066	76,852	76,720	$52,898	- -	- -	- -	- -	- -
35 - 39	2,057	459	336	965	288	9	- -	- -	- -	- -
	84,430	71,090	86,511	89,768	85,351	$85,243	- -	- -	- -	- -
40 - 44	2,508	334	208	930	855	166	15	- -	- -	- -
	91,339	75,467	84,650	91,325	97,401	100,385	$92,706	- -	- -	- -
45 - 49	2,877	262	182	778	910	544	182	19	- -	- -
	93,403	73,846	85,165	85,375	96,839	107,161	105,376	$97,582	- -	- -
50 - 54	3,596	200	151	696	806	573	607	540	23	- -
	96,629	73,825	82,624	81,708	91,618	106,198	115,165	104,648	$98,065	- -
55 - 59	3,407	164	133	599	721	492	532	629	134	3
	95,596	67,582	78,834	78,436	89,639	101,847	110,207	111,162	99,946	$153,994
60 - 64	2,328	128	97	496	532	242	311	364	129	29
	92,312	65,429	73,378	78,999	86,241	95,349	106,848	109,987	115,321	107,923
65 - 69	1,151	38	46	251	296	139	123	173	50	35
	89,491	58,468	84,930	74,105	83,253	101,263	102,928	99,668	110,634	117,773
70 & over	575	25	33	112	169	81	41	68	18	28
	77,214	49,538	66,918	58,350	70,969	88,168	97,396	95,428	94,046	110,916
Total	**21,226**	**3,540**	**1,650**	**5,155**	**4,582**	**2,246**	**1,811**	**1,793**	**354**	**95**
	$88,453	**$63,670**	**$80,640**	**$83,653**	**$91,060**	**$102,840**	**$109,877**	**$107,112**	**$106,636**	**$113,889**

(1) Based on employment service. Average employment service for Tier 1 is 16.2 years compared to average benefit service of 15.4 years.

(2) Limited by Internal Revenue Code Section 401(a)(17) compensation limit.

EXHIBIT B – MEMBERS IN ACTIVE SERVICE AS OF JUNE 30, 2019 (CONTINUED) BY AGE, YEARS OF SERVICE,[1] AND AVERAGE PROJECTED COMPENSATION[2]
TIER 3

	Years of Service									
Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 & over
Under 25	560	560	- -	- -	- -	- -	- -	- -	- -	- -
	$47,895	$47,895	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	1,187	1,186	1	- -	- -	- -	- -	- -	- -	- -
	56,083	56,052	$91,908	- -	- -	- -	- -	- -	- -	- -
30 - 34	1,025	1,008	14	3	- -	- -	- -	- -	- -	- -
	65,063	64,635	92,509	$80,731	- -	- -	- -	- -	- -	- -
35 - 39	786	766	10	8	2	- -	- -	- -	- -	- -
	69,831	69,389	97,012	76,555	$76,187	- -	- -	- -	- -	- -
40 - 44	577	558	6	6	4	3	- -	- -	- -	- -
	70,754	69,794	114,071	112,775	79,531	$66,998	- -	- -	- -	- -
45 - 49	460	440	4	8	6	1	1	- -	- -	- -
	71,457	70,064	76,468	121,186	105,156	81,046	$54,690	- -	- -	- -
50 - 54	374	360	5	- -	5	3	1	- -	- -	- -
	74,382	73,313	77,489	- -	91,605	100,240	280,000	- -	- -	- -
55 - 59	276	270	1	1	2	- -	2	- -	- -	- -
	71,727	70,789	85,547	280,000	73,754	- -	85,348	- -	- -	- -
60 - 64	124	124	- -	- -	- -	- -	- -	- -	- -	- -
	71,123	71,123	- -	- -	- -	- -	- -	- -	- -	- -
65 - 69	30	30	- -	- -	- -	- -	- -	- -	- -	- -
	75,912	75,912	- -	- -	- -	- -	- -	- -	- -	- -
70 & over	7	7	- -	- -	- -	- -	- -	- -	- -	- -
	76,111	76,111	- -	- -	- -	- -	- -	- -	- -	- -
Total	**5,406**	**5,309**	**41**	**26**	**19**	**7**	**4**	**- -**	**- -**	**- -**
	$64,356	**$63,762**	**$93,181**	**$106,953**	**$89,840**	**$83,251**	**$126,347**	**- -**	**- -**	**- -**

(1) Based on employment service. Average employment service for Tier 3 is 1.6 years compared to average benefit service of 1.4 years. We understand that some Tier 3 members entered LACERS with incoming reciprocal (i.e., employment) service. Such service is only used for eligibility determination purposes.

(2) Limited by Internal Revenue Code Section 401(a)(17) compensation limit.

EXHIBIT C – RECONCILIATION OF MEMBER DATA

	Active Members	Inactive Vested Members	Retired Members	Disabled Members	Beneficiaries	Total
Number as of June 30, 2018	**26,042**	**8,028**	**14,583**	**894**	**3,902**	**53,449**
• New members	2,440	0	0	0	273	2,713
• Terminations – with vested rights	-1,096	1,096	0	0	0	0
• Contribution refunds	-67	-208	0	0	0	-275
• Retirements	-892	-147	1,039	0	0	0
• New disabilities	-1	-28	0	29	0	0
• Return to work	252	-250	0	-2	0	0
• Died with or without beneficiary	-46	-48	-457	-33	-189	-773
• Data adjustments	0	145[1]	0	0	-5	140
Number as of June 30, 2019	**26,632**	**8,588**	**15,165**	**888**	**3,981**	**55,254**

(1) Includes members who were both hired and terminated during the year.

Note: For the change in the annual benefits from the retirees and beneficiaries added to and removed from the rolls, refer to Exhibit D of the supplemental schedules that accompany this report.

EXHIBIT D – SUMMARY STATEMENT OF INCOME AND EXPENSES ON A MARKET VALUE BASIS FOR RETIREMENT, HEALTH, FAMILY DEATH, AND LARGER ANNUITY BENEFITS

	Year Ended June 30, 2019		Year Ended June 30, 2018	
Net assets at market value at the beginning of the year		**$16,989,616,344**		**$15,689,570,310**
Contribution income:				
• Employer contributions	$586,753,902		$551,247,264	
• Member contributions	240,357,396		236,222,166	
Net contribution income		$827,111,298		$787,469,430
Investment income:				
• Interest, dividends and other income	$416,415,425		$391,326,284	
• Asset appreciation	637,092,495		1,206,714,441	
• Less investment and administrative fees	-107,917,081		-99,940,548	
Net investment income		$945,590,839		$1,498,100,177
Total income available for benefits		**$1,772,702,137**		**$2,285,569,607**
Less benefit payments:				
• Benefits paid	-$1,042,725,029[1]		-$975,112,058	
• Refunds of contributions	-11,683,519		-10,411,515	
Net benefit payments		-$1,054,408,548		-$985,523,573
Change in net assets at market value		**$718,293,589**		**$1,300,046,034**
Net assets at market value at the end of the year		**$17,707,909,933**		**$16,989,616,344**

Note: Results may be slightly off due to rounding.

[1] Includes offsets related to self funded dental insurance premium of $6,090,036 and health insurance premium reserve of $468,153.

EXHIBIT E – SUMMARY STATEMENT OF PLAN ASSETS FOR RETIREMENT, HEALTH, FAMILY DEATH, AND LARGER ANNUITY BENEFITS

	June 30, 2019		June 30, 2018	
Cash equivalents		$440,455,108		$470,390,317
Accounts receivable:				
• Accrued investment income	$62,832,172		$57,236,792	
• Proceeds from sales of investments	234,349,252		86,261,200	
• Other	15,324,165		13,985,260	
Total accounts receivable		$312,505,589		$157,483,252
Investments:				
• Fixed income	4,359,360,084		$4,054,094,716	
• Equities	9,912,472,407		9,783,373,660	
• Real estate and alternative investment	2,801,074,174		2,608,972,084	
• Derivative instruments	-796,982		0	
• Other	918,104,377		911,404,923	
Total investments at market value		17,990,214,060		$17,357,845,383
Capital assets		8,788,596		9,184,627
Total assets		$18,751,963,353		$17,994,903,579
Accounts payable:				
• Accounts payable and accrued expenses	-$54,418,516		-$40,966,628	
• Accrued investment expenses	-9,664,366		-10,455,435	
• Purchases of investments	-274,435,536		-158,788,428	
• Securities lending collateral	-705,535,002		-795,076,744	
Total accounts payable		-$1,044,053,420		-$1,005,287,235
Net assets at market value		**$17,707,909,933**		**$16,989,616,344**
Net assets at actuarial value		**$17,711,461,636**		**$16,687,907,767**
Net assets at valuation value (retirement benefits)		**$14,818,564,427**		**$13,982,435,465**

Note: Results may be slightly off due to rounding.

EXHIBIT F – DEVELOPMENT OF THE FUND THROUGH JUNE 30, 2019 FOR RETIREMENT, HEALTH, FAMILY DEATH, AND LARGER ANNUITY BENEFITS

Year Ended June 30	Employer Contributions	Employee Contributions	Net Investment Return[1]	Benefit Payments	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2010	$362,751,146	$126,961,295	$1,049,769,483	$681,106,189	$9,001,364,526	$11,019,583,518	122.4%
2011	414,133,032	114,731,434	1,934,130,562	770,755,578	10,693,603,976	11,280,641,736	105.5%
2012	423,920,740	178,246,151	67,093,447	767,163,328	10,595,700,986	11,620,457,827	109.7%
2013	419,266,581	197,880,631	1,512,696,071	803,005,352	11,922,538,917	12,004,110,338	100.7%
2014	455,658,786	204,135,914	2,180,005,302	826,566,921	13,935,771,998	12,935,503,398	92.8%
2015	481,765,868	207,564,465	348,113,908	848,455,864[2]	14,124,760,375	13,895,589,227	98.4%
2016	546,687,123	211,344,752	7,190,895	884,923,630	14,005,059,515	14,752,102,625	105.3%
2017	550,961,514	227,531,810	1,834,657,728	928,640,257	15,689,570,310	15,686,973,131	100.0%
2018	551,247,264	236,222,166	1,498,100,177	985,523,573[3]	16,989,616,344	16,687,907,767	98.2%
2019	586,753,902	240,357,396	945,590,839	1,054,408,548[4]	17,707,909,933	17,711,461,636	100.0%

(1) On a market value basis, net of investment fees and administrative expenses.

(2) Includes transfer of $2,614,765 to Fire and Police Pension for Office of Public Safety.

(3) Includes approximately $3.0 million transferred to LAFPP on January 5, 2018 for the APO who transferred from LACERS to LAFPP on January 7, 2018.

(4) Includes offsets related to self funded dental insurance premium of $6,090,036 and health insurance premium reserve of $468,153.

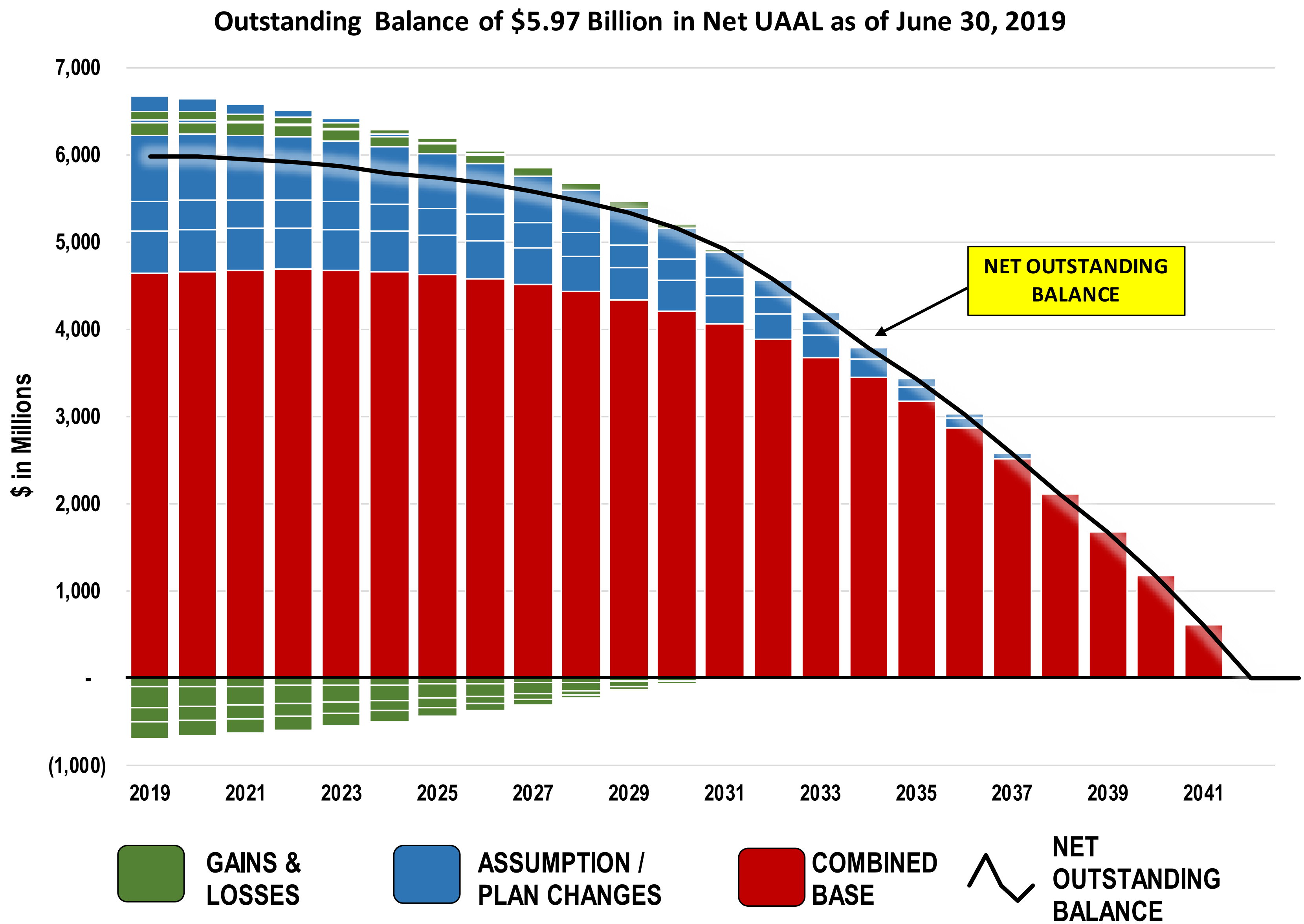
EXHIBIT G – TABLE OF AMORTIZATION BASES

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment[1]
Plan amendment (2009 ERIP)	June 30, 2009	$300,225,354	15	$174,336,478	5	$37,392,301
Combined base	June 30, 2012	4,173,548,280	30	4,635,156,828	23	289,952,764
Experience loss	June 30, 2013	116,022,989	15	96,155,626	9	12,266,702
Experience gain	June 30, 2014	-215,549,892	15	-187,434,889	10	-21,884,662
Change in assumptions	June 30, 2014	785,439,114	20	766,528,146	15	64,790,775
Experience gain	June 30, 2015	-185,473,782	15	-167,942,357	11	-18,126,135
Experience gain	June 30, 2016	-255,444,007	15	-238,882,218	12	-24,029,402
Experience gain	June 30, 2017	-99,814,895	15	-95,742,943	13	-9,037,767
Change in assumptions	June 30, 2017	340,717,846	20	339,036,254	18	25,059,890
Experience loss	June 30, 2018	147,418,362	15	144,742,271	14	12,896,653
Change in assumptions	June 30, 2018	483,717,164	20	483,166,785	19	34,374,423
Plan amendment (APO Tier 1 Enhancement)	January 7, 2018	25,170,149	15	25,342,723	13.5	2,322,624
Experience loss	June 30, 2019	394,012	15	394,012	15	33,304
Subtotal before GASB amount				**$5,974,856,716**		$406,011,470
40-year minimum GASB 25/27	June 30, 2004	29,189,615	15	0	0	0
40-year minimum GASB 25/27	June 30, 2005	12,708,684	15	1,860,290	1	1,860,290
Total				$5,976,717,006		**$407,871,760**

[1] Beginning of year payments, based on level percentage of payroll.

Note: the equivalent single amortization period is about 20 years.

EXHIBIT H – PROJECTION OF UAAL BALANCES AND PAYMENTS



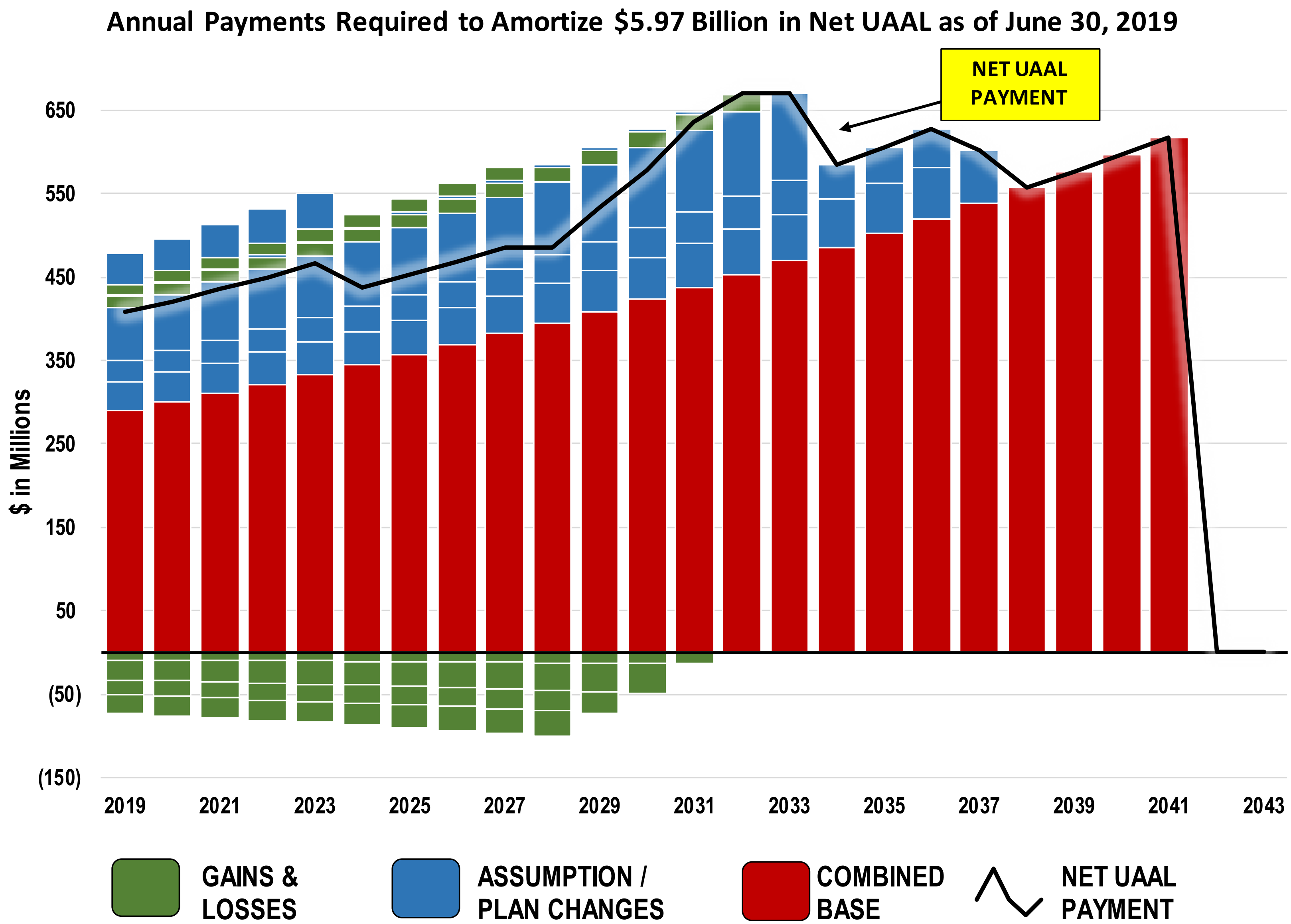

Annual Payments Required to Amortize $5.97 Billion in Net UAAL as of June 30, 2019
NET UAAL PAYMENT
650
550
450
350
250
150
50
(50)
(150)
$ in Millions
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043
GAINS & LOSSES
ASSUMPTION / PLAN CHANGES
COMBINED BASE
NET UAAL PAYMENT

EXHIBIT I – DEFINITION OF PENSION TERMS

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

Actuarial Accrued Liability for Actives:	The equivalent of the accumulated Normal Costs allocated to the years before the valuation date.
Actuarial Accrued Liability for Pensioners and Beneficiaries:	Actuarial Present Value of lifetime benefits to existing pensioners and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial Cost Method:	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the recommended contribution.
Actuarial Gain or Loss:	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield actuarial liabilities that are larger than projected.
Actuarially Equivalent:	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV):	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is: Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.) Multiplied by the probability of the occurrence of an event (such as survival, death, disability, 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 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 Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund of member contributions 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, as well as Actuarially Determined Contributions.
Actuarial Value of Assets (AVA):	The value of the Plan's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the Actuarially Determined Contribution.
Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the 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 Unfunded Actuarial Accrued Liability. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the Unfunded Actuarial Accrued Liability. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is intended to payoff the Unfunded Actuarial Accrued Liability.

Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Plan is calculated, including: Investment return - the rate of investment yield that the Plan will earn over the long-term future; Mortality rates - the rate or probability of death at a given age for employees and pensioners; Retirement rates - the rate or probability of retirement at a given age or service; Disability rates – the rate or probability of disability retirement at a given age; Withdrawal rates - the rate or probability at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; Salary increase rates - the rates of salary increase due to inflation, real wage growth and merit and promotion increases.
Closed Amortization Period:	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 20 years, it is 19 years at the end of one year, 18 years at the end of two years, etc. See Open Amortization Period.
Decrements:	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.
Defined Benefit Plan:	A retirement plan in which benefits are defined by a formula based on the member's compensation, age 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.
Experience Study:	A periodic review and analysis of the actual experience of the Plan that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified based on recommendations from the Actuary.
Funded Ratio:	The ratio of the Valuation Value of Assets (VVA) to the Actuarial Accrued Liability (AAL). Plans sometimes also calculate a market funded ratio, using the Market Value of Assets (MVA), rather than the VVA.
Investment Return:	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Normal Cost:	The portion of the Actuarial Present Value of Future Benefits allocated to a valuation year by the Actuarial Cost Method. Any payment with respect to an Unfunded Actuarial Accrued Liability is not part of the Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of member contributions and employer Normal Cost unless otherwise specifically stated.

Open Amortization Period:	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in each future year in determining the Amortization Period.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Valuation Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus or an Overfunded Actuarial Accrued Liability.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future 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.

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 June 29, 2018, and the June 30, 2017 Review of Economic Actuarial Assumptions dated June 30, 2017. Unless otherwise noted, all actuarial assumptions and methods shown below apply to both Tier 1 and Tier 3 members. These assumptions have been adopted by the Board.
Economic Assumptions	
Net Investment Return:	7.25%; net of administrative and investment expenses. Based on the Review of Economic Actuarial Assumptions referenced above, expected administrative and investment expenses represent about 0.60% of the Market Value of Assets.
Employee Contribution Crediting Rate:	Based on average of 5-year Treasury note rate. An assumption of 3.00% is used to approximate that crediting rate in this valuation.
Consumer Price Index (CPI):	Increase of 3.00% per year; benefit increases due to CPI subject to 3.00% maximum for Tier 1 and 2.00% maximum for Tier 3.
Payroll Growth:	Inflation of 3.00% per year plus real "across the board" 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 3.00% per year from the valuation date.

Salary Increases:	The annual rate of compensation increase includes: inflation at 3.00%, plus "across the board" salary increases of 0.50% per year, plus the following merit and promotion increases:

Merit and Promotion Increases	
Years of Service	**Rate (%)**
Less than 1	6.50
1 – 2	6.20
2 – 3	5.10
3 – 4	3.10
4 – 5	2.10
5 – 6	1.10
6 – 7	1.00
7 – 8	0.90
8 – 9	0.70
9 – 10	0.60
10 & Over	0.40

<u>Demographic Assumptions</u>

Post-Retirement Mortality Rates:

Healthy Members and All Beneficiaries

- Headcount-Weighted RP-2014 Healthy Annuitant Mortality Tables (separate tables for males and females), with no setback for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2017.

Disabled Members

- Headcount-Weighted RP-2014 Disabled Retiree Mortality Tables (separate tables for males and females), with no setback for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2017.

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

Pre-Retirement Mortality Rates:

- Headcount-Weighted RP-2014 Employee Mortality Tables (separate tables for males and females), with no setback for males and females, multiplied by 90%, projected generationally with the two-dimensional mortality improvement scale MP-2017.

	Rate (%)[1]	
Age	**Male**	**Female**
20	0.05	0.02
25	0.06	0.02
30	0.05	0.02
35	0.06	0.03
40	0.07	0.04
45	0.11	0.07
50	0.19	0.12
55	0.31	0.19
60	0.51	0.27
65	0.88	0.40

For Tier 1 Enhanced, 100% of pre-retirement death benefits are assumed to be service-connected.

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

Disability Incidence:

Disability Incidence	
Age	**Rate (%)**
25	0.01
30	0.02
35	0.05
40	0.07
45	0.13
50	0.19
55	0.20
60	0.20

For Tier 1 Enhanced, 90% of disability retirements are assumed to be service-connected with service-connected disability benefits based on years of service, as follows:

Years of Service	Benefit
Less than 20	55% of Final Average Monthly Compensation
20 – 30	65% of Final Average Monthly Compensation
More than 30	75% of Final Average Monthly Compensation

For Tier 1 Enhanced, 10% of disability retirements are assumed to be nonservice-connected with nonservice-connected disability benefits equal to 40% of Final Average Monthly Compensation.

Termination:

Termination (< 5 Years of Service)	
Years of Service	**Rate (%)**
Less than 1	12.00
1 – 2	10.00
2 – 3	9.00
3 – 4	8.25
4 – 5	7.75

Termination (5+ Years of Service)	
Age	**Rate (%)**
25	7.00
30	7.00
35	5.50
40	3.90
45	3.20
50	2.70
55	2.50
60	2.50

No termination is assumed after a member is eligible for retirement (as long as a retirement rate is present).

Retirement Rates:

	Retirement Rates (%)					
	Tier 1		Tier 1 Enhanced[1]		Tier 3	
Age	Non-55/30	55/30	Non-55/30	55/30	Non-55/30	55/30
50	6.0	0.0	7.0	0.0	6.0	0.0
51	3.0	0.0	4.0	0.0	3.0	0.0
52	3.0	0.0	4.0	0.0	3.0	0.0
53	3.0	0.0	4.0	0.0	3.0	0.0
54	17.0	0.0	18.0	0.0	16.0	0.0
55	6.0	24.0	7.0	25.0	0.0[2]	23.0
56	6.0	16.0	7.0	17.0	0.0[2]	15.0
57	6.0	16.0	7.0	17.0	0.0[2]	15.0
58	6.0	16.0	7.0	17.0	0.0[2]	15.0
59	6.0	16.0	7.0	17.0	0.0[2]	15.0
60	7.0	16.0	8.0	17.0	6.0	15.0
61	7.0	16.0	8.0	17.0	6.0	15.0
62	7.0	16.0	8.0	17.0	6.0	15.0
63	7.0	16.0	8.0	17.0	6.0	15.0
64	7.0	16.0	8.0	17.0	6.0	15.0
65	13.0	20.0	14.0	21.0	12.0	19.0
66	13.0	20.0	14.0	21.0	12.0	19.0
67	13.0	20.0	14.0	21.0	12.0	19.0
68	13.0	20.0	14.0	21.0	12.0	19.0
69	13.0	20.0	14.0	21.0	12.0	19.0
70 & Over	100.0	100.0	100.0	100.0	100.0	100.0

(1) Consistent with the cost study prepared for the adoption of enhanced Tier 1 benefits, we have estimated the rates above by increasing the retirement rates for Tier 1 by a flat 1%.

(2) Not eligible to retire under the provisions of the Tier 3 plan.

Retirement Age and Benefit for Inactive Vested Members: Pension benefit paid at the later of age 59 or the current attained age. For reciprocals, 3.90% compensation increases per annum.

Other Reciprocal Service: 5% of future inactive vested members will work at a reciprocal system.

Service: Employment service is used for eligibility determination purposes. Benefit service is used for benefit calculation purposes.

Future Benefit Accruals: 1.0 year of service credit per year.

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

Form of Payment:	All active and inactive Tier 1 and Tier 3 members who are assumed to be married or with domestic partners at retirement are assumed to elect the 50% Joint and Survivor Cash Refund Annuity. For Tier 1 Enhanced, the continuance percentage is 70% for service retirement and nonservice-connected disability, and 80% for service-connected disability. Those members who are assumed to be un-married or without domestic partners are assumed to elect the Single Cash Refund Annuity.
Percent Married/Domestic Partner:	76% of male participants; 50% of female participants.
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.
Actuarial Funding Policy	
Actuarial Cost Method:	Entry Age Cost Method, level percent of salary. Entry age is calculated as age on the valuation date minus years of employment service. Both the normal cost and the actuarial accrued liability are calculated on an individual basis.
Actuarial Value of Assets:	Market value of assets (MVA) less unrecognized returns in each of the last seven years. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a seven-year period. The actuarial value of assets (AVA) is limited by a 40% corridor; the AVA cannot be less than 60% of MVA, nor greater than 140% of MVA.
Valuation Value of Assets:	The portion of the total actuarial value of assets allocated for retirement benefits, based on a prorated share of market value.
Amortization Policy:	The amortization method for the UAAL is a level percent of payroll, assuming annual increases in total covered payroll equal to inflation plus across the board increases (other than inflation). Changes in the UAAL due to actuarial gains/losses are amortized over separate 15-year periods. Changes in the UAAL due to assumption or method changes are amortized over separate 20-year periods. Plan changes, including the 2009 ERIP, are amortized over separate 15-year periods. Future ERIPs will be amortized over 5 years. Any actuarial surplus is amortized over 30 years. All the bases on or before June 30, 2012, except those arising from the 2009 ERIP and the two (at that time) GASB 25/27 layers, were combined and amortized over 30 years effective June 30, 2012.

Other Actuarial Methods	
Employer Contributions:	Employer contributions consist of two components: *Normal Cost* The annual contribution rate that, if paid annually from a member's first year of membership through the year of retirement, would accumulate to the amount necessary to fully fund the member's retirement-related benefits. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution rate is expressed as a level percentage of the member's compensation. *Contribution to the Unfunded Actuarial Accrued Liability (UAAL)* The annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution (or rate credit in the case of a negative UAAL) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the System) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the annual rate of 3.50% (i.e., 3.00% inflation plus 0.50% across-the-board salary increase). The amortization policy is described on the previous page. The recommended employer contributions are provided in *Section 2, Subsection F.*
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 members 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 $225,000 for 2019. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant's circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions. Benefits 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. Actual limitations will result in gains as they occur.
Changes in 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
Census Date:	June 30
Membership Eligibility:	
Tier 1 *(§ 4.1002(a))*	All employees who became members of the System before July 1, 2013, and certain employees who became members of the System on or after July 1, 2013. In addition, pursuant to Ordinance No. 184134, all Tier 2 employees who became members of the System between July 1, 2013 and February 21, 2016 were transferred to Tier 1 effective February 21, 2016. Includes Airport Peace Officers who did not pay for enhanced benefits.
Tier 1 Enhanced *(§4.1002(e))*	All Tier 1 Airport Peace Officers (including certain fire fighters) appointed to their positions before January 7, 2018 who elected to remain at LACERS after January 6, 2018, and who paid their mandatory additional contribution of $5,700 to LACERS before January 8, 2019, or prior to their retirement date, whichever was earlier.
Tier 3 *(§4.1080.2(a))*	All employees who became members of the System on or after February 21, 2016, except as provided otherwise in Section 4.1080.2(b) of the Los Angeles Administrative Code.
Normal Retirement Benefit:	
Tier 1 & Tier 1 Enhanced	
Age & Service Requirement *(§ 4.1005(a))*	Age 70; or Age 60 with 10 years of continuous City service; or Age 55 with at least 30 years of City service.
Tier 1	
Amount (§ 4.1007(a))	2.16% per year of service credit (not greater than 100%) of the Final Average Monthly Compensation.
Tier 1 Enhanced	
Amount (§ 4.1007(a))	2.30% per year of service credit (not greater than 100%) of the Final Average Monthly Compensation.
Tier 3	
➤ *With less than 30 Years of Service (§ 4.1080.5(a)(2)(i))*	
Age & Service Requirement	Age 60 with 10 years of service, including 5 years of continuous City service.
Amount	1.50% per year of service credit at age 60 (not greater than 80%[1]) of the Final Average Monthly Compensation.

Normal Retirement Benefit: (continued)

Tier 3 (continued)

- *With 30 or more Years of Service (§ 4.1080.5(a)(2)(ii))*

Age & Service Requirement	Age 60 with 30 years of service, including 5 years of continuous City service.
Amount	2.00% per year of service credit at age 60 (not greater than 80%[(1)]) of the Final Average Monthly Compensation.

[(1)] Except when benefit is based solely on the annuity component funded by the member's contributions.

Early Retirement Benefit:

Tier 1 & Tier 1 Enhanced

Age & Service Requirement (§ 4.1005(b))	Age 55 with 10 years of continuous City service; or Any age with 30 years of City service.
Amount (§ 4.1007(a) & (b))	2.16% and 2.30% per year of service credit for Tier 1 and Tier 1 Enhanced, respectively, (not greater than 100%) of the Final Average Monthly Compensation, reduced for retirement ages below age 60 using the following Early Retirement benefit adjustment factors:

Age	Factor	Age	Factor
45	0.6250	53	0.8650
46	0.6550	54	0.8950
47	0.6850	55	0.9250
48	0.7150	56	0.9400
49	0.7450	57	0.9550
50	0.7750	58	0.9700
51	0.8050	59	0.9850
52	0.8350	60	1.0000

Early Retirement Benefit: (continued)

Tier 3

Age & Service Requirement (§ 4.1080.5(a)(1))	Prior to age 60 with 30 years of service, including 5 years of continuous City service.
Amount (§ 4.1080.5(a)(1))	2.00% per year of service credit (not greater than 80%[(1)]) of the Final Average Monthly Compensation, reduced for retirement ages below age 55 using the following Early Retirement benefit adjustment factors:

Age	Factor	Age	Factor
45	0.6250	50	0.7750
46	0.6550	51	0.8050
47	0.6850	52	0.8350
48	0.7150	53	0.8650
49	0.7450	54	0.8950
		55 - 60	1.0000

[(1)] Except when benefit is based solely on the annuity component funded by the member's contributions.

Enhanced Retirement Benefit:

Tier 1 & Tier 1 Enhanced

Age & Service Requirement	Not applicable - see Normal Retirement age and service requirement.
Amount	Not applicable - see Normal Retirement amount.

Tier 3

- *With less than 30 Years of Service (§ 4.1080.5(a)(3)(i))*

Age & Service Requirement	Age 63 with 10 years of service, including 5 years of continuous City service.
Amount	2.00% per year of service credit at age 63 (not greater than 80%[(1)]) of the Final Average Monthly Compensation.

- *With 30 or more Years of Service (§ 4.1080.5(a)(3)(ii))*

Age & Service Requirement	Age 63 with 30 years of service, including 5 years of continuous City service.
Amount	2.10% per year of service credit at age 63 (not greater than 80%[(1)]) of the Final Average Monthly Compensation.

[(1)] Except when benefit is based solely on the annuity component funded by the member's contributions.

Service Credit:	
Tier 1, Tier 1 Enhanced, & Tier 3 (*§ 4.1001(a) & § 4.1080.1(a)*)	The time component of the formula used by LACERS for purposes of calculating benefits.
Final Average Monthly Compensation:	
Tier 1 & Tier 1 Enhanced (*§ 4.1001(b)*)	Equivalent of monthly average salary of highest continuous 12 months (one year); includes base salary plus regularly assigned pensionable bonuses or premium pay.[1]
Tier 3 (*§ 4.1080.1(b)*)	Equivalent of monthly average salary of highest continuous 36 months (three years); limited to base salary and any items of compensation that are designated as pension based.[1]
	[1] IRC Section 401(a)(17) compensation limit would apply to all employees who began membership in LACERS after June 30, 1996.
Post-Retirement Cost-of-Living Benefits:	
Tier 1 & Tier 1 Enhanced (*§ 4.1022*)	Based on changes to Los Angeles area[1] Consumer Price Index, to a maximum of 3% per year; excess banked.
Tier 3 (*§ 4.1080.17*)	Based on changes to Los Angeles area[1] Consumer Price Index, to a maximum of 2% per year; excess not banked.
	[1] Currently referred to as the Los Angeles-Long Beach-Anaheim Area, by the Bureau of Labor Statistics.
Death after Retirement:	
Tier 1 & Tier 3 (*§ 4.1010(c), § 4.1080.10(c), & § 4.1012(c)*)	(i) 50% of retiree's unmodified allowance continued to an eligible spouse or a domestic partner; or a modified continuance to an eligible spouse or a domestic partner at the time of member's death (or a designated beneficiary selected by member at the time of retirement);[1] (ii) $2,500 lump sum death benefit paid to a designated beneficiary; and (iii) Any unused contributions if the member has elected the cash refund annuity option. [1] The retiree may elect at the time of retirement to take a reduced allowance in order to provide for a higher continuance percentage pursuant to the provisions of either Section 4.1015 (Tier 1) or Section 4.1080.14 (Tier 3).

Death after Retirement: (continued) *Tier 1 Enhanced* *(§ 4.1010.1(b), § 4.1010.1(i), and § 4.1010.1(j))* ➤ *While on service-connected disability*	(i) 80% of retiree's unmodified allowance continued to an eligible spouse or a domestic partner; or a modified continuance to an eligible spouse or a domestic partner at the time of member's death (or a designated beneficiary selected by member at the time of retirement) [(1),(2)] (ii) $2,500 lump sum death benefit paid to a designated beneficiary; and (iii) Any unused contributions if the member has elected the cash refund annuity option. (1) If the death occurs within three years of the retiree's retirement, the eligible survivor shall receive 80% of the Final Average Monthly Compensation (adjusted with Cost of Living benefit). (2) The retiree may elect at the time of retirement to take a reduced allowance in order to provide for a higher continuance percentage pursuant to the provision of Section 4.1010.1(c).
➤ *While on nonservice-connected disability or service retirement*	(i) 70% of retiree's unmodified allowance continued to an eligible spouse or a domestic partner; or a modified continuance to an eligible spouse or a domestic partner at the time of member's death (or a designated beneficiary selected by member at the time of retirement)[(3)] (ii) $2,500 lump sum death benefit paid to a designated beneficiary; and (iii) Any unused contributions if the member has elected the cash refund annuity option. (3) The retiree may elect at the time of retirement to take a reduced allowance in order to provide for a higher continuance percentage pursuant to the provision of Section 4.1010.1(c).

Death before Retirement:	
Tier 1, Tier 1 Enhanced & Tier 3 (§ 4.1010(a), § 4.1010.1(b), & § 4.1080.10(a))	Greater of: Option #1: (i) Eligibility – None. (ii) Benefit – Refund of employee contributions plus a limited pension benefit equal to 50% of monthly salary paid, according to the following schedule:

Service Credit	**Total Number of Monthly Payments**
Less than 1 year	0
1 year	2
2 years	4
3 years	6
4 years	8
5 years	10
6+ years	12

Tier 1 & Tier 3	Option #2: (i) Eligibility – Duty-related death or after 5 years of continuous service. (ii) Benefit – Continuance of service or disability benefit payable under 100% joint and survivor option to an eligible spouse or qualified domestic partner.
Tier 1 Enhanced	
Service-Connected Death	Option #2: (i) Eligibility – None. (ii) Benefit – 80% of member's Final Average Monthly Compensation.
Nonservice-Connected Death	(i) Eligibility – 5 years of service (unless on military leave and killed while on military duties). (ii) Benefit – 50% of member's Final Average Monthly Compensation.

Member Contributions:	
Tier 1 & Tier 1 Enhanced *(§ 4.1003)*	Effective July 1, 2011, the member contribution rate became 7% for all employees. Of the 7% rate, 0.5% is the survivor contribution portion and 6.5% is the normal contribution. The 7% member rate shall be paid until June 30, 2026 or until the ERIP Cost Obligation (defined in ERIP Ordinance No. 180926) is fully paid, whichever comes first.(1) Beginning January 1, 2013, all non-represented members and members in certain bargaining groups are required to pay an additional 4% member contribution rate to defray the cost of providing a Retiree Medical Plan premium subsidy (this additional rate has increased to 4.5% for certain members). For Tier 1 (excluding Tier 1 Enhanced), members with no eligible spouse or domestic partner at retirement can request a refund of the survivor portion of the member contributions (i.e., generally based on a contribution rate of 0.5% of pay). (1) The member contribution rate will drop down to 6% afterwards.
Tier 3 *(§ 4.1080.3)*	The member contribution rate is 7% for all employees. Of the 7% rate, 0.5% is the survivor contribution portion and 6.5% is the normal contribution. All members are required to pay an additional 4% member contribution rate to defray the cost of providing a Retiree Medical Plan premium subsidy. Members with no eligible spouse or domestic partner at retirement can request a refund of the survivor portion of the member contributions (i.e., generally based on a contribution rate of 0.5% of pay).
Disability:	
Tier 1 & Tier 3	
Service Requirement *(§ 4.1008(a) & § 4.1080.8(a))*	5 years of continuous service
Amount(1) *(§ 4.1008(c) & § 4.1080.8(c))*	1/70 (1.43%) of the Final Average Monthly Compensation per year of service or 1/3 of the Final Average Monthly Compensation, if greater.

Disability: (continued)	
Tier 1 Enhanced	
Service Requirement	
(§ 4.1008.1)	
Service-Connected Disability	None
Nonservice-Connected Disability	5 years of continuous service
Amount[(1)]	
(§ 4.1008.1)	
Service-Connected Disability	30% to 90% of the Final Average Monthly Compensation depending on severity of disability, with a minimum of 2% of the Final Average Monthly Compensation per year of service.
Nonservice-Connected Disability	30% to 50% of the Final Average Monthly Compensation depending on severity of disability.
	(1) The benefit calculated using the service retirement formula will be paid if the member is eligible and that benefit is greater than that calculated under the disability retirement formula.
Deferred Retirement Benefit (Vested):	
Tier 1 & Tier 1 Enhanced	
(§ 4.1006)	
Age & Service Requirement	Age 70 with 5 years of continuous City service; or Age 60 with 5 years of continuous City service and at least 10 years elapsed from first date of membership; or Age 55 with at least 30 years of service. Deferred employee who meets part-time eligibility: age 60 and at least 10 years elapsed from first date of membership.
Amount	Normal retirement benefit (or refund of contributions and accumulated interest).
Age & Service Requirement	Age 55 with 5 years of continuous City service and at least 10 years elapsed from first date of membership. Deferred employee who meets part-time eligibility: age 55 and at least 10 years elapsed from first date of membership.

Deferred Retirement Benefit (Vested): (continued)

Amount	Early retirement benefit (or refund of contributions and accumulated interest), using the following Early Retirement benefit adjustment factors:

Age	Factor
55	0.9250
56	0.9400
57	0.9550
58	0.9700
59	0.9850

Tier 3

(§ 4.1080.6)

Age & Service Requirement	Age 60 with 5 years of continuous City service and at least 10 years elapsed from first date of membership; or Age 70 with 5 years of continuous City service, regardless of the number of years that have elapsed from first date of membership.
Amount	Normal retirement benefit (based on a Retirement Factor of 1.50%; or refund of contributions and accumulated interest).
Age & Service Requirement	Age 60 with 30 years of continuous City service and at least 10 years elapsed from first date of membership; or Age 63 with 10 years of service, including 5 years of continuous City service.
Amount	Normal retirement benefit (based on a Retirement Factor of 2.00%; or refund of contributions and accumulated interest).
Age & Service Requirement	Age 63 with 30 years of continuous City service and at least 10 years elapsed from first date of membership.
Amount	Enhanced retirement (benefit based on a Retirement Factor of 2.10%; or refund of contributions and accumulated interest).
Age & Service Requirement	Age 55 (but not yet 60) with 5 years of continuous City service and at least 10 years elapsed from first date of membership.
Amount	Early retirement benefit (based on a Retirement Factor of 1.50% instead of 2.00%; or refund of contributions and accumulated interest), using the following Early Retirement benefit adjustment factors:

Age	Factor
55	0.9250
56	0.9400
57	0.9550
58	0.9700
59	0.9850

Withdrawal of Contributions Benefit (Ordinary Withdrawal):	Refund of employee contributions with interest.
Changes in Plan Provisions:	There have been no changes in plan provisions since the last valuation.

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

5590655v4/05806.002

Los Angeles City Employees' Retirement System

Funding Actuarial Valuation and Review of Other Postemployment Benefits (OPEB) as of June 30, 2019

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

Segal Consulting

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T 415.263.8200 www.segalco.com

November 6, 2019

Board of Administration
Los Angeles City Employees' Retirement System
202 W. 1st Street, Suite 500
Los Angeles, CA 90012-4401

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review of Other Postemployment Benefits (OPEB) as of June 30, 2019. The report summarizes the actuarial data used in the valuation, establishes the Actuarially Determined Contribution (ADC) for the Fiscal Year 2020/2021, and analyzes the preceding year's experience. This report was based on the census and unaudited financial data provided by the System and the terms of the Plan as summarized in Exhbit III. The actuarial calculations were completed under the supervision of Thomas Bergman, ASA, MAAA, Enrolled Actuary and Andy Yeung, ASA, MAAA, FCA, Enrolled Actuary. The health care trend and other related medical assumptions have been reviewed by Paul Sadro, ASA, MAAA.

This actuarial valuation has been completed in accordance with generally accepted actuarial principles and practices. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in our opinion, the assumptions used in this valution and described in Exhibit II are reasonably related to the experience of and the expectations for the Plan. The actuarial projections are based on these assumptions and the plan of benefits as summarized in Exhibits II and III.

Sincerely,

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

Paul Angelo, FSA, MAAA, FCA, EA	*Andy Yeung, ASA, MAAA, FCA, EA*
Senior Vice President and Actuary	*Vice President and Actuary*

JAC/jl

SECTION 1

VALUATION SUMMARY

SECTION 2

VALUATION RESULTS

SECTION 3

VALUATION DETAILS

SECTION 4

SUPPORTING INFORMATION

PURPOSE

This report presents the results of our actuarial valuation of the City of Los Angeles Employees' Retirement System OPEB plan as of June 30, 2019 for funding purposes. The results of the valuation for financial reporting purposes consistent with GASB Statement No. 74 are provided in a separate report.

HIGHLIGHTS OF THE VALUATION

- The recommended contribution rate has decreased from 4.91% of payroll to 4.49% of payroll while the recommended contribution amount has decreased from $106.8 million to $100.0 million, assuming contributions are received by LACERS on July 15. The main reasons for the decline in the contribution rate were: (i) investment gain (after smoothing) and (ii) 2019/2020 premium and subsidy levels lower than expected, offset to some degree by (iii) updated trend for projecting Medicare Part B premiums after 2019/2020, and (iv) miscellaneous demographic and other losses.[1] A complete reconciliation of the change in the recommended contribution rate is provided in Exhibit H. Rates are shown separately for Tier 1 and Tier 3 in Chart 4.
- The ratio of the actuarial value of assets to actuarial accrued liabilities increased from 80.72% to 84.36%. On a market value of assets basis, the funded ratio increased from 82.18% to 84.34%. The unfunded actuarial accrued liability decreased from $628.0 million to $521.6 million. A complete reconciliation of the System's unfunded actuarial accrued liability is provided in Chart 2.
- As noted above, the GAS 74 report with a measurement date of June 30, 2019 for financial reporting purposes for the Plan was provided as a separate report.
- The GAS 75 report with a measurement date of June 30, 2019 for financial reporting purposes for the employer (with a reporting date of June 30, 2020) will be provided in the next few months.
- The actuarial valuation report as of June 30, 2019 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected. Declines in asset values will increase the actuarial cost of the Plan, while increases will decrease the actuarial cost of the Plan.
- As in prior years, the employer contribution rates provided in this report have been developed assuming they will be received by LACERS on any of the following dates:

  (1) The beginning of the fiscal year, or

  (2) On July 15, 2020, or

  (3) Throughout the year (i.e., LACERS will receive contributions at the end of every pay period).

[1] *Other losses include the recognition for the first time of the liability for about 250 retirees receiving a premium reimbursement for health plans not sponsored by LACERS. Data for those retirees are not included in the regular retiree membership data as members receiving a medical subsidy from LACERS, and were provided separately for the first time for this valuation.*

The key valuation results for the current and prior years are shown.

SUMMARY OF VALUATION RESULTS

	June 30, 2019	June 30, 2018
Actuarial Accrued Liability (AAL)	$3,334,298,549	$3,256,827,847
Actuarial Value of Assets	2,812,661,894	2,628,843,511
Unfunded Actuarial Accrued Liability	521,636,655	627,984,336
Funded Ratio on Actuarial Value Basis	84.36%	80.72%
Market Value of Assets	$2,812,097,867	$2,676,371,615
Funded Ratio on Market Value Basis	84.34%	82.18%
Actuarially Determined Contribution (ADC)		
Normal cost (beginning of year)	$76,422,769	$74,477,507
Amortization of the unfunded actuarial accrued liability	23,236,922	32,047,427
Total Actuarially Determined Contribution (beginning of year)	$99,659,691	$106,524,934
Total Actuarially Determined Contribution (July 15)	$99,950,758	$106,836,051
Total Actuarially Determined Contribution (end of each pay period)	$103,209,147	$110,318,900
Total projected compensation[1]	$2,225,412,831	$2,177,687,102
ADC as a percentage of pay (there is a 12-month delay until the rate is effective)[2]		
Beginning of year	4.47%	4.89%
July 15	4.49%	4.91%
End of each pay period	4.64%	5.07%
Total Participants	49,221	47,731

(1) *Reflects amount calculated in the pension valuation.*

(2) *A breakdown of the ADC by tier is provided in Chart 4.*

IMPORTANT INFORMATION ABOUT ACTUARIAL VALUATIONS

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

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

- **Plan of benefits** Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan description in this report to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
- **Assets** This valuation is based on the market value of assets as of the valuation date, as provided by the System.
- **Actuarial assumptions** In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to health care trends and member enrollment in retiree health benefits. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan's assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

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

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

- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If LACERS 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. LACERS 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 LACERS, it is not a fiduciary in its capacity as actuaries and consultants with respect to LACERS.

November 6, 2019

ACTUARIAL CERTIFICATION

This is to certify that Segal Consulting (Segal) has conducted an actuarial valuation of certain benefit obligations of Los Angeles City Employees' Retirement System's other postemployment benefit programs as of June 30, 2019, in accordance with generally accepted actuarial principles and practices. In particular, it is our understanding that the assumptions and methods used for funding purposes meet the parameters set by the Actuarial Standards of Practice (ASOPs). Actuarial valuations are performed annually for this other postemployment benefit program with the last valuation completed as of June 30, 2018.

The actuarial valuation is based on the plan of benefits verified by LACERS and on participant, premium, claims and financial data provided by LACERS. Segal did not audit LACERS' financial statements, but conducted an examination of all participant data for reasonableness and we concluded that it was reasonable and consistent with the prior year's data.

One of the general goals of an actuarial valuation is to establish contributions that fully fund the System's liabilities, and that, as a percentage of payroll, remain as level as possible for each generation of active members. Both the Normal Cost and the Actuarial Accrued Liability are determined under the Entry Age cost method.

The actuarial computations made are for funding plan benefits. Accordingly, additional determinations will be needed for other purposes, such as satisfying financial accounting requirements under Governmental Accounting Standards Board (GASB) Statements No. 74 and judging benefit security at termination of the plan.

Segal prepared all of the supporting schedules for the Actuarial Section of the Comprehensive Annual Financial Report (CAFR) and certain supporting schedules in the Financial Section, based on the results of the June 30, 2019 actuarial valuation. A listing of the supporting schedules Segal prepared for inclusion in the Financial Section, and in the Actuarial Section, is provided below:

Financial Section

1) Schedule of Net OPEB Liability*
2) Schedule of Changes in Net OPEB Liability and Related Ratios*
3) Schedule of Contribution History*

November 6, 2019

ACTUARIAL CERTIFICATION (CONTINUED)

Actuarial Section

4) Summary of Significant Valuation Results
5) Active Member Valuation Data
6) Retirees and Beneficiaries Added to and Removed from Retiree Payroll
7) Schedule of Funded Liabilities by Type
8) Schedule of Funding Progress
9) Actuarial Analysis of Financial Experience
10) Actuarial Balance Sheet
11) Schedule of Changes in Net OPEB Liability and Related Ratios*

* Source: Segal's GASB Statement No. 74 valuation report as of June 30, 2019.

LACERS' staff prepared other trend data schedules in the Statistical Section based on information supplied in Segal's valuation report.

To the best of our knowledge, this report is complete and accurate and in our opinion presents the plan's current funding information. The signing actuaries are members of the American Academy of Actuaries and collectively are qualified to render the actuarial opinion contained herein.

Thomas Bergman
Thomas Bergman, ASA, MAAA, EA
Retiree Health Actuary

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

The actuarial present value of total projected benefits uses the actuarial assumptions disclosed in Section 4 to calculate the value today of all benefits expected to be paid to current actives and retired plan members. The actuarial balance sheet shows the expected breakdown of how these benefits will be financed.

CHART 1

Actuarial Present Value of Total Projected Benefits (APB) and Actuarial Balance Sheet

	Actuarial Present Value of Total Projected Benefits (APB)	
	June 30, 2019	**June 30, 2018**
Participant Category		
Current retirees, beneficiaries, and dependents	$1,600,130,890	$1,497,370,105
Current active members	2,315,499,364	2,315,910,753
Terminated members entitled but not yet eligible	65,887,248	67,137,848
Total	$3,981,517,502	$3,880,418,706

	June 30, 2019	**June 30, 2018**
Actuarial Balance Sheet		
The actuarial balance sheet as of the valuation date is as follows:		
Assets		
1. Actuarial value of assets	$2,812,661,894	$2,628,843,511
2. Present value of future normal costs	647,218,953	623,590,859
3. Unfunded actuarial accrued liability	521,636,655	627,984,336
4. Present value of current and future assets	$3,981,517,502	$3,880,418,706
Liabilities		
5. Actuarial Present Value of total Projected Benefits	$3,981,517,502	$3,880,418,706

The actuarial accrued liability shows that portion of the APB (Chart 1) allocated to periods prior to the valuation date by the actuarial cost method. The chart below shows the portion of the liability for active and inactive members, and reconciles the unfunded actuarial accrued liability from last year to this year.

CHART 2

Actuarial Accrued Liability (AAL) and Unfunded AAL (UAAL)

	June 30, 2019	June 30, 2018
Participant Category		
Current retirees, beneficiaries, and dependents	$1,600,130,890	$1,497,370,105
Current active members	1,668,280,411	1,692,319,894
Terminated members entitled but not yet eligible	65,887,248	67,137,848
Total actuarial accrued liability	$3,334,298,549	$3,256,827,847
Unfunded Actuarial Accrued Liability		
Total actuarial accrued liability	$3,334,298,549	$3,256,827,847
Actuarial value of assets	2,812,661,894	2,628,843,511
Unfunded actuarial accrued liability	$521,636,655	$627,984,336

Development of Unfunded Actuarial Accrued Liability for the Year Ended June 30, 2019

1. Unfunded actuarial accrued liability as of June 30, 2018	$627,984,336
2. Employer normal cost as of June 30, 2018	74,477,507
3. Expected employer contributions during 2018/2019 fiscal year	-106,524,934
4. Interest	43,205,425
5. Expected unfunded actuarial accrued liability as of June 30, 2019 (1 + 2 + 3 + 4)	$639,142,334
6. Change due to investment gain, after smoothing	-16,214,973
7. Change due to actual contributions more than expected	-1,177,631
8. Change due to miscellaneous demographic gains and other losses*	38,443,686
9. Change due to updated 2019/2020 premium and subsidy levels	-172,496,463
10. Change due to updating trend to project future Medicare Part B premiums after 2019/2020	33,939,702
11. Unfunded actuarial accrued liability as of June 30, 2019 (5 + 6 + 7 + 8 + 9 + 10)	$521,636,655

* *Other losses include the recognition for the first time of the liability for about 250 retirees receiving a premium reimbursement for health plans not sponsored by LACERS. Data for those retirees are not included in the regular retiree membership data as members receiving a medical subsidy from LACERS, and were provided separately for the first time for this valuation.*

Amortization payments may be calculated as level dollar amounts or as amounts designed to remain level as a percent of a growing payroll base. Los Angeles City Employees' Retirement System has elected to amortize the unfunded actuarial accrued liability using the following rules: The costs associated with the 2009 ERIP have been amortized over 15 years beginning with the June 30, 2009 valuation date. The unfunded actuarial accrued liability as of June 30, 2012 is amortized over a fixed period of 30 years beginning July 1, 2012. Assumption changes resulting from the triennial experience study will be amortized over 20 years.

Health trend and premium assumption changes, plan changes, and gains and losses will be amortized over 15 years.

CHART 3

Table of Amortization Bases

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment*
Plan Amendment (2009 ERIP)	06/30/2009	$54,735,645	15	$31,784,191	5	$6,817,185
Combined Base**	06/30/2012	597,984,614	30	664,123,736	23	41,544,336
Experience Loss	06/30/2013	16,206,142	15	13,431,061	9	1,713,418
Change in Assumptions	06/30/2014	135,287,549	20	132,030,239	15	11,159,853
Experience Gain	06/30/2014	-101,972,860	15	-88,672,145	10	-10,353,248
Experience Gain	06/30/2015	-193,346,818	15	-175,071,214	11	-18,895,557
Plan Change	06/30/2015	17,466,894	15	15,815,880	11	1,707,019
Experience Gain	06/30/2016	-21,878,470	15	-20,459,973	12	-2,058,089
Change in Assumptions	06/30/2017	121,183,087	20	120,584,996	18	8,913,049
Experience Gain	06/30/2017	-109,999,503	15	-105,512,070	13	-9,959,935
Change in Assumptions	06/30/2018	109,882,560	20	109,757,534	19	7,808,591
Experience Gain	06/30/2018	-59,754,629	15	-58,669,901	14	-5,227,535
Experience Gain	06/30/2019	-117,505,679	15	-117,505,679	15	-9,932,165
Total				$521,636,655		$23,236,922

* *Level percentage of payroll.*

** *On October 23, 2012, the Board elected to combine all amortization bases as of June 30, 2012, except for the base associated with the 2009 ERIP, which remains on its original schedule. In addition, the Board adopted an initial amortization period of 30 years for the combined bases as of June 30, 2012.*

The Actuarially Determined Contribution (ADC) is the amount calculated to determine the annual cost of the OPEB plan for funding purposes on an accrual basis. The calculation consists of adding the Normal Cost of the plan to an amortization payment. Both are determined as of the start of the funding period and adjusted as if the annual cost were to be received throughout the fiscal year or on July 15th.

CHART 4

Determination of Actuarially Determined Contribution (ADC)

	Tier 1 - Cost Element	Determined as of June 30, 2019		June 30, 2018	
		Amount	Percentage of Compensation	Amount	Percentage of Compensation
1.	Normal cost	$61,834,858	3.29%	$65,056,794	3.34%
2.	Amortization of the unfunded actuarial accrued liability	19,604,197	1.04%	28,655,863	1.47%
3.	Total Actuarially Determined Contribution (beginning of year)	$81,439,055	4.33%	$93,712,657	4.81%
4.	Total Projected Compensation(1)	$1,877,504,719		$1,947,223,478	
5.	Adjustment for timing (July 15)	$237,851	0.02%	$273,698	0.02%
6.	Total Actuarially Determined Contribution (July 15)	$81,676,906	4.35%	$93,986,355	4.83%
7.	Adjustment for timing (end of pay period)	$2,900,514	0.16%	$3,337,647	0.17%
8.	Total Actuarially Determined Contribution (end of pay period)	$84,339,569	4.49%	$97,050,304	4.98%

(1) *Reflects amount calculated in the pension valuation.*

CHART 4 (continued)

Determination of Actuarially Determined Contribution (ADC)

Tier 3 - Cost Element		**Determined as of June 30, 2019**		**June 30, 2018**	
		Amount	**Percentage of Compensation**	**Amount**	**Percentage of Compensation**
1.	Normal cost	$14,587,911	4.19%	$9,420,713	4.09%
2.	Amortization of the unfunded actuarial accrued liability	3,632,725	1.04%(2)(3)	3,391,564	1.47%(2)
3.	Total Actuarially Determined Contribution (beginning of year)	$18,220,636	5.23%	$12,812,277	5.56%
4.	Total Projected Compensation(1)	$347,908,112		$230,463,624	
5.	Adjustment for timing (July 15)	$53,216	0.02%	$37,419	0.02%
6.	Total Actuarially Determined Contribution (July 15)	$18,273,852	5.25%	$12,849,696	5.58%
7.	Adjustment for timing (end of pay period)	$648,942	0.19%	$456,319	0.20%
8.	Total Actuarially Determined Contribution (end of pay period)	$18,869,578	5.42%	$13,268,596	5.76%

(1) *Reflects amount calculated in the pension valuation.*

(2) *In developing the UAAL contribution rate, we have combined the UAAL for Tier 1 and Tier 3 and amortized that total UAAL over the total payroll for Tier 1 and Tier 3.*

(3) *For purposes of Government Service Buybacks for Tier 3, the cost of the purchase is based, in part, on the "City Contribution Rate," pursuant to the Administrative Code. As Tier 3 has no UAAL as of June 30, 2019, the City's normal cost rate of 4.19% (beginning of year) is used for purposes of these buybacks.*

CHART 4 (continued)

Determination of Actuarially Determined Contribution (ADC)

Combined - Cost Element		Determined as of June 30, 2019 Amount	June 30, 2019 Percentage of Compensation	June 30, 2018 Amount	June 30, 2018 Percentage of Compensation
1.	Normal cost	$76,422,769	3.43%	$74,477,507	3.42%
2.	Amortization of the unfunded actuarial accrued liability	23,236,922	1.04%	32,047,427	1.47%
3.	Total Actuarially Determined Contribution (beginning of year)	$99,659,691	4.47%	$106,524,934	4.89%
4.	Total Projected Compensation[1]	$2,225,412,831		$2,177,687,102	
5.	Adjustment for timing (July 15)	$291,067	0.02%	$311,117	0.02%
6.	Total Actuarially Determined Contribution (July 15)	$99,950,758	4.49%	$106,836,051	4.91%
7.	Adjustment for timing (end of pay period)	$3,549,456	0.17%	$3,793,966	0.18%
8.	Total Actuarially Determined Contribution (end of pay period)	$103,209,147	4.64%	$110,318,900	5.07%

[1] *Reflects amount calculated in the pension valuation.*

The schedule of employer contributions compares actual contributions to the Actuarially Determined Contributions.

CHART 5

Schedule of Employer Contributions

Fiscal Year Ended June 30	Actuarially Determined Contributions[1]	Actual Contributions	Percentage Contributed
2014	$97,840,554	$97,840,554	100.00%
2015	100,466,945	100,466,945	100.00%
2016	105,983,112	105,983,112	100.00%
2017	97,457,455	97,457,455	100.00%
2018	100,909,010	100,909,010	100.00%
2019	107,926,949	107,926,949	100.00%

[1] *Prior to plan year ending June 30, 2018, this amount was the Annual Required Contribution (ARC).*

This schedule of funding progress presents multi-year trend information about whether the actuarial value of plan assets is increasing or decreasing over time relative to the actuarial accrued liability for benefits.

CHART 6

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll* (c)	UAAL as a Percentage of Covered Payroll [(b) - (a) / (c)]
06/30/2014	$1,941,224,810	$2,662,853,153	$721,628,343	72.90%	$1,898,064,175	38.02%
06/30/2015	2,108,924,651	2,646,989,367	538,064,716	79.67%	1,907,664,598	28.21%
06/30/2016	2,248,753,480	2,793,688,955	544,935,475	80.49%	1,968,702,630	27.68%
06/30/2017	2,438,458,132	3,005,806,234	567,348,102	81.12%	2,062,316,129	27.51%
06/30/2018	2,628,843,511	3,256,827,847	627,984,336	80.72%	2,177,687,102	28.84%
06/30/2019	2,812,661,894	3,334,298,549	521,636,655	84.36%	2,225,412,831	23.44%

* *Reflects amount calculated in the pension valuation.*

VOLATILITY RATIOS

OPEB plans are subject to volatility in the level of determined contributions. This volatility tends to increase as OPEB plans become more mature.

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

For LACERS, the current AVR is about 1.26. This means that a 1% asset gain/(loss) (relative to the assumed investment return) translates to about 1.26% of one-year's payroll. Since LACERS amortizes actuarial gains and losses over a period of 15 years, there would be a 0.1% of payroll decrease/(increase) in the determined contribution for each 1% asset gain/(loss).

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

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

For LACERS, the current LVR is about 1.50. This is about 19% higher than the AVR. Therefore, we would expect that contribution volatility will increase over the long-term.

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

CHART 7

Volatility Ratios for Years Ended June 30, 2011 – 2019

Year Ended June 30	Asset Volatility Ratio	Liability Volatility Ratio
2011	0.80	1.07
2012	0.82	1.26
2013	0.93	1.31
2014	1.10	1.40
2015	1.12	1.39
2016	1.08	1.42
2017	1.18	1.46
2018	1.23	1.50
2019	1.26	1.50

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, inactive non-vested members (entitled to a refund of member contributions), 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, Exhibit A.

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

CHART 8

Member Population: 2010 – 2019

Year Ended June 30	Active Members	Inactive Vested Members	Retired Members and Beneficiaries*	Total Non-Actives	Ratio of Non-Actives to Actives	Ratio of Retired Members and Beneficiaries to Actives
2010	26,245	806	13,442	14,248	0.54	0.51
2011	25,449	813	13,436	14,249	0.56	0.53
2012	24,917	858	13,431	14,289	0.57	0.54
2013	24,441	861	13,592	14,453	0.59	0.56
2014	24,009	955	13,686	14,641	0.61	0.57
2015	23,895	1,032	14,012	15,044	0.63	0.59
2016	24,446	1,119	14,313	15,432	0.63	0.59
2017	25,457	1,280	14,652	15,932	0.63	0.58
2018	26,042	1,401	15,144	16,545	0.64	0.58
2019	26,632	1,474	15,791	17,265	0.65	0.59

* *Excludes retirees and surviving spouses not yet enrolled in retiree health benefits.*

This exhibit summarizes the participant data used for the current and prior valuations.

EXHIBIT A
Summary of Participant Data

All

Category	Year Ended June 30 2019	Year Ended June 30 2018	Change From Prior Year
Active members in valuation:			
Number	26,632	26,042	2.3%
Average age	47.0	47.5	-0.5
Average service	13.2	13.7	-0.4
Total projected compensation	$2,225,412,831	$2,177,687,102	2.2%
Inactive members:			
Number	1,474	1,401	5.2%
Average age	50.9	50.9	0.0
Retirees:*			
Number of non-disabled	13,609	13,029	4.5%
Number of disabled	334	326	2.5%
Total number of retirees	13,943	13,355	4.4%
Average age of retirees	71.9	71.9	0.0
Number of spouses	5,324	5,144	3.5%
Average age of spouses	68.5	68.5	0.0
Surviving Spouses:*			
Number in pay status	1,848	1,789	3.3%
Average age	79.6	79.6	0.0

** Excludes retirees and surviving spouses not receiving health benefits.*

EXHIBIT A (continued)

Summary of Participant Data

Tier 1*

Category	Year Ended June 30 2019	Year Ended June 30 2018	Change From Prior Year
Active members in valuation:			
Number	21,226	22,409	-5.3%
Average age	49.6	49.2	0.4
Average service	16.2	15.7	0.5
Total projected compensation	$1,877,504,719	$1,947,223,478	-3.6%
Inactive members:			
Number	1,466	1,397	4.9%
Average age	51.0	50.9	0.1
Retirees:**			
Number of non-disabled	13,609	13,029	4.5%
Number of disabled	334	326	2.5%
Total number of retirees	13,943	13,355	4.4%
Average age of retirees	71.9	71.9	0.0
Number of spouses	5,324	5,144	3.5%
Average age of spouses	68.5	68.5	0.0
Surviving Spouses:**			
Number in pay status	1,848	1,789	3.3%
Average age	79.6	79.6	0.0

**Includes the following number of Airport Peace Officers eligible for enhanced retirement benefits:*

	June 30, 2019	*June 30, 2018*
Active Members	*433*	*457*
Inactive Members	*17*	*7*
Retired Members	*43*	*31*

***Excludes retirees and surviving spouses not receiving health benefits.*

EXHIBIT A (continued)

Summary of Participant Data

Tier 3

Category	Year Ended June 30 2019	Year Ended June 30 2018	Change From Prior Year
Active members in valuation:			
Number	5,406	3,633	48.8%
Average age	37.0	36.6	0.4
Average service	1.6	1.3	0.3
Total projected compensation	$347,908,112	$230,463,624	51.0%
Inactive members:			
Number	8	4	100.0%
Average age	46.7	48.0	-1.3
Retirees:			
Number of non-disabled	0	0	0
Number of disabled	0	0	0
Total number of retirees	0	0	0
Average age of retirees	N/A	N/A	N/A
Number of spouses	0	0	0
Average age of spouses	N/A	N/A	N/A
Surviving Spouses:			
Number in pay status	0	0	0
Average age	N/A	N/A	N/A

EXHIBIT B
Reconciliation of Participant Data with Pension Valuation

	Year Ended June 30	
	2019	2018
Active		
Pension valuation	26,632	26,042
Health valuation	26,632	26,042
Retirees		
Pension valuation	15,165	14,583
Retirees with no subsidy due to service or decision not to enroll	-1,540	-1,532
Deferred retirees eligible for future health benefits	-16	-22
Health valuation	13,609	13,029
Disableds		
Pension valuation	888	894
Disabled with no subsidy due to service or decision not to enroll	-500	-512
Deferred disableds eligible for future health benefits	-54	-56
Health valuation	334	326
Surviving Spouses		
Pension valuation	3,981	3,902
Surviving spouses with no subsidy due to service or decision not to enroll	-2,057	-2,043
Deferred surviving spouses eligible for future health benefits	-76	-70
Health valuation	1,848	1,789
Inactive Vested		
Pension valuation	8,588	8,028
Inactive vesteds with less than 10 years of service	-7,114	-6,627
Health valuation	1,474	1,401

EXHIBIT C
Retirees and Beneficiaries Added to and Removed from Health Benefits

Year Ended 6/30	No. of New Retirees/ Beneficiaries	Annual Allowances Added*	No. of Retirees/ Beneficiaries Removed	Annual Allowances Removed	No. of Retirees/ Beneficiaries at 6/30	Annual Allowances at 6/30	Percent Increase in Annual Allowances	Average Annual Allowance
2014	616	$7,160,148	522	$3,047,436	13,686	$104,959,232	4.1	$7,669
2015	860	10,844,333	534	3,174,045	14,012	112,629,520	7.3	8,038
2016	837	2,185,058	536	3,102,492	14,313	111,712,086	-0.8	7,805
2017	913	13,706,185	574	3,316,380	14,652	122,101,891	9.3	8,333
2018	1,104	17,413,241	612	3,649,382	15,144	135,865,750	11.3	8,972
2019	1,195	12,323,187	548	3,780,696	15,791	144,408,241	6.3	9,145

**Also reflects changes in subsidies for continuing retirees and beneficiaries.*

EXHIBIT D
Cash Flow Projections

The ADC generally exceeds the current pay-as-you-go ("paygo") cost of an OPEB plan. Over time the paygo cost will tend to grow and may even eventually exceed the ADC in a well-funded plan. The following table projects the paygo cost as the projected payment over the next ten years.

Year Ending June 30	Projected Number of Retirees*			Projected Benefit Payments		
	Current	Future	Total	Current	Future	Total
2020	21,115	1,738	22,853	$135,864,490	$12,440,868	$148,305,358
2021	20,709	2,847	23,556	133,899,212	22,619,825	156,519,037
2022	20,063	3,961	24,024	134,814,430	34,238,398	169,052,828
2023	19,414	5,037	24,451	135,148,661	47,361,523	182,510,184
2024	18,755	6,112	24,867	134,834,872	60,665,697	195,500,569
2025	18,095	7,125	25,220	133,604,021	74,215,901	207,819,922
2026	17,430	8,102	25,532	132,043,113	87,658,864	219,701,977
2027	16,757	9,032	25,789	130,067,964	101,045,231	231,113,195
2028	16,086	9,940	26,026	127,789,136	114,124,032	241,913,168
2029	15,410	10,822	26,232	126,064,747	126,590,563	252,655,310

* *Includes spouses of retirees, but excludes those not receiving a subsidy from LACERS.*

EXHIBIT E

Summary Statement of Income and Expenses on an Market Value Basis for Retirement, Health, Family Death, and Larger Annuity Benefits

	Year Ended June 30, 2019		Year Ended June 30, 2018	
Contribution income:				
Employer contributions	$586,753,902		$551,247,264	
Member contributions	240,357,396		236,222,166	
Net contribution income		$827,111,298		$787,469,430
Investment income:				
Interest, dividends and other income	$416,415,425		$391,326,284	
Asset appreciation	637,092,495		1,206,714,441	
Less investment and administrative fees	-107,917,081		-99,940,548	
Net investment income		$945,590,839		$1,498,100,177
Total income available for benefits		**$1,772,702,137**		**$2,285,569,607**
Less benefit payments:				
Benefits paid	-$1,042,725,029[1]		-$975,112,058	
Refunds of contributions	-11,683,519		-10,411,515	
Net benefit payments		-$1,054,408,548		-$985,523,573
Change in net assets at market value		**$718,293,589**		**$1,300,046,034**
Net assets at market value at the end of the year		**$17,707,909,933**		**$16,989,616,344**

Note: Results may be slightly off due to rounding.

[1] Includes offsets related to self-funded dental insurance premium of $6,090,036 and health insurance premium reserve of $468,153.

EXHIBIT F
Summary Statement of Plan Assets for Retirement, Health, Family Death, and Larger Annuity Benefits

	June 30, 2019		June 30, 2018	
Cash equivalents		$440,455,108		$470,390,317
Accounts receivable:				
Accrued investment income	$62,832,172		$57,236,792	
Proceeds from sales of investments	234,349,252		86,261,200	
Other	15,324,165		13,985,260	
Total accounts receivable		$312,505,589		$157,483,252
Investments:				
Fixed income	$4,359,360,084		$4,054,094,716	
Equities	9,912,472,407		9,783,373,660	
Real estate and alternative investment	2,801,074,174		2,608,972,084	
Derivative instruments	-796,982		0	
Other	918,104,377		911,404,923	
Total investments at market value		$17,990,214,060		$17,357,845,383
Capital assets		8,788,596		9,184,627
Total assets		$18,751,963,353		$17,994,903,579
Accounts payable:				
Accounts payable and accrued expenses	-$54,418,516		-$40,966,628	
Accrued investment expenses	-9,664,366		-10,455,435	
Purchases of investments	-274,435,536		-158,788,428	
Securities lending collateral	-705,535,002		-795,076,744	
Total accounts payable		-$1,044,053,420		-$1,005,287,235
Net assets at market value		**$17,707,909,933**		**$16,989,616,344**
Net assets at actuarial value		**$17,711,461,636**		**$16,687,907,767**
Net assets at valuation value (health benefits)		**$2,812,661,894**		**$2,628,843,511**

Note: Results may be slightly off due to rounding.

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board of Administration 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.

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

EXHIBIT G

Determination of Actuarial Value of Assets as of June 30, 2019

	Actual Return	Expected Return	Investment Gain (Loss)	Portion Not Recognized	Unrecognized Amount
1. Market value of assets					$17,707,909,933
2. Calculation of unrecognized return[1]					
(a) Year ended June 30, 2019	$945,590,839	$1,242,978,109	-$297,387,270	6/7	-$254,903,374
(b) Year ended June 30, 2018	1,498,100,177	1,148,631,872	349,468,305	5/7	249,620,218
(c) Year ended June 30, 2017	1,834,657,728	1,063,688,256	770,969,472	See footnote (2) below	
(d) Year ended June 30, 2016	7,190,895	1,072,214,464	-1,065,023,569		
(e) Year ended June 30, 2015	348,113,908	1,055,874,448	-707,760,540		
(f) Year ended June 30, 2014	2,180,005,303	933,719,722	1,246,285,581		
(g) Combined net deferred loss as of June 30, 2013			-81,571,421	4/6	1,731,453
(h) Total unrecognized return					-$3,551,703
3. Preliminary actuarial value: (1) - (2h)					17,711,461,636
4. Adjustment to be within 40% corridor					0
5. Final actuarial value of assets: (3) + (4)					$17,711,461,636
6. Actuarial value as a percentage of market value: (5) ÷ (1)					100.0%
7. Market value of health assets					$2,812,097,867
8. Valuation value of health assets (5) ÷ (1) x (7)					$2,812,661,894
9. Deferred return recognized in each of the next 6 years:					
(a) Amount recognized on 6/30/2020					$7,873,011
(b) Amount recognized on 6/30/2021					7,873,011
(c) Amount recognized on 6/30/2022					7,873,011
(d) Amount recognized on 6/30/2023					7,873,011
(e) Amount recognized on 6/30/2024					7,440,148
(f) Amount recognized on 6/30/2025					-42,483,896
(g) Subtotal (may not total exactly due to rounding)					-$3,551,703

(1) *Total return minus expected return on a market value basis.*

(2) *Based on action taken by the Board on July 24, 2018, the net unrecognized gain as of June 30, 2017 (i.e., $2,597,179) has been recognized in six level amounts, with four years of recognition remaining after the June 30, 2019 valuation.*

The chart below details the changes in the ADC from the prior valuation to the current year's valuation.

EXHIBIT H

Reconciliation of Recommended Contribution from June 30, 2018 to June 30, 2019[1]

Recommended Contribution as of June 30, 2018[1]	4.91%
Change due to investment gain, after smoothing	-0.06
Change due to miscellaneous demographic and other losses[2]	0.23
Change due to updated 2019/2020 premium and subsidy levels	-0.84
Change due to updating trend to project future Medicare Part B premiums after 2019/2020	0.19
Effect of increase in UAAL rate from lower than expected increase in payroll	0.06
Recommended Contribution as of June 30, 2019[1]	4.49%

[1] *If received on July 15.*

[2] *Other losses include the recognition for the first time of the liability for about 250 retirees receiving a premium reimbursement for health plans not sponsored by LACERS. Data for those retirees are not included in the regular retiree membership data as members receiving a medical subsidy from LACERS, and were provided separately for the first time for this valuation.*

EXHIBIT I
Member Benefit Coverage Information for OPEB

	Aggregate Actuarial Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
Valuation Date	Terminated Members	Retirees, Beneficiaries, & Dependents	Active Members	Valuation Value of Retiree Health Assets	Terminated Members	Retirees, Beneficiaries, & Dependents	Active Members
06/30/2014	$41,188,181	$1,196,769,321	$1,424,895,651	$1,941,224,810	100%	100%	49%
06/30/2015	42,943,089	1,210,066,527	1,393,979,751	2,108,924,651	100	100	61
06/30/2016	50,413,399	1,275,604,225	1,467,671,331	2,248,753,480	100	100	63
06/30/2017	62,252,306	1,379,356,850	1,564,197,078	2,438,458,132	100	100	64
06/30/2018	67,137,848	1,497,370,105	1,692,319,894	2,628,843,511	100	100	63
06/30/2019	65,887,248	1,600,130,890	1,668,280,411	2,812,661,894	100	100	69

EXHIBIT I

Summary of Supplementary Information

Valuation date	June 30, 2019	
Actuarial cost method	Entry Age Cost Method, level percent of salary.	
Amortization method	Level percent of payroll – assuming a 3.50% increase in total covered payroll.	
Amortization period	Multiple Layers:	
	2009 ERIP	15 years
	2012 Combined Base	30 years
	Actuarial Experience	15 years
	Change in non-health related assumptions	20 years
	Change in health related assumptions	15 years
	Future ERIP	5 years
	AVA in excess of AAL	30 years
	Plan Amendment	15 years
Asset valuation method	Market value of assets less unrecognized returns in each of the last seven years. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a seven-year period. The actuarial value of assets cannot be less than 60% or greater than 140% of the market value of assets.	
Actuarial assumptions:		
Investment rate of return	7.25%	
Inflation rate	3.00%	
Real across-the-board salary increase	0.50%	
Projected salary increases	Ranges from 10.00% to 3.90%	
Medical, dental, Medicare Part B trend rates	See table on page 37.	
Plan participants:	June 30, 2019	June 30, 2018
Current retirees, beneficiaries, and dependents receiving benefits	21,115	20,288
Current active participants	26,632	26,042
Terminated participants entitled but not yet eligible	1,474	1,401
Total	49,221	47,731

EXHIBIT II

Actuarial Assumptions and Actuarial Cost Method

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 June 29, 2018, economic assumption review dated June 30, 2017 and retiree health assumptions letter dated September 17, 2019. Unless otherwise noted, all actuarial assumptions and methods shown below apply to both Tier 1 and Tier 3 members. These assumptions have been adopted by the Board.

Measurement Date: June 30, 2019

Data: LACERS provided detailed census data and financial data for post-employment benefits.

Post-Retirement Mortality Rates:

Healthy Members and All Beneficiaries: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Tables (separate tables for males and females), with no setback for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2017.

Disabled Members: Headcount-Weighted RP-2014 Disabled Retiree Mortality Tables (separate tables for males and females), with no setback for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2017.

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

Termination Rates Before Retirement:

Pre-Retirement Mortality:

Headcount-Weighted RP-2014 Employee Mortality Tables (separate tables for males and females), with no setback for males and females, multiplied by 90%, projected generationally with the two-dimensional mortality improvement scale MP-2017.

	Rate (%)	
Age	**Disability**	**Termination***
25	0.01	7.00
30	0.02	7.00
35	0.05	5.50
40	0.07	3.90
45	0.13	3.20
50	0.19	2.70
55	0.20	2.50
60	0.20	2.50

* *Rates for members with five or more years of service.*

Rates of termination for members with less than 5 years of service are as follows:

	Rate (%)
Service	**Termination (Based on Service)**
0	12.00
1	10.00
2	9.00
3	8.25
4	7.75

Retirement Rates:

	Rate (%)					
	Tier 1		APO Tier 1[1]		Tier 3	
Age	Non-55/30	55/30	Non-55/30	55/30	Non-55/30	55/30
50	6.0	0.0	7.0	0.0	6.0	0.0
51	3.0	0.0	4.0	0.0	3.0	0.0
52	3.0	0.0	4.0	0.0	3.0	0.0
53	3.0	0.0	4.0	0.0	3.0	0.0
54	17.0	0.0	18.0	0.0	16.0	0.0
55	6.0	24.0	7.0	25.0	0.0[2]	23.0
56	6.0	16.0	7.0	17.0	0.0[2]	15.0
57	6.0	16.0	7.0	17.0	0.0[2]	15.0
58	6.0	16.0	7.0	17.0	0.0[2]	15.0
59	6.0	16.0	7.0	17.0	0.0[2]	15.0
60	7.0	16.0	8.0	17.0	6.0	15.0
61	7.0	16.0	8.0	17.0	6.0	15.0
62	7.0	16.0	8.0	17.0	6.0	15.0
63	7.0	16.0	8.0	17.0	6.0	15.0
64	7.0	16.0	8.0	17.0	6.0	15.0
65	13.0	20.0	14.0	21.0	12.0	19.0
66	13.0	20.0	14.0	21.0	12.0	19.0
67	13.0	20.0	14.0	21.0	12.0	19.0
68	13.0	20.0	14.0	21.0	12.0	19.0
69	13.0	20.0	14.0	21.0	12.0	19.0
70	100.0	100.0	100.0	100.0	100.0	100.0

(1) *Consistent with the cost study prepared for the adoption of enhanced Tier 1 retirement benefits, we have estimated the rates above by increasing the retirement rates for Tier 1 by a flat 1%.*

(2) *Not eligible to retire under the provisions of the Tier 3 plan.*

Retirement Age and Benefit for Inactive Vested Participants: Assume retiree health benefit will be paid at the later of age 59 or the current attained age.

Exclusion of Inactive Vested: Inactive vested with less than 10 years of service are excluded.

Definition of Active Members: First day of biweekly payroll following employment for new department employees or immediately following transfer from other city department.

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

Service: Employment service is used for eligibility determination purposes. Benefit service is used for benefit calculation purposes.

Future Benefit Accruals: 1.0 year of service per year.

Net Investment Return: 7.25%

Salary Increases: Inflation: 3.00%; plus additional 0.50% "across the board" salary increases (other than inflation); plus the following merit and promotional increases:

Service	Rate (%)
0	6.50
1	6.20
2	5.10
3	3.10
4	2.10
5	1.10
6	1.00
7	0.90
8	0.70
9	0.60
10+	0.40

Actuarial Value of Assets: The market value of assets less unrecognized returns in each of the last seven years. Unrecognized return is equal to the difference between the actual and expected returns on a market value basis and is recognized over a seven-year period. The actuarial value of assets cannot be less than 60% or greater than 140% of the market value of assets.

Actuarial Cost Method: Entry Age Cost Method, level percent of salary. Entry age is calculated as age on the valuation date minus years of employment service. Both the normal cost and the actuarial accrued liability are calculated on an individual basis.

Per Capita Cost Development: The assumed costs on a composite basis are the future costs of providing postemployment health care benefits at each age. To determine the assumed costs on a composite basis, historical premiums are reviewed and adjusted for increases in the cost of health care services.

Maximum Dental Subsidy

Carrier	Election Percent	Monthly 2019-2020 Fiscal Year Subsidy
Delta Dental PPO	79.4%	$44.60
DeltaCare USA	20.6%	$13.98

Medicare Part B Premium Subsidy*

Actual monthly premium for calendar year 2019	$135.50
Projected monthly premium for calendar year 2020	$141.60
Projected average monthly premium for plan year 2019/2020	$138.55

**LACERS will not reimburse Medicare Part B premiums for Spouse/Domestic Partners, unless they are LACERS retired Members with Medicare Parts A and B enrolled as a dependent in a LACERS medical plan. This valuation does does not reflect Medicare Part B reimbursement for any spouse/domestic partners enrolled in Medicare Parts A and B.*

Per Capita Cost Development – Tier 1, Not Subject to Medical Subsidy Cap, and Tier 3:

Participant Under Age 65 or Not Eligible for Medicare A & B

2019-2020 Fiscal Year		**Single Party**			**Married/With Domestic Partner**			**Eligible Survivor**		
CARRIER	Observed and Assumed Election Percent	Monthly Premium*	Maximum Subsidy	**Subsidy**	Monthly Premium*	Maximum Subsidy	**Subsidy**	Monthly Premium*	Maximum Subsidy	**Subsidy**
Kaiser HMO	**61.9%**	$853.39	$1,790.80	**$853.39**	$1,706.78	$1,790.80	**$1,706.78**	$853.39	$853.39	**$853.39**
Anthem Blue Cross PPO	**21.5%**	$1,271.19	$1,790.80	**$1,271.19**	$2,537.56	$1,790.80	**$1,790.80**	$1,271.19	$853.39	**$853.39**
Anthem Blue Cross HMO	**16.6%**	$996.03	$1,790.80	**$996.03**	$1,987.24	$1,790.80	**$1,790.80**	$996.03	$853.39	**$853.39**

* With the exception of Kaiser, the amounts above reflect the inclusion of the vision insurance plan premium.

Participant Eligible for Medicare A & B

2019-2020 Fiscal Year		**Single Party**			**Married/With Domestic Partner**			**Eligible Survivor**		
CARRIER	Observed and Assumed Election Percent	Monthly Premium*	Maximum Subsidy	**Subsidy**	Monthly Premium*	Maximum Subsidy	**Subsidy**	Monthly Premium*	Maximum Subsidy	**Subsidy**
Kaiser Senior Advantage HMO	**57.6%**	$262.47	$262.47	**$262.47**	$524.94	$524.94	**$524.94**	$262.47	$262.47	**$262.47**
Anthem Blue Cross Medicare Supplement	**31.4%**	$546.54	$546.54	**$546.54**	$1,088.27	$1,066.16	**$1,066.16**	$546.54	$546.54	**$546.54**
UHC Medicare Advantage Plan**	**11.0%**	$275.98	$275.98	**$275.98**	$547.14	$547.14	**$547.14**	$275.98	$275.98	**$275.98**

* With the exception of Kaiser, the amounts above reflect the inclusion of the vision insurance plan premium.

** Rates for CA plan.

Members who are subject to the retiree medical subsidy cap will have monthly health insurance subsidy maximums capped at the levels in effect at July 1, 2011, as shown in the table below:

	Single Party	Married/With Domestic Partner	Eligible Survivor
Under 65 – All Plans	$1,190.00	$1,190.00	$593.62
<u>Over 65</u>			
Kaiser Senior Advantage HMO	$203.27	$406.54	$203.27
Blue Cross Medicare Supplement	$478.43	$478.43	$478.43
UHC Medicare Advantage Plan	$219.09	$433.93	$219.09

These rates only apply to a few inactive members. No active members are subject to the retiree medical subsidy cap.

Adjustments to per-capita costs (as shown on page 34) based on age, gender, and status, are as follows:

	Retiree		Spouse	
Age	Male	Female	Male	Female
55	0.9019	0.9312	0.7098	0.8040
60	1.0711	1.0037	0.9503	0.9324
64	1.2288	1.0647	1.1996	1.0495
65	0.9187	0.7809	0.9187	0.7809
70	1.0648	0.8415	1.0648	0.8415
75	1.1475	0.9058	1.1475	0.9058
80+	1.2357	0.9766	1.2357	0.9766

Spouse/Domestic Partner Coverage:

60% of male and 35% of female retirees who receive a subsidy are assumed to be married or have a qualified domestic partner and elect dependent coverage. Of these covered spouses/domestic partners, 100% are assumed to continue coverage if the retiree predeceases the spouse/domestic partner.

Male retirees are assumed to be 4 years older than their female spouses/domestic partners. Female retirees are assumed to be 2 years younger than their male spouses/domestic partners.

Participation:

Retiree Medical and Dental Coverage Participation:

Service Range	Percent Covered*
10 – 14	60%
15 – 19	80%
20 – 24	90%
25 and Over	95%

* *Inactive members are assumed to elect coverages at 50% of the rates shown above.*

100% of retirees becoming eligible for Medicare are assumed to be covered by both Parts A and B.

Health Care Cost Subsidy Trend Rates:

MEDICAL TRENDS FOR THE JUNE 30, 2019 VALUATION

Trends to be applied in following fiscal years, to all health plans.

Trend is to be applied to premium for shown fiscal year to calculate next fiscal year's projected premium

First Fiscal Year (July 1, 2019 through June 30, 2020)

Plan	Anthem Blue Cross PPO, Under Age 65	Anthem Blue Cross Medicare Supplement	Kaiser HMO, Under Age 65	Kaiser Senior Advantage	Anthem Blue Cross HMO, Under 65	UHC Medicare Advantage Plan
Trend to be applied to 2019-2020 Fiscal Year premium	3.40%	3.88%	3.37%	3.12%	7.89%	3.96%

The fiscal year trend rates are based on the following calendar year trend rates:

Fiscal Year	Trend (Approx.) Non-Medicare	Trend (Approx.) Medicare	Calendar Year	Trend (applied to calculate following year premium) Non-Medicare	Trend (applied to calculate following year premium) Medicare
2020-2021	6.62%	6.12%	2020	6.75%*	6.25%*
2021-2022	6.37%	5.87%	2021	6.50%	6.00%
2022-2023	6.12%	5.62%	2022	6.25%	5.75%
2023-2024	5.87%	5.37%	2023	6.00%	5.50%
2024-2025	5.62%	5.12%	2024	5.75%	5.25%
2025-2026	5.37%	4.87%	2025	5.50%	5.00%
2026-2027	5.12%	4.62%	2026	5.25%	4.75%
2027-2028	4.87%	4.50%	2027	5.00%	4.50%
2028-2029	4.62%	4.50%	2028	4.75%	4.50%
2029 and later	4.50%	4.50%	2029	4.50%	4.50%

Dental Premium Trend	4.00% for all years
Medicare Part B Premium Trend	4.50% for all years.

** For example, the 6.75% assumption when applied to the 2020 non-Medicare medical premiums would provide the projected 2021 non-Medicare medical premiums. This trend would also be applied to the maximum medical subsidy, based on the non-Medicare Kaiser premium.*

Health Care Reform:	As directed by LACERS, we have reflected in the current valuation the impact of potential excise tax imposed on high-cost health care plans by the Affordable Care Act (ACA) and related statutes on certain health plans in calculating the contribution rates for the employer. We understand that Statements No. 74 and No. 75 by the Governmental Accounting Standards Board (GASB) for financial reporting purposes require the inclusion of the excise tax in the liability. We have allocated the potential tax liability to the Plan and member in the same proportion as the proportion of the total medical premium paid by the Plan and member.
Administrative Expenses:	No administrative expenses were valued separately from the premium costs.
Plan Design:	Development of plan liabilities was based on the substantive plan of benefits in effect as described in Exhibit III.
Assumption Changes Since Prior Valuation:	The trend used to project future Medicare Part B premiums was increased from 4.00% to 4.50%. Starting premium costs and first year trends were updated to reflect 2020 calendar year premium data.

EXHIBIT III

Summary of Plan

This exhibit summarizes the major benefit provisions as included in the valuation. To the best of our knowledge, the summary represents the substantive plans as of the measurement date. It is not intended to be, nor should it be interpreted as, a complete statement of all benefit provisions.

Membership Eligibility:

Tier 1 (§4.1002(a))	All employees who became members of the System before July 1, 2013, and certain employees who became members of the System on or after July 1, 2013. In addition, pursuant to Ordinance No. 184134, all Tier 2 employees who became members of the System between July 1, 2013 and February 21, 2016 were transferred to Tier 1 effective February 21, 2016.
Tier 3 (§4.1080.2(a))	All employees who became members of the System on or after February 21, 2016, except as provided otherwise in Section 4.1080.2(b) of the Los Angeles Administrative Code.

Benefit Eligibility:

Tier 1 (§4.1111(a)) and Tier 3 (§4.1126(a))	Retired age 55 or older with at least 10 years of service (including deferred vested members who terminate employment and receive a retirement benefit from LACERS), or if retirement date is between October 2, 1996, and September 30, 1999 at age 50 or older with at least 30 years of service. Benefits are also payable to spouses, domestic partners, or other qualified dependents while the retiree is alive. Please note that the health subsidy is not payable to a disabled retiree before the member reaches age 55.

Medical Subsidy for Members Not Subject to Cap:

Under Age 65 or Over Age 65 Without Medicare Part A

Tier 1 (§4.1111(d)) and Tier 3 (§4.1126(c))

The System will pay 4% of the maximum health subsidy (limited to actual premium) for each year of Service Credit, up to 100% of the maximum health subsidy. As of July 1, 2019, the maximum health subsidy is $1,790.80 per month, remaining unchanged in calendar year 2020. This amount includes coverage of dependent premium costs.

Over Age 65 and Enrolled in Both Medicare Parts A and B

Tier 1 (§4.1111(e)) and Tier 3 (§4.1126(d))

For retirees, a maximum health subsidy shall be paid in the amount of the single-party monthly premium of the approved Medicare supplemental or coordinated plan in which the retiree is enrolled, subject to the following vesting schedule:

Completed Years of Service	Vested Percentage
1-14	75%
15-19	90%
20+	100%

Subsidy Cap for Tier 1:
(§4.1111(b))

As of the June 30, 2011 valuation, the retiree health benefits program was changed to cap the medical subsidy for non-retired members who do not contribute an additional 4.00% or 4.50% of employee contributions to the Pension Plan.

The capped subsidy is different for Medicare and non-Medicare retirees.

The cap applies to the medical subsidy limits at the 2011 calendar year level.

The cap does not apply to the dental subsidy or the Medicare Part B premium reimbursement.

Dependents:

Tier 1 (§4.1111(e)(4)) and Tier 3 (§4.1126(d)(4))

An additional amount is added for coverage of dependents which shall not exceed the amount provided to a retiree not enrolled in Medicare Parts A and B and covered by the same medical plan with the same years of service. The combined member and dependent subsidy shall not exceed the actual premium. This refers to dependents of retired members with Medicare Parts A and B. It does not apply to those without Medicare or Part B only.

Dental Subsidy for Members:

Tier 1 (§4.1114(b)) and Tier 3 (§4.1129(b))

The System will pay 4% of the maximum dental subsidy (limited to actual premium) for each year of Service Credit, up to 100% of the maximum dental subsidy. As of July 1, 2019, the maximum dental subsidy is $44.60 per month; remaining unchanged in calendar year 2020.

There is no subsidy available to dental plan dependents or surviving spouses/domestic partners. There is also no reimbursement for dental plans not sponsored by the System.

Medicare Part B Reimbursement for Members:

Tier 1 (§4.1113) and Tier 3 (§4.1128)

If a Retiree is covered by both Medicare Parts A and B, and enrolled in a LACERS' medical plan or participates in the LACERS Retiree Medical Premium Reimbursement Program, LACERS will reimburse the retiree the basic Medicare Part B premium.

Surviving Spouse Medical Subsidy:

Tier 1 (§4.1115) and Tier 3 (§4.1129.1)
The surviving spouse or domestic partner will be entitled to a health subsidy based on the member's years of service and the surviving dependent's eligibility for Medicare.

Under Age 65 or Over Age 65 Without Medicare Part A
The maximum health subsidy available for survivors is the lowest cost plan available (currently Kaiser) single-party premium ($853.39 per month as of July 1, 2019, remaining unchanged in calendar year 2020).

Over Age 65 and Enrolled in Both Medicare Parts A and B
For survivors, a maximum health subsidy limited to the single-party monthly premium of the plan in which the survivor is enrolled, is provided subject to the following vesting schedule:

Completed Years of Service	Vested Percentage
1-14	75%
15-19	90%
20+	100%

Changes in Plan Provisions: None.

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

EXHIBIT IV
Definitions of Terms

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

Assumptions or Actuarial Assumptions: The estimates on which the cost of the Plan is calculated including:

(a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;

(b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates;

(c) Retirement rates — the rate or probability of retirement at a given age;

(d) Turnover rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Actuarial Present Value of Total Projected Benefits (APB): Present value of all future benefit payments for current retirees and active employees taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions.

Normal Cost: The amount of contributions required to fund the benefit allocated to the current year of service.

Actuarial Accrued Liability For Actives: The equivalent of the accumulated normal costs allocated to the years before the valuation date.

Actuarial Accrued Liability For Retirees: The single sum value of lifetime benefits to existing retirees. This sum takes account of life expectancies appropriate to the ages of the retirees and of the interest which the sum is expected to earn before it is entirely paid out in benefits.

Actuarial Value of Assets (AVA):	The value of assets used by the actuary in the valution. These may be at market value or some other method used to smooth variations in market value from one valuation to the next.
Funded Ratio:	The ratio AVA/AAL.
Unfunded Actuarial Accrued Liability (UAAL):	The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan. There is a wide range of approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.
Amortization of the Unfunded Actuarial Accrued Liability:	Payments made over a period of years equal in value to the Plan's unfunded actuarial accrued liability.
Investment Return (discount rate):	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next. If the plan is funded on a pay-as-you-go basis, the discount rate is tied to the expected rate of return on day-to-day employer funds.
Covered Payroll:	Annual reported salaries for all active participants on the valuation date.
ADC as a Percentage of Covered Payroll:	The ratio of the actuarially determined contribution to covered payroll.
Health Care Cost Trend Rates:	The annual rate of increase in net claims costs per individual benefiting from the Plan.
Actuarially Determined Contribution (ADC):	The ADC is equal to the sum of the normal cost and the amortization of the unfunded actuarial accrued liability.

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November 6, 2019

Board of Administration
Los Angeles City Employees' Retirement System
202 West First Street, Suite 500
Los Angeles, CA 90012-4401

Re: Los Angeles City Employees' Retirement System
Family Death Benefit Plan (FDBP) Costs as of June 30, 2019

Dear Board Members:

We have developed our recommended contribution rates for the voluntary Family Death Benefit Plan ("Plan") as of June 30, 2019. If adopted by the Board, these rates will be effective for the two plan years beginning July 1, 2020 and ending June 30, 2022. The last review of the Plan was conducted as part of the June 30, 2017 actuarial valuation. That study yielded the current employee monthly contribution rate of $3.00. The City matches the employees' cost at the same level.

RECOMMENDATIONS

Based on the census data and the actuarial assumptions used for the June 30, 2019 actuarial valuation, our observations and recommendations are as follows:

- The current employee monthly rate is $3.00 through June 30, 2020. Based on this rate, the estimated total annual contributions would be about $192,000 ($96,000 each for the members and the City) for plan year 2019/2020. The current monthly rate of $3.00 previously adopted by the Board was a result of a reduction by about 20% from the prior monthly rate of $3.70.
- It is our understanding that the earnings credited to the Family Death Benefits Reserve include realized and unrealized gains or losses. Therefore, the crediting procedure for the Family Death Benefits Reserve is in line with the procedure utilized for the Retirement Plan reserves (with the exceptions of the Reserve for Member Contributions and the Annuity Reserve). Since the future payment liability for this program has been discounted at the valuation assumed earnings rate of 7.25% per year for this valuation, we believe the crediting procedure is consistent with the valuation discount rate assumption.

- For several years, Plan assets have exceeded the Plan's liability reserve. The Plan does not currently have a formal policy on how the monthly premium rate should be adjusted to reflect any such funding surplus. However, after discussions with LACERS in 2017, we recommended two action items for reducing surplus in the FDBP liability reserve for the June 30, 2017 FDBP valuation, and those action items were adopted by the Board and implemented by LACERS. We have continued presenting similar action items for the Board to consider for the June 30, 2019 FDBP valuation and those two items are provided as an Appendix to this report.
- We recommend that the current employee monthly rate of $3.00 be decreased by 20% to $2.40 for the two plan years beginning July 1, 2020 and ending June 30, 2022. This is developed using Action Item 2 in the Appendix to this report, where the surplus is amortized over 30 years.

ANALYSIS AND ASSUMPTIONS

It is our understanding that the Plan is funded on a term cost basis and the premium charged for the current year is only supposed to be sufficient to pay for the present value of the projected death benefits for those expected to die in the same period. However, there is an adjustment in the monthly premium based on the Plan's funded status to reflect the relative value of the actual plan reserve compared to the actual present value of death benefits in pay status for those who previously died. As of June 30, 2019, the Plan's term cost is $236,561 for the 2,672 active members participating at June 30, 2019. This translates to a monthly rate of $3.69 for both the employee and the City. However, the Plan is in a surplus position as of June 30, 2019, with the Plan's actuarial value of assets of $16,686,626 exceeding the liability reserve of $7,209,746 by $9,476,880.[1] This surplus is about $1.2 million higher than the surplus as of the last review as of June 30, 2017.

We anticipate that the surplus reserve of $9,476,880 will be more than sufficient to sustain the recommended monthly premium rates of $2.40 for the employee and the City for the two plan years beginning July 1, 2020. As the surplus would be depleted at the rate of about $83,000 per year, which is substantially less than the expected investment return on the surplus assets of $9,476,880, we expect that at June 30, 2022 there would be an even larger surplus remaining from the June 30, 2019 surplus balance of $9,476,880. The

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1 If the Plan's June 30, 2019 market value of assets of $16,683,280 were to be used in the above analysis, the Plan would have a surplus of $9,473,534 instead of $9,476,880.

surplus continues to grow, in part, because some active FDBP members are paying premiums even though their survivors may not receive benefits from the Plan. This is discussed in item 5 below and under Action Item 1 in the Appendix.

As noted, all of the calculations are based on the June 30, 2019 actuarial valuation participant data and actuarial assumptions shown in the Retirement Plan valuation report. In addition, this Plan requires further assumptions in the valuation as shown below:

1) Each participating active member is assumed to have two children with an average age of about 13.
2) The children are assumed to be eligible for a monthly benefit of about $938 each until they reach age 18.
3) A surviving spouse is assumed to be eligible for a monthly benefit of about $312 until the children reach age 16.
4) A surviving spouse of a member who has paid FDBP premiums for 10 or more years is assumed to be eligible for an additional monthly benefit of about $613 starting at age 60.[2]
5) As previously discussed with LACERS and included in our 2017 valuation report, we understood that survivors may not receive benefits from the FDBP if they receive a service retirement survivorship benefit from the Retirement Plan. Therefore, those FDBP participants who are currently eligible to retire under the Retirement Plan do not have an FDBP liability in our valuation even though it is assumed that they would continue to pay premiums to the FDBP. We believe this is one of the contributors to the increase in the surplus balance of $9,476,880 as of June 30, 2019, because 1,177 of the 2,672 active participants in the Plan as of June 30, 2019 will not be eligible for a benefit from the FDBP based on this criterion. Additionally, based on a recent conversation with LACERS, we now understand that for the active members who are enrolled in the FDBP and who have no surviving spouse/domestic partner upon death, FDBP payments may be made to the members' eligible children and/or dependent parents, if any. We will work with LACERS prior to the next FDBP biennial valuation to determine if Segal Consulting can collect census data from LACERS for FDBP active members who are in this situation. It is anticipated that including any such members in the next valuation would not have a material effect on the valuation results.

   Another contributor to the increase in the surplus balance as of June 30, 2019 is the higher than expected return on the actuarial value of FDBP assets for the years ended June 30, 2018 and June 30, 2019, as discussed in the Appendix.

2 Larger amounts are available if the surviving spouse begins receiving payments after age 60.

The above costs were certified by Andy Yeung, ASA, Enrolled Actuary. The undersigned 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.

Sincerely,

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

DNA/jl

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Los Angeles City Employees' Retirement System
FDBP Costs as of June 30, 2019

APPENDIX

Possible Action Items On How To Adjust The Monthly Premium Rate In Years Where There Is A Surplus

SURPLUS HISTORY

Below we provide the historical progression of the surplus Family Death Benefit Reserves, based on the actuarial (smoothed) value of assets, for the last five biennial valuations:

Valuation Date	Actuarial Value of FDBP Assets	FDBP Liability Reserve	Excess FDBP Reserves
June 30, 2011	$15,085,615	$9,542,709	$5,542,906
June 30, 2013	14,456,893	8,453,914	6,002,979
June 30, 2015	15,402,402	8,378,370	7,024,032
June 30, 2017	15,858,684	7,576,611	8,282,073
June 30, 2019	16,686,626	7,209,746	9,476,880(1)

(1) The increase in the excess FDBP reserves is due to, in part, the higher than expected returns on the actuarial value of FDBP assets for the years ended June 30, 2018 and 2019. The actual rates of return were 8.86% for the year ended June 30, 2018 and 7.99% for the year ended June 30, 2019, compared to the assumed annual rate of return of 7.25%. This resulted in an actuarial gain of about $367,000 for the two years.

ACTION ITEMS FOR REDUCING SURPLUS IN FDBP

Following are two possible action items on how to reduce the FDBP surplus and to adjust the monthly premium rate for the FDBP when there is a surplus:

Action Item 1. Permanent Cessation of Contributions to FDBP for Certain Members

As previously discussed with LACERS and included in our 2017 valuation report, we understood that current or future survivors may not receive any benefits from the FDBP if they are currently receiving a service retirement survivorship benefit from the Retirement Plan because the member has already passed away, or will become entitled to a future service retirement survivorship benefit because

APPENDIX

Possible Action Items On How To Adjust The Monthly Premium Rate In Years Where There Is A Surplus

the active member has already satisfied the requirements under the Retirement Plan to receive a benefit. Following up on the action item we recommended in the June 30, 2017 FDBP valuation, we were informed that LACERS sent letters to members who were contributing to the FDBP, but who were retirement eligible, to consider de-selecting the voluntary FDBP contributions.[3] Since the campaign to advise those members to de-select their contributions is still in progress as of the date of this valuation on June 30, 2019, there are still FDBP active participants who are currently eligible to retire under the Retirement Plan (and whose potential survivors may not receive any benefits from the FDBP) and who are continuing to pay employee premiums. We have estimated the number of such members for the last two valuations to be as follows:

	Active FDBP Members in the June 30, 2017 Valuation	No Longer Active FDBP Members	New Active FDBP Members	Active FDBP Members in the June 30, 2019 Valuation
Eligible to Retire[(1)]	1,397			1,177
Not Eligible to Retire	1,678			1,495
Total	3,075	-652	+249	2,672

(1) Whose potential survivors may not receive any benefits from the FDBP.

As alluded to above, it will take some time for the full effect of the de-selection recommendation to be realized in a subsequent valuation. With that said, we have observed that approximately 525 of the 1,397 members who were participating in the FDBP as of June 30, 2017 and whose current or future survivors may not receive any benefits from the FDBP were no longer participating in the FDBP as of June 30, 2019.

Note that, based on a recent conversation with LACERS, we now understand that for active members enrolled in the FDBP who have no surviving spouse/domestic partner upon death, FDBP payments may be made to the members' eligible children and/or dependent parents, if any. Accordingly, for this action item, Segal proposes that <u>if</u> LACERS can determine exactly which remaining FDBP

[3] LACERS has indicated that 808 such letters were sent on August 3, 2018, 773 letters were sent on January 31, 2019, and 685 letters were sent after the date of the June 30, 2019 valuation, on August 20, 2019.

APPENDIX

Possible Action Items On How To Adjust The Monthly Premium Rate In Years Where There Is A Surplus

participants are currently eligible for service retirement and are married or with domestic partners or have no eligible children and/or dependent parents that LACERS consider an annual program to inform these participants to consider de-selecting the voluntary FDBP contributions. (This would have the added effect of allowing the City to suspend matching contributions to the FDBP for these participants.) As noted on page 2 in the body of this report, the Plan's term cost of $236,561 as of June 30, 2019 for the 2,672 active members participating in the Plan as of that date translates to an employee and City monthly rate of $3.69 each. This term cost reflects no liabilities for the 1,177 members who are eligible to retire under the Retirement Plan. Should these 1,177 members terminate their participation in the FDBP, the term cost as of June 30, 2019 for the remaining 1,495 members would translate to an employee and City monthly rate of $6.59 each. In this case, maintaining the current monthly premium at $3.00 would mean that the surplus is depleted at a rate of about $129,000 per year, which is less than the expected investment return on the surplus of about $687,000.

While this action item may be considered to be more of a communication issue than a funding policy issue, it would help to prevent the Plan from accumulating even more surplus going forward.

Action Item 2. Reduction in Contributions

Under the Retirement Plan's funding policy, actuarial surplus is amortized over a 30-year open (non-decreasing) period. For the FDBP, the Board may want to consider amortizing actuarial surplus over the same 30-year open period. In addition, since the benefits and the associated employer and employee contributions for FDBP are not dependent on salary, we would suggest amortizing the surplus as a level dollar amount, rather than a level percentage of salary. The amortization of the surplus would serve as a reduction in the current $3.00 per month charge to the FDBP. An annual amortization credit of about $730,000 would be available at the beginning of the year by amortizing over 30 years the surplus of $9,476,880 available as of June 30, 2019. We note this credit would be more than the $3.00 monthly charge. This credit would be approximately $11.38 per month each (for the employee and for the City), assuming for this calculation that the same 2,672 active employees as of June 30, 2019 would continue to participate in the Plan (i.e., before considering Action Item 1).

APPENDIX

Possible Action Items On How To Adjust The Monthly Premium Rate In Years Where There Is A Surplus

For the June 30, 2017 FDBP valuation, we recommended a decrease in the monthly charge from $3.70 to $3.00, or by about 20%, and that recommendation was adopted by the Board. Under this action item for the June 30, 2019 valuation, we propose that the monthly charge be reduced below the current $3.00 by another 20%, or to $2.40 for the two plan years beginning July 1, 2020 and ending June 30, 2022. However, before the Board considers this action item, the following ramification should be considered. As of the June 30, 2019 valuation date, there were about 26,600 active members. Of those, we have roughly estimated that about 7,400 members were eligible to retire as of the valuation date, leaving about 19,200 not yet eligible. Of those not yet eligible to retire, about 1,500 members are currently contributing FDBP premiums. This leaves approximately 17,700 (i.e., 19,200 - 1,500) additional active employees who may want to participate in the FDBP if contributions are temporarily reduced, which is about a twelve-fold increase over the number of retirement ineligible members currently contributing.

For an extreme illustration, if all of the 17,700 active employees referenced above were to enroll in the FDBP in the next two years and there is no change to the current $3.00 employee monthly rate, there would be a reduction in the excess FDBP reserves by about $1.53 million. This represents slightly more than two years of the annual surplus amortization credits of $730,000.

Alternatively, we have reviewed the sensitivity of enrolling new members for purposes of applying the annual surplus amortization credit of $730,000 to reduce the excess FDBP reserves. For instance, if we were to recommend no change in the current $3.00 employee monthly rate, we have estimated that approximately 7,000 new FDBP participants out of the remaining 17,700 eligible participants mentioned above would need to enroll in the FDBP in order to reduce the excess FDBP reserves by the entire annual credit of $730,000. These hypothetical 7,000 new FDBP participants would represent about 40% of all remaining eligible participants. Considering that there were only 249 new members who elected to participate in the FDBP between the June 30, 2017 and June 30, 2019 valuations (when the employee monthly rate was reduced from $3.70 to $3.00), enrolling about another 7,000 new participants in the short term may not be realistic. The 249 new members represented about 1.5% of those not yet in the plan and not yet eligible to retire as of June 30, 2017.

If, instead, we were to recommend a large change in the current $3.00 employee monthly rate, such as a 50% reduction to $1.50, we have estimated that approximately 4,500 new FDBP participants would need to enroll in the FDBP in order for the surplus to be

APPENDIX

Possible Action Items On How To Adjust The Monthly Premium Rate
In Years Where There Is A Surplus

reduced by the annual credit of $730,000. These hypothetical 4,500 new FDBP participants would represent about 25% of all remaining eligible participants.

These scenario results reflect the assumption that the current participants who will not have a survivor eligible for FDBP benefits (i.e., the 1,177 participants mentioned above in Action Item 1) will opt out of the Plan.

Based on the information discussed above, we recommend that the current employee monthly rate of $3.00 be decreased to $2.40 per month. This 20% reduction in the monthly rate is in line with the recommended decrease in the monthly rate for the last June 30, 2017 FDBP valuation and it would mean that about 5,800 new participants would need to enroll in the FDBP in order for the surplus reserves to be reduced by the annual credit of $730,000.[4] While this represents a large population of new participants, we feel it may be prudent at this time to let the full effect of the actions adopted from the June 30, 2017 FDBP valuation, combined with the actions recommended for this June 30, 2019 valuation, to take effect, before considering discussions on possible changes to the Plan for future valuations.

It should be noted that in preparing the above premium reduction amounts, we have assumed the term cost of the new FDBP participants to be the same as the $6.59 calculated above based on 1,495 members covered under the Plan as of June 30, 2019.

RECOMMENDATION

As noted above, we recommend a reduction to the current monthly premiums, from the current $3.00 to $2.40, for 2020/2021 and 2021/2022 (Action Item 2). In addition, we recommend that, if possible, it be communicated to the remaining members who are currently contributing to the FDBP but who are currently retirement eligible and are married or with domestic partners or have no eligible children and/or dependent parents to cease contributing to the Plan (Action Item 1).

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[4] The 5,800 count assumes that none of the 1,177 FDBP active members who are currently eligible to retire under the Retirement Plan are single or without a domestic partner and have eligible children and/or dependent parents and will remain in the plan.

Segal Consulting

Los Angeles City Employees' Retirement System

Governmental Accounting Standards (GAS) 67 Actuarial Valuation as of June 30, 2019

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

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November 6, 2019

Board of Administration
Los Angeles City Employees' Retirement System
202 W. 1st Street, Suite 500
Los Angeles, CA 90012-4401

Dear Board Members:

We are pleased to submit this Governmental Accounting Standards (GAS) 67 Actuarial Valuation as of June 30, 2019. It contains various information that will need to be disclosed in order to comply with GAS 67.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist LACERS in preparing items related to the retirement plan in their financial report. The census and financial information on which our calculations were based was prepared by LACERS. That assistance is gratefully acknowledged.

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

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

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

Sincerely,

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

By:

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

DNA/jl

SECTION 1

VALUATION SUMMARY

SECTION 2

GASB 67 INFORMATION

Purpose

This report has been prepared by Segal Consulting ("Segal") to present certain disclosure information required by Statement No. 67 of the Governmental Accounting Standards Board as of June 30, 2019. This valuation is based on:

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

General Observations on GAS 67 Valuation

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

- The Governmental Accounting Standards Board (GASB) rules only define pension liability and expense for financial reporting purposes, and do not apply to contribution amounts for pension funding purposes. Employers and plans still develop and adopt funding policies under current practices.
- When measuring pension liability, GASB uses the same actuarial cost method (Entry Age) and the same type of discount rate (expected return on assets) as LACERS uses for funding. This means that the Total Pension Liability (TPL) measure for financial reporting shown in this report is determined on the same basis as LACERS' Actuarial Accrued Liability (AAL) measure for funding. We note that the same is true for the Normal Cost component of the annual plan cost for funding and financial reporting.
- The Net Pension Liability (NPL) is equal to the difference between the TPL and the Plan's Fiduciary Net Position. The Plan's Fiduciary Net Position is equal to the market value of assets and therefore, the NPL measure is the same as the Unfunded Actuarial Accrued Liability (UAAL) calculated on a market value basis. The NPL reflects all investment gains and losses as of the measurement date. This is different from the UAAL calculated on an actuarial value of assets basis in the funding valuation that reflects investment gains and losses over a seven-year period.
- The NPLs measured as of June 30, 2019 and 2018 have been determined from the actuarial valuations as of June 30, 2019 and June 30, 2018, respectively.

Significant Issues in Valuation Year

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

- The NPL increased from $5.71 billion as of June 30, 2018 to $5.98 billion as of June 30, 2019 mainly due to the return on the market value of retirement plan assets of 5.57%[1] during 2018/2019 that was less than the assumption of 7.25% used in the June 30, 2018 valuation (that loss was about $0.24 billion), and other miscellaneous gains. Changes in these values during the last two fiscal years ending June 30, 2018 and June 30, 2019 can be found in Exhibit 3.
- The discount rate used to determine the TPL and NPL as of June 30, 2019 and 2018 was 7.25% following the same assumption used by the System in the pension funding valuations as of the same dates. The detailed calculations used in the derivation of the discount rate of 7.25% used in the calculation of the TPL and NPL as of June 30, 2019 can be found in Exhibit 5 of Section 2. Various other information that is required to be disclosed can be found throughout Exhibits 1 through 4 in Section 2.

[1] *Net of investment expenses only.*

Summary of Key Valuation Results

	2019	2018
Disclosure elements for fiscal year ending June 30:		
Service cost[1]	$370,409,073	$352,282,612
Total Pension Liability	20,793,421,143	19,944,579,058
Plan Fiduciary Net Position	14,815,592,841	14,235,230,528
Net Pension Liability	5,977,828,302	5,709,348,530
Schedule of contributions for fiscal year ending June 30:		
Actuarially determined contributions	$478,716,953	$450,195,254
Actual contributions	478,716,953	450,195,254
Contribution deficiency / (excess)	0	0
Demographic data for plan year ending June 30:		
Number of retired members and beneficiaries	20,034	19,379
Number of vested terminated members[2]	8,588	8,028
Number of active members	26,632	26,042
Key assumptions as of June 30:		
Investment rate of return	7.25%	7.25%
Inflation rate	3.00%	3.00%
Projected salary increases[3]	Ranges from 10.00% to 3.90%, based on years of service	Ranges from 10.00% to 3.90%, based on years of service

[1] *The service cost is based on the previous year's valuation, meaning the 2019 and 2018 values are based on the valuations as of June 30, 2018 and June 30, 2017, respectively. Both service costs have been calculated using the economic actuarial assumptions shown in the 2018 column, as there had been no changes in the economic actuarial assumptions between the June 30, 2017 and June 30, 2018 valuations.*

[2] *Includes terminated members due a refund of employee contributions.*

[3] *Includes inflation at 3.00% plus real across the board salary increase of 0.50%, plus merit and promotional increases.*

Important Information about Actuarial Valuations

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

In order to prepare an actuarial valuation, Segal 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 this report (as well as the plan summary included in our funding valuation report) to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
- **Assets** This valuation is based on the market value of assets as of the valuation date, as provided by the System. The System uses an "actuarial value of assets" that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining 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.

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 Board to assist the sponsors of the Fund in preparing items related to the pension plan in their financial reports. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If the System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.

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

EXHIBIT 1

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

Plan Description

Plan administration. The Los Angeles City Employees' Retirement System (LACERS) was established by City Charter in 1937. LACERS is a single employer public employee retirement system whose main function is to provide retirement benefits to the civilian employees of the City of Los Angeles.

Under the provisions of the City Charter, the Board of Administration (the "Board") has the responsibility and authority to administer the Plan and to invest its assets. The Board members serve as trustees and must act in the exclusive interest of the Plan's members and beneficiaries. The Board has seven members: four members, one of whom shall be a retired member of the system, shall be appointed by the Mayor subject to the approval of the Council; two members shall be active employee members of the system elected by the active employee members; one shall be a retired member of the system elected by the retired members of the system.

Plan membership. At June 30, 2019, pension plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	20,034
Vested terminated members entitled to, but not yet receiving benefits[(1)]	8,588
Active members	26,632
Total	55,254

[(1)] *Includes terminated members due a refund of employee contributions.*

Benefits provided. LACERS provides service retirement, disability, death and survivor benefits to eligible retirees and beneficiaries. Employees of the City become members of LACERS on the first day of employment in a position with the City in which the employee is not excluded from membership. Members employed prior to July 1, 2013 are designated as Tier 1. All Tier 1 Airport Peace Officers (including certain fire fighters) appointed to their positions before January 7, 2018 who elected to remain at LACERS after January 6, 2018, and who paid their mandatory additional contribution of $5,700 to LACERS before January 8, 2019, or prior to their retirement date, whichever was earlier, are designated as Tier 1 Enhanced. Those employed on or after February 21, 2016 are designated as Tier 3 (unless a specific exception applies to the employee, providing a right to Tier 1 status).

Tier 1 and Tier 1 Enhanced members are eligible to retire for service with a normal retirement benefit once they attain the age of 70, or the age of 60 with 10 or more years of continuous City service, or the age of 55 with 30 or more years of City service. Tier 3 members are eligible to retire for service with a normal retirement benefit at 1.50% of final average monthly compensation per year of service credit once they attain the age of 60 with 10 years of service (but with less than 30 years of service), including 5 years of continuous City service, or at 2.00% of final average monthly compensation per year of service credit once they attain the age of 60 with 30 years of service, including 5 years of continuous City service.

Tier 1 and 3 members are eligible to retire for disability once they have 5 or more years of continuous service. Tier 1 Enhanced members are eligible to retire for service-connected disability without a service requirement, and once they have 5 or more years of continuous service for a nonservice-connected disability.

Under the Tier 1 formula, the monthly service retirement allowance at normal retirement age is 2.16% of final average monthly compensation per year of service credit. Under the Tier 1 Enhanced formula, the monthly service retirement allowance at normal retirement age is 2.30% of final average monthly compensation per year of service credit. Reduced retirement allowances are available for early retirement for Tier 1 and Tier 1 Enhanced members reaching age 55 with 10 or more years of continuous City service, or with 30 or more years of City service at any age. The Tier 1 and Tier 1 Enhanced early retirement reduction factors, for retirement below age 60, are as follows:

Age	Factor	Age	Factor
45	0.6250	53	0.8650
46	0.6550	54	0.8950
47	0.6850	55	0.9250
48	0.7150	56	0.9400
49	0.7450	57	0.9550
50	0.7750	58	0.9700
51	0.8050	59	0.9850
52	0.8350	60	1.0000

Under the Tier 3 formula, the monthly service retirement allowance at normal retirement age is 2.00% of final average monthly compensation per year of service credit. Reduced retirement allowances are available for early retirement for Tier 3 members prior to reaching age 60 with 30 years of service, including 5 years of continuous City service.

The Tier 3 retirement reduction factors at early retirement ages are as follows:

Age	Factor	Age	Factor
45	0.6250	50	0.7750
46	0.6550	51	0.8050
47	0.6850	52	0.8350
48	0.7150	53	0.8650
49	0.7450	54	0.8950
		55-60	1.0000

Tier 3 members are eligible to retire with an enhanced retirement benefit at 2.00% of final average monthly compensation per year of service credit once they attain the age of 63 with 10 years of service (but with less than 30 years of service), including 5 years of continuous City service, or at 2.10% of final average monthly compensation per year of service credit once they attain the age of 63 with 30 years of service, including 5 years of continuous City service.

Under Tier 1 and Tier 1 Enhanced, pension benefits are calculated based on the highest average salary earned during a 12-month period (including base salary plus regularly assigned pensionable bonuses or premium pay). Under Tier 3, pension benefits are calculated based on the highest average salary earned during a 36-month period (limited to base salary and any items of compensation that are designated as pension based). The IRC Section 401(a)(17) compensation limit applies to all employees who began membership in LACERS after June 30, 1996.

For Tier 1 and Tier 1 Enhanced members, the maximum monthly retirement allowance is 100% of the final average monthly compensation. For Tier 3 members, the maximum monthly retirement allowance is 80% of the final average monthly compensation, except when the benefit is based solely on the annuity component funded by the member's contributions.

In lieu of the service retirement allowance under the Tier 1, Tier 1 Enhanced, and Tier 3 formulas ("unmodified option"), the member may choose an optional retirement allowance. The unmodified option provides the highest monthly benefit and a 50% continuance to an eligible surviving spouse or domestic partner for Tier 1, Tier 1 Enhanced, and Tier 3 members. The optional retirement allowances require a reduction in the unmodified option amount in order to allow the member the ability to provide various benefits to a surviving spouse, domestic partner, or named beneficiary.

LACERS provides annual cost-of-living adjustments (COLAs) to all retirees. The cost-of-living adjustments are made each July 1 based on the percentage change in the average of the Consumer Price Index for the Los Angeles-Long Beach-Anaheim Area[2]--All Items For All Urban Consumers. It is capped at 3.0% for Tier 1 and Tier 1 Enhanced, and at 2.0% for Tier 3.

[2] *Formerly the Los Angeles-Riverside-Orange County Area.*

The City of Los Angeles contributes to the retirement plan based upon actuarially determined contribution rates adopted by the Board of Administration. Employer contribution rates are adopted annually based upon recommendations received from LACERS' actuary after the completion of the annual actuarial valuation. The combined employer contribution rate as of June 30, 2019 was 22.71% of compensation.[3]

All members are required to make contributions to LACERS regardless of the tier in which they are included. Currently, all Tier 1 members contribute at 11.0% or 11.5% of compensation, and all Tier 1 Enhanced and Tier 3 members contribute at 11.0% of compensation.

[3] *Based on the June 30, 2017 funding valuation which established funding requirements for fiscal year 2018/2019. Exhibit 4 in Section 2 of this report provides details on how this rate was calculated.*

EXHIBIT 2

Net Pension Liability

The components of the Net Pension Liability of LACERS are as follows:

	June 30, 2019	June 30, 2018
Total Pension Liability	$20,793,421,143	$19,944,579,058
Plan Fiduciary Net Position	-14,815,592,841	-14,235,230,528
System's Net Pension Liability	$5,977,828,302	$5,709,348,530
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	71.25%	71.37%

The NPL was measured as of June 30, 2019 and 2018. The Plan's Fiduciary Net Position was valued as of the measurement date, while the TPL was determined based upon the results of the actuarial valuations as of June 30, 2019 and 2018, respectively.

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

Actuarial assumptions. The TPLs as of June 30, 2019 and June 30, 2018 were determined by actuarial valuations as of June 30, 2019 and June 30, 2018, respectively. The actuarial assumptions used in both the June 30, 2019 and June 30, 2018 valuations were based on the results of an experience study for the period from July 1, 2014 through June 30, 2017 and the June 30, 2017 review of economic actuarial assumptions. They are the same as the assumptions used in the June 30, 2019 funding actuarial valuation for LACERS. In particular, the following actuarial assumptions were applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	Ranges from 10.00% to 3.90% based on years of service, including inflation
Investment rate of return	7.25%, net of pension plan investment expense and including inflation
Other assumptions	Same as those used in the June 30, 2019 actuarial valuation

The long-term expected rate of return on pension plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation and subtracting expected investment expenses and a risk margin. The target allocation and projected arithmetic real rates of return for each major asset class, after deducting inflation but before deducting investment expenses, are summarized in the following table. These values were used in the derivation of the long-term expected investment rate of return assumption that was used in the actuarial valuation as of June 30, 2019. This information is subject to change every three years based on the actuarial experience study.

Asset Class	Target Allocation	Long-Term (Arithmetic) Expected Real Rate of Return
U.S. Large Cap Equity	14.00%	5.32%
U.S. Small Cap Equity	5.00%	6.07%
Developed International Large Cap Equity	17.00%	6.67%
Developed International Small Cap Equity	3.00%	7.14%
Emerging Market Equity	7.00%	8.87%
Core Bond	13.75%	1.04%
High Yield Bond	2.00%	3.09%
Bank Loan	2.00%	3.00%
TIPS	3.50%	0.97%
Emerging Market Debt (External)	4.50%	3.44%
Real Estate	7.00%	4.68%
Cash	1.00%	0.01%
Commodities	1.00%	3.36%
Additional Public Real Assets	1.00%	4.76%
Real Estate Investment Trust (REIT)	0.50%	5.91%
Private Debt	3.75%	5.50%
Private Equity	14.00%	8.97%
Total	100.00%	

Discount rate: The discount rate used to measure the Total Pension Liability was 7.25% as of June 30, 2019 and June 30, 2018. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the actuarially determined contribution rates. For this purpose, only employee and employer contributions that are intended to fund benefits for current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the Pension Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability as of both June 30, 2019 and June 30, 2018.

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the Net Pension Liability of LACERS as of June 30, 2019, calculated using the discount rate of 7.25%, as well as what LACERS' Net Pension Liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.25%) or 1-percentage-point higher (8.25%) than the current rate:

	1% Decrease (6.25%)	Current Discount Rate (7.25%)	1% Increase (8.25%)
Net Pension Liability as of June 30, 2019	$8,797,245,998	$5,977,828,302	$3,652,816,107

EXHIBIT 3

Schedules of Changes in LACERS Net Pension Liability – Last Two Fiscal Years

	2019	2018
Total Pension Liability		
Service cost[(1)]	$370,409,073	$352,282,612
Interest	1,439,660,906	1,332,878,299
Change of benefit terms	0	25,173,222
Differences between expected and actual experience	-46,035,243	144,224,403
Changes of assumptions	0	483,717,164
Benefit payments, including refunds of employee contributions	-915,192,651	-851,884,595
Net change in Total Pension Liability	$848,842,085	$1,486,391,105
Total Pension Liability – beginning	19,944,579,058	18,458,187,953
Total Pension Liability – ending (a)	$20,793,421,143	$19,944,579,058
Plan Fiduciary Net Position		
Contributions – employer	$478,716,953	$450,195,254
Contributions – employee	237,087,419	230,756,920
Net investment income	799,350,708	1,243,817,173
Benefit payments, including refunds of employee contributions	-915,192,651	-851,884,595
Administrative expense	-19,600,116	-17,698,803
Other	0	-471,146[(2)]
Net change in Plan Fiduciary Net Position	$580,362,313	$1,054,714,803
Plan Fiduciary Net Position – beginning	14,235,230,528	13,180,515,725
Plan Fiduciary Net Position – ending (b)	$14,815,592,841	$14,235,230,528
System's Net Pension Liability – ending (a) – (b)	$5,977,828,302	$5,709,348,530
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	71.25%	71.37%
Covered payroll[(3)]	$2,108,171,088	$2,057,565,478
Plan Net Pension Liability as percentage of covered payroll	283.56%	277.48%

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

(2) *Correction made by LACERS to beginning of year interest posted to member reserves.*

(3) *Covered payroll is defined as the payroll on which contributions to a pension plan are based.*

EXHIBIT 4

Schedule of Employer Contributions – Last Ten Fiscal Years

Year Ended June 30	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency / (Excess)	Covered Payroll[1]	Contributions as a Percentage of Covered Payroll
2010	$258,642,795	$258,642,795	$0	$1,827,864,283	14.15%
2011	303,560,953	303,560,953	0	1,678,059,440	18.09%
2012	308,539,905	308,539,905	0	1,715,197,133	17.99%
2013	346,180,852	346,180,852	0	1,736,112,598	19.94%
2014	357,649,232	357,649,232	0	1,802,931,195	19.84%
2015	381,140,923	381,140,923	0	1,835,637,409	20.76%
2016	440,546,011	440,546,011	0	1,876,946,179	23.47%
2017	453,356,059	453,356,059	0	1,973,048,633	22.98%
2018	450,195,254	450,195,254	0	2,057,565,478	21.88%
2019	478,716,953	478,716,953	0	2,108,171,088	22.71%

[1] *Covered payroll is defined as the payroll on which contributions to a pension plan are based.*

Notes to Exhibit 4

Methods and assumptions used to establish "actuarially determined contribution" (ADC) rates:	
Valuation date	Actuarially determined contribution rates are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported
Actuarial cost method	Entry Age Cost Method (individual basis)
Amortization method	Level percent of payroll
Amortization period	Multiple layers, closed amortization periods. Actuarial gains/losses are amortized over 15 years. Assumption or method changes are amortized over 20 years. Plan changes, including the 2009 ERIP, are amortized over 15 years. Future ERIPs will be amortized over 5 years. Actuarial surplus is amortized over 30 years. The existing layers on June 30, 2012, except those arising from the 2009 ERIP and the two (at that time) GASB 25/27 layers, were combined and amortized over 30 years.
Asset valuation method	Market value of assets less unrecognized returns in each of the last seven years. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a seven-year period. The actuarial value of assets cannot be less than 60% or greater than 140% of the market value of assets.
Actuarial assumptions:	June 30, 2019 valuation date
Investment rate of return	7.25%
Inflation rate	3.00%
Real across-the-board salary increase	0.50%
Projected salary increases[1]	Ranges from 10.00% to 3.90%, based on years of service
Cost of living adjustments	3.00% for Tier 1; 2.00% for Tier 3 (actual increases are contingent upon CPI increases with a 3.00% maximum for Tier 1 and a 2.00% maximum for Tier 3)
Mortality	Healthy: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Tables (separate tables for males and females) with no setback for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2017.
Other assumptions	Same as those used in the June 30, 2019 funding actuarial valuation

[1] *Includes inflation at 3.00% plus across the board salary increases of 0.50% plus merit and promotional increases.*

EXHIBIT 5

Projection of Pension Plan's Fiduciary Net Position for Use in Calculation of Discount Rate as of June 30, 2019

($ in millions)

Year Beginning July 1,	Projected Beginning Plan Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Plan Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
2018	$14,235	$716	$915	$20	$799	$14,816
2019	14,816	771	1,075	20	1,058	15,549
2020	15,549	773	1,099	21	1,110	16,312
2021	16,312	777	1,161	22	1,163	17,068
2022	17,068	783	1,224	24	1,216	17,819
2023	17,819	788	1,288	25	1,268	18,562
2024	18,562	749	1,350	26	1,317	19,253
2025	19,253	759	1,415	27	1,365	19,935
2026	19,935	766	1,481	27	1,412	20,605
2045	27,789	124 *	2,441	38	1,919	27,353
2046	27,353	118 *	2,452	38	1,887	26,869
2047	26,869	112 *	2,461	37	1,851	26,334
2048	26,334	105 *	2,468	36	1,812	25,747
2049	25,747	99 *	2,474	35	1,769	25,105
2082	2,656	17 *	524	4	172	2,318
2083	2,318	16 *	471	3	149	2,009
2084	2,009	14 *	420	3	129	1,729
2085	1,729	13 *	373	2	111	1,477
2086	1,477	12 *	329	2	94	1,252
2102	29	1 *	11	0	2	21
2103	21	1 *	8	0	1	15
2104	15	1 *	6	0	1	11
2105	11	1 *	4	0	1	8
2106	8	0 *,**	3	0	0	6
2107	6	0 *,**	2	0	0	4
2108	4	0 *,**	2	0	0	3
2109	3	0 *,**	1	0	0	2
2110	2	0 *,**	1	0	0	2
2111	2	0 *,**	1	0	0	1
2112	1	0 *,**	1	0	0	1
2113	1	0 *,**	0 **	0	0	0
2114	0	0 *,**	0 **	0	0	0
2115	0	0 *,**	0 **	0	0	0
2116	0	0 *,**	0 **	0	0	0
2117	0	0 *,**	0 **	0	0	0

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

** Less than $1 million, when rounded.

Note that in preparing the above projections, we have not taken into consideration the one-year delay between the date of the contribution rate calculation and the implementation.

EXHIBIT 5

Projection of Pension Plan's Fiduciary Net Position for Use in Calculation of Discount Rate as of June 30, 2019

($ in millions) – continued

Notes:

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

(2) Amounts shown for the year beginning July 1, 2018 row are actual amounts, based on the unaudited financial statements provided by LACERS.

(3) Years 2027-2044, 2050-2081, and 2087-2101 have been omitted from this table.

(4) Column (a): None of the projected beginning Plan Fiduciary Net Position amounts shown have been adjusted for the time value of money.

(5) Column (b): Projected total contributions include employee and employer normal cost contributions based on closed group projections (based on covered active members as of June 30, 2019); plus employer contributions to the unfunded actuarial accrued liability; plus contributions to fund each year's annual administrative expenses reflecting a 15-year amortization schedule. Contributions are assumed to occur halfway through the year, on average.

(6) Column (c): Projected benefit payments have been determined in accordance with paragraph 39 of GAS Statement No. 67, and are based on the closed group of active, inactive vested, retired members, and beneficiaries as of June 30, 2019. The projected benefit payments reflect the cost of living increase assumptions used in the June 30, 2019 funding valuation report. Benefit payments are assumed to occur halfway through the year, on average. In accordance with paragraph 31.b.(1)(e) of GASB Statement No. 67, the long-term expected rate of return on Plan investments of 7.25% was applied to all periods of projected benefit payments to determine the discount rate.

(7) Column (d): Projected administrative expenses are calculated as approximately 0.14% of the projected beginning Plan Fiduciary Net Position amount. The 0.14% portion was based on the actual fiscal year 2018 - 2019 administrative expenses as a percentage of the beginning Plan Fiduciary Net Position amount as of July 1, 2018. Administrative expenses are assumed to occur halfway through the year, on average.

(8) Column (e): Projected investment earnings are based on the assumed investment rate of return of 7.25% per annum.

(9) As illustrated in this Exhibit, the Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments for current Plan members. In other words, there is no projected 'cross-over date' when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 7.25% per annum was applied to all periods of projected benefit payments to determine the Total Pension Liability as of June 30, 2019 shown earlier in this report, pursuant to paragraph 44 of GASB Statement No. 67.

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Segal Consulting

Los Angeles City Employees' Retirement System

Governmental Accounting Standards (GAS) 74 Actuarial Valuation of Other Postemployment Benefits (OPEB) as of June 30, 2019

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November 6, 2019

Board of Administration
Los Angeles City Employees' Retirement System
202 W. 1st Street, Suite 500
Los Angeles, CA 90012-4401

Dear Board Members:

We are pleased to submit this Governmental Accounting Standards (GAS) 74 Actuarial Valuation as of June 30, 2019. It contains various information that will need to be disclosed in order to comply with GAS 74.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist LACERS in preparing items related to the OPEB plan in their financial report. The census and financial information on which our calculations were based was prepared by LACERS. That assistance is gratefully acknowledged.

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

The actuarial calculations were completed under the supervision of Thomas Bergman, ASA, MAAA, Enrolled Actuary and Andy Yeung ASA, MAAA, FCA, Enrolled Actuary. The health care trend and other related medical assumptions have been reviewed by Paul Sadro, ASA, MAAA. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and expectations for the System.

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

Sincerely,

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

By:

Paul Angelo, FSA, MAAA, FCA, EA	*Andy Yeung ASA, MAAA, FCA, EA*
Senior Vice President and Actuary	*Vice President and Actuary*

JAC/bqb

SECTION 1

VALUATION SUMMARY

SECTION 2

GASB 74 INFORMATION

Purpose

This report has been prepared by Segal Consulting ("Segal") to present certain disclosure information required for "Other Postemployment Benefits (OPEB)" plans by Statement No. 74 of the Governmental Accounting Standards Board as of June 30, 2019. This valuation is based on:

- The benefit provisions of the OPEB Plan, as administered by the Board of Administration;
- The characteristics of covered active members, inactive vested members, and retired members and surviving spouses as of June 30, 2019, provided by LACERS;
- The assets of the Plan as of June 30, 2019, provided by LACERS;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other (health and non-health) actuarial assumptions, regarding employee terminations, retirement, death, health care trend and enrollment, etc. as of June 30, 2019.

General Observations on GAS 74 Actuarial Valuation

The following points should be considered when reviewing this GAS 74 report:

- The Governmental Accounting Standards Board (GASB) rules only define OPEB liability and expense for financial reporting purposes, and do not apply to contribution amounts for OPEB funding purposes. Employers and plans still develop and adopt funding policies under current practices.
- When measuring OPEB liability, GASB uses the same actuarial cost method (Entry Age) and, for benefits that are being fully funded on an actuarial basis, the same expected return on Plan assets as used for funding. This means that the Total OPEB Liability (TOL) measure for financial reporting shown in this report is determined on the same basis as the Actuarial Accrued Liability (AAL) measure for funding. We note that the same is true for the Normal Cost component of the annual plan cost for funding and financial reporting.
- The Net OPEB Liability (NOL) is equal to the difference between the TOL and the Plan's Fiduciary Net Position. The Plan's Fiduciary Net Position is equal to the market value of assets and therefore, the NOL measure is the same as the Unfunded Actuarial Accrued Liability (UAAL) calculated on a market value basis. The NOL reflects all investment gains and losses as of the measurement date. This is different from the UAAL calculated on an actuarial value of assets basis in the funding valuation that reflects investment gains and losses over a seven-year period.

- The NOLs measured as of June 30, 2019 and 2018 have been determined from the actuarial valuations as of June 30, 2019 and June 30, 2018, respectively.

Significant Issues in Valuation Year

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

- The NOL has decreased from $580.5 million as of June 30, 2018 to $522.2 million as of June 30, 2019. The main reason for the decrease in NOL was favorable premium renewal experience, offset to some degree by: (i) updated trend for projecting Medicare Part B premiums after 2019/2020, (ii) investment loss (on market value basis), and (iii) miscellaneous demographic and other losses.[1]
- The discount rate used in the valuation for financial disclosure purposes as of June 30, 2019 is the assumed investment return on Plan assets (e.g. 7.25% for the June 30, 2019 funding valuation). As contributions that are required to be made by the City to amortize the Unfunded Actuarial Accrued Liability in the funding valuation are determined on an actuarial basis, the future Actuarially Determined Contributions and current Plan assets, when projected in accordance with the method prescribed by GAS 74, are expected to be sufficient to make all benefit payments to current members.

[1] *Other losses include the recognition for the first time of the liability for about 250 retirees receiving a premium reimbursement for health plans not sponsored by LACERS. Data for those retirees are not included in the regular retiree membership data as members receiving a medical subsidy from LACERS, and were provided separately for the first time for this valuation.*

Summary of Key Valuation Results

	2019	2018
Disclosure elements for fiscal year ending June 30:		
Service cost[1]	$74,477,507	$74,610,881
Total OPEB Liability	3,334,298,548	3,256,827,847
Plan Fiduciary Net Position	2,812,097,867	2,676,371,615
Net OPEB Liability	522,200,681	580,456,232
Schedule of contributions for fiscal year ending June 30:		
Actuarially determined contributions	$107,926,949	$100,909,010
Actual contributions	107,926,949	100,909,010
Contribution deficiency / (excess)	0	0
Demographic data for plan year ending June 30:		
Number of retired members and surviving spouses[2]	15,791	15,144
Number of vested terminated members	1,474	1,401
Number of active members	26,632	26,042
Key assumptions as of June 30:		
Discount rate	7.25%	7.25%
Health care premium trend rates		
Non-Medicare medical plan	Graded from 6.62% to ultimate 4.50% over 9 years	Graded from 6.87% to ultimate 4.50% over 10 years[3]
Medicare medical plan	Graded from 6.12% to ultimate 4.50% over 7 years	Graded from 6.37% to ultimate 4.50% over 8 years[3]
Dental	4.00%	4.00%
Medicare Part B	4.50%	4.00%

[1] *The service cost is always based on the previous year's valuation, meaning the 2019 and 2018 values are based on the valuations as of June 30, 2018 and June 30, 2017, respectively. The key assumptions used in the June 30, 2017 valuation are as follows:*

Discount rate	*7.25%*
Health care premium trend rates	
Non-Medicare medical plan	*Graded from 6.87% to ultimate 4.50% over 10 years*
Medicare medical plan	*Graded from 6.37% to ultimate 4.50% over 8 years*
Dental and Medicare Part B	*4.50%*

[2] *The total number of participants, including married dependents, receiving benefits is 21,115 as of June 30, 2019 and 20,288 as of June 30, 2018.*

[3] *The 2020-2021 premium increases include additional estimated increases of 1.0% (non-Medicare) and 0.5% (Medicare) from the impact of the Health Insurance Tax (HIT).*

Important Information about Actuarial Valuations

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

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

- **Plan of benefits** Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan description in this report to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
- **Assets** This valuation is based on the market value of assets as of the valuation date, as provided by the System.
- **Actuarial assumptions** In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to health care trends and member enrollment in retiree health benefits. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan's assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

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

- The actuarial valuation is prepared at the request of the Board to assist the sponsors of the Fund in preparing items related to the pension plan in their financial reports. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If the System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. LACERS 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 System.

EXHIBIT 1

General Information – "Financial Statements", Note Disclosures and Required Supplementary Information for a Single-Employer OPEB Plan

Plan Description

Plan administration. The Los Angeles City Employees' Retirement System (LACERS) was established by City Charter in 1937. LACERS is a single employer public employee retirement system whose main function is to provide retirement benefits to the civilian employees of the City of Los Angeles.

Under the provisions of the City Charter, the Board of Administration (the "Board") has the responsibility and authority to administer the Plan and to invest its assets. The Board members serve as trustees and must act in the exclusive interest of the Plan's members and surviving spouses. The Board has seven members: four members, one of whom shall be a retired member of the System, shall be appointed by the Mayor subject to the approval of the Council; two members shall be active employee members of the System elected by the active employee members; one shall be a retired member of the System elected by the retired members of the System.

Plan membership. At June 30, 2019, OPEB plan membership consisted of the following:

Retired members or surviving spouses currently receiving benefits[(1)]	15,791
Vested terminated members entitled to, but not yet receiving benefits	1,474
Active members	26,632
Total	43,897

[(1)] *The total number of participants, including married dependents, receiving benefits is 21,115.*

Benefits provided. LACERS provides benefits to eligible retirees and beneficiaries.

Membership Eligibility:

Tier 1 (§4.1002(a))	All employees who became members of the System before July 1, 2013, and certain employees who became members of the System on or after July 1, 2013. In addition, pursuant to Ordinance No. 184134, all Tier 2 employees who became members of the System between July 1, 2013 and February 21, 2016 were transferred to Tier 1 effective February 21, 2016.

Tier 3 (§4.1080.2(a))	All employees who became members of the System on or after February 21, 2016, except as provided otherwise in Section 4.1080.2(b) of the Los Angeles Administrative Code.

Benefit Eligibility:

Tier 1 (§4.1111(a)) and Tier 3 (§4.1126(a))	Retired age 55 or older with at least 10 years of service (including deferred vested members who terminate employment and receive a retirement benefit from LACERS), or if retirement date is between October 2, 1996, and September 30, 1999 at age 50 or older with at least 30 years of service. Benefits are also payable to spouses, domestic partners, or other qualified dependents while the retiree is alive. Please note that the health subsidy is not payable to a disabled retiree before the member reaches age 55.

Medical Subsidy for Members Not Subject to Cap:

Under Age 65 or Over Age 65 Without Medicare Part A

Tier 1 (§4.1111(d)) and Tier 3 (§4.1126(c))	The System will pay 4% of the maximum health subsidy (limited to actual premium) for each year of Service Credit, up to 100% of the maximum health subsidy. As of July 1, 2019, the maximum health subsidy is $1,790.80 per month; remaining unchanged in calendar year 2020. This amount includes coverage of dependent premium costs.

Over Age 65 and Enrolled in Both Medicare Parts A and B

Tier 1 (§4.1111(e)) and Tier 3 (§4.1126(d))	For retirees, a maximum health subsidy shall be paid in the amount of the single-party monthly premium of the approved Medicare supplemental or coordinated plan in which the retiree is enrolled, subject to the following vesting schedule:

Completed Years of Service	Vested Percentage
1-14	75%
15-19	90%
20+	100%

Subsidy Cap for Tier 1:
(§4.1111(b))

As of the June 30, 2011 valuation, the retiree health benefits program was changed to cap the medical subsidy for non-retired members who do not contribute an additional 4% or 4.5% of employee contributions to the Pension Plan.

The capped subsidy is different for Medicare and non-Medicare retirees.

The cap applies to the medical subsidy limits at the 2011 calendar year level.

The cap does not apply to the dental subsidy or the Medicare Part B premium reimbursement.

Dependents:

Tier 1 (§4.1111(e)(4)) and Tier 3 (§4.1126(d)(4))

An additional amount is added for coverage of dependents which shall not exceed the amount provided to a retiree not enrolled in Medicare Parts A and B and covered by the same medical plan with the same years of service. The combined member and dependent subsidy shall not exceed the actual premium. This refers to dependents of retired members with Medicare Parts A and B. It does not apply to those without Medicare or Part B only.

Dental Subsidy for Members:

Tier 1 (§4.1114(b)) and Tier 3 (§4.1129(b))

The System will pay 4% of the maximum dental subsidy (limited to actual premium) for each year of Service Credit, up to 100% of the maximum dental subsidy. As of July 1, 2019, the maximum dental subsidy is $44.60 per month; remaining unchanged in calendar year 2020.

There is no subsidy available to spouses or domestic partners or for dependent coverage. There is also no reimbursement for dental plans not sponsored by the System.

Medicare Part B Reimbursement for Members:

Tier 1 (§4.1113) and Tier 3 (§4.1128)

If a Retiree is covered by both Medicare Parts A and B, and enrolled in a LACERS medical plan or participates in the LACERS Retiree Medical Premium Reimbursement Program, LACERS will reimburse the retiree the basic Medicare Part B premium.

Surviving Spouse Medical Subsidy:

Tier 1 (§4.1115) and Tier 3 (§4.1129.1)

The surviving spouse or domestic partner will be entitled to a health subsidy based on the member's years of service and the surviving dependent's eligibility for Medicare.

Under Age 65 or Over Age 65 Without Medicare Part A

The maximum health subsidy available for survivors is the lowest cost plan available (currently Kaiser) single-party premium ($853.39 per month as of July 1, 2019; remaining unchanged in calendar year 2020).

Over Age 65 and Enrolled in Both Medicare Parts A and B

For survivors, a maximum health subsidy limited to the single-party monthly premium of the plan in which the survivor is enrolled, is provided subject to the following vesting schedule:

Completed Years of Service	Vested Percentage
1-14	75%
15-19	90%
20+	100%

Note that a new Tier 1 Enhanced Plan providing a higher retirement benefit was adopted pursuant to Ordinance No. 184853. However, other than Segal applying higher retirement rate assumptions to anticipate somewhat earlier retirement, there are no differences between the retiree health benefits paid by LACERS to those members.

EXHIBIT 2
Net OPEB Liability

The components of the Net OPEB Liability of LACERS are as follows:

	June 30, 2019	June 30, 2018
Total OPEB Liability	$3,334,298,548	$3,256,827,847
Plan Fiduciary Net Position	$2,812,097,867	-2,676,371,615
System's Net OPEB Liability	$522,200,681	$580,456,232
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	84.34%	82.18%

The Net OPEB Liability was measured as of June 30, 2019 and 2018. The Plan's Fiduciary Net Position (plan assets) was valued as of the measurement date, while the Total OPEB Liability was determined based upon the results of the actuarial valuations as of June 30, 2019 and 2018, respectively.

Plan provisions. The plan provisions used in the measurement of the NOL as of June 30, 2019 and 2018 are the same as those used in the LACERS funding valuations as of June 30, 2019 and 2018, respectively.

Actuarial assumptions. The Total OPEB Liabilities as of June 30, 2019 and June 30, 2018 were determined by actuarial valuations as of June 30, 2019 and June 30, 2018, respectively. The actuarial assumptions used in both the June 30, 2019 and June 30, 2018 valuations were based on the results of an economic actuarial assumptions study as of June 30, 2017. However, based on the results of an experience study for the period from July 1, 2014 through June 30, 2017, the demographic assumptions were changed for the 2018 valuation. The assumptions used in the June 30, 2019 funding actuarial valuation for LACERS were applied to all periods included in the measurement:

Investment rate of return	7.25%, net of OPEB plan investment expense and including inflation
Inflation	3.00%
Salary increases	Ranges from 10.00% to 3.90% based on years of service, including inflation
Other assumptions	Same as those used in the June 30, June 30, 2019 funding valuation

The long-term expected rate of return on OPEB plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation and subtracting expected investment expenses and a risk margin. The target allocation and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before deducting investment expenses, are summarized in the following table. These values were used in the derivation of the long-term expected investment rate of return assumption that was used in the actuarial valuation as of June 30, 2019. This information is subject to change every three years based on the actuarial experience study.

Asset Class	Target Allocation	Long-Term (Arithmetic) Expected Real Rate of Return
U.S. Large Cap Equity	14.00%	5.32%
U.S. Small Cap Equity	5.00%	6.07%
Developed International Large Cap Equity	17.00%	6.67%
Developed International Small Cap Equity	3.00%	7.14%
Emerging Market Equity	7.00%	8.87%
Core Bond	13.75%	1.04%
High Yield Bond	2.00%	3.09%
Bank Loan	2.00%	3.00%
TIPS	3.50%	0.97%
Emerging Market Debt (External)	4.50%	3.44%
Real Estate	7.00%	4.68%
Cash	1.00%	0.01%
Commodities	1.00%	3.36%
Additional Public Real Assets	1.00%	4.76%
Real Estate Investment Trust (REIT)	0.50%	5.91%
Private Debt	3.75%	5.50%
Private Equity	14.00%	8.97%
Total	100.00%	

Discount rate: The discount rate used to measure the Total OPEB Liability was 7.25% as of June 30, 2019 and June 30, 2018. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the actuarially determined contribution rates. For this purpose, only employee and employer contributions that are intended to fund benefits for current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the OPEB Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to determine the Total OPEB Liability as of both June 30, 2019 and June 30, 2018.

Sensitivity of the Net OPEB Liability to changes in the discount rate. The following presents the Net OPEB Liability of LACERS as of June 30, 2019, calculated using the discount rate of 7.25%, as well as what LACERS' Net OPEB Liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.25%) or 1-percentage-point higher (8.25%) than the current rate:

	1% Decrease (6.25%)	Current Discount Rate (7.25%)	1% Increase (8.25%)
Net OPEB Liability as of June 30, 2019	$1,000,087,555	$522,200,681	$131,811,191

Sensitivity of the Net OPEB Liability to changes in the healthcare cost trend rate. The following presents the Net OPEB Liability of LACERS as of June 30, 2019, calculated using the trend rate as well as what LACERS' Net OPEB Liability would be if it were calculated using a trend rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate:

	1% Decrease*	Current Trend Rates*	1% Increase*
Net OPEB Liability as of June 30, 2019	$80,855,379	$522,200,681	$1,101,306,810

**Current trend rates: 6.62% graded down to 4.50% over 9 years for Non-Medicare medical plan costs and 6.12% graded down to 4.50% over 7 years for Medicare medical plan costs. 4.00% for all years for Dental and 4.50% for all years for Medicare Part B subsidy cost.*

EXHIBIT 3

Schedules of Changes in LACERS Net OPEB Liability – Last Two Fiscal Years

	2019	2018
Total OPEB Liability		
Service cost[(1)]	$74,477,507	$74,610,881
Interest	236,677,675	218,687,305
Change of benefit terms (retirement rates adjusted for Enhanced Tier 1)	0	948,264
Differences between expected and actual experience	-134,052,778	-7,321,481[(2)]
Changes of assumptions	33,939,702	92,177,641
Benefit payments	-133,571,405	-128,080,997
Net change in Total OPEB Liability	$77,470,701	$251,021,613
Total OPEB Liability – beginning	3,256,827,847	3,005,806,234
Total OPEB Liability – ending (a)	$3,334,298,548	$3,256,827,847
Plan Fiduciary Net Position		
Contributions – employer	$107,926,949	$100,909,010
Contributions – employee	0	0
Net investment income	166,469,503	269,380,196
Benefit payments	-133,571,405	-128,080,997
Administrative expense	-5,098,795	-4,698,444
Other	0	0
Net change in Plan Fiduciary Net Position	$135,726,252	$237,509,765
Plan Fiduciary Net Position – beginning	2,676,371,615	2,438,861,850
Plan Fiduciary Net Position – ending (b)	$2,812,097,867	$2,676,371,615
System's Net OPEB Liability – ending (a) – (b)	$522,200,681	$580,456,232
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	84.34%	82.18%
Covered payroll[(3)]	$2,108,171,088	$2,057,565,478
Plan Net OPEB Liability as percentage of covered payroll	24.77%	28.21%

(1) *The service cost is always based on the previous year's valuation, meaning the 2019 and 2018 values are based on the valuations as of June 30, 2018 and June 30, 2017, respectively.*

(2) *Includes a reallocation of liability between service cost and TOL as a result of adjustment to Entry Age cost methodology.*

(3) *Covered payroll is defined as the payroll on which contributions to an OPEB plan are based.*

EXHIBIT 4

Schedule of Employer Contributions – Last Ten Fiscal Years

Year Ended June 30	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency / (Excess)	Covered Payroll[1]	Contributions as a Percentage of Covered Payroll
2010	$96,511,234	$96,511,234	$0	$1,827,864,283	5.28%
2011	107,395,804	107,395,804	0	1,678,059,440	6.40%
2012	115,208,835	115,208,835	0	1,715,197,133	6.72%
2013	72,916,729	72,916,729	0	1,736,112,598	4.20%
2014	97,840,554	97,840,554	0	1,802,931,195	5.43%
2015	100,466,945	100,466,945	0	1,835,637,409	5.47%
2016	105,983,112	105,983,112	0	1,876,946,179	5.65%
2017	97,457,455	97,457,455	0	1,973,048,633	4.94%
2018	100,909,010	100,909,010	0	2,057,565,478	4.90%
2019	107,926,949	107,926,949	0	2,108,171,088	5.12%

[1] *Covered payroll is defined as the payroll on which contributions to an OPEB plan are based.*

Notes to Exhibit 4

Methods and assumptions used to establish "actuarially determined contribution" (ADC) rates:	
Valuation date	Actuarially determined contribution rates are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported
Actuarial cost method	Entry Age Cost Method (level percent of payroll)
Amortization method	Level percent of payroll
Amortization period	Multiple layers, closed amortization periods. The costs associated with the 2009 ERIP have been amortized over 15 years beginning with the June 30, 2009 valuation date. The unfunded actuarial accrued liability as of June 30, 2012 is amortized over a fixed period of 30 years beginning July 1, 2012. Assumption changes resulting from the triennial experience study will be amortized over 20 years. Health trend and premium assumption changes, plan changes, and gains and losses will be amortized over 15 years.
Asset valuation method	Market value of assets less unrecognized returns in each of the last seven years. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a seven-year period. The actuarial value of assets cannot be less than 60% or greater than 140% of the market value of assets.
Actuarial assumptions:	June 30, 2019 valuation date
Investment rate of return	7.25%
Inflation rate	3.00%
Real across-the-board salary increase	0.50%
Projected salary increases[1]	Ranges from 10.00% to 3.90%, based on years of service
Mortality	Headcount-Weighted RP-2014 Healthy Annuitant Mortality Tables (separate tables for males and females), with no setback for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2017.
Other assumptions	Same as those used in the June 30, 2019 funding actuarial valuation

[1] *Includes inflation at 3.00% plus across the board salary increases of 0.50% plus merit and promotional increases.*

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