FLORIDA RETIREMENT SYSTEM PENSION PLAN

GASB 67 DISCLOSURE AS OF June 30, 2018 MEASUREMENT DATE
Fiscal Year: July 1, 2017 to June 30, 2018

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Certification

Actuarial computations presented in this report under Statement No. 67 of the Governmental Accounting Standards Board are for purposes of assisting the Florida Department of Management Services in fulfilling its financial accounting requirements. No attempt is being made to offer any accounting opinion or advice. This report is for fiscal year July 1, 2017 to June 30, 2018. The reporting date for determining plan assets and obligations is June 30, 2018. The calculations enclosed in this report have been made on a basis consistent with our understanding of the plan provisions. Determinations for purposes other than meeting financial reporting requirements may be significantly different than the results contained in this report. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security or meeting employer funding requirements.

In preparing this report, we relied, without audit, on information as of June 30, 2017 and June 30, 2018 furnished by the Florida Department of Management Services. This information includes, but is not limited to, statutory provisions, member census data, and financial information. Please note that this report is based on the June 30, 2018 assets for the program as reported to us by the Florida State Board of Administration. Please see Milliman's funding valuation report to be published in December 2018 for more information on the plan's participant group as of July 1, 2018 as well as a summary of the plan provisions and a summary of the actuarial methods and assumptions used for funding purposes.

We performed a limited review of the census and financial information used directly in our analysis and have found them to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

We hereby certify that, to the best of our knowledge, this report, including all costs and liabilities based on actuarial assumptions and methods, is complete and accurate and determined in conformance with generally recognized and accepted actuarial principles and practices, which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Code of Professional Conduct and supporting Recommendations of the American Academy of Actuaries.

This valuation report is only an estimate of the Plan's financial condition as of a single date. It can neither predict the Plan's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of Plan benefits, only the timing of Plan contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan’s funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuarial assignment, we did not perform an analysis of the potential range of such future measurements.

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Certification

Milliman's work is prepared solely for the internal use and benefit of the Florida Department of Management Services. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) the Plan Sponsor may provide a copy of Milliman's work, in its entirety, to the Plan Sponsor's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the Plan; and (b) the Plan Sponsor may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their specific needs.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and has been prepared in accordance with generally recognized accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

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Overview of GASB 67 and GASB 68

In 2012, the Governmental Accounting Standards Board (GASB) released GASB Statements No. 67 and 68 for public pension plans and participating employers. GASB Statements No. 67 and 68 substantially revised the accounting requirements previously mandated under GASB Statements No. 25 and 27. The most notable change is the distinct separation of funding from financial reporting. The Annual Required Contribution (ARC) has been eliminated under GASB 67 and 68 and is no longer relevant for financial reporting purposes.

GASB 67 applies to financial reporting for public pension plans. Under GASB 67, enhancements to the financial statement disclosures are required, along with certain required supplementary information.

GASB 68 governs the specifics of accounting for public pension plan obligations for participating employers. GASB 68 requires a liability for pension obligations, known as the Net Pension Liability, to be recognized on the balance sheets of participating employers. Changes in the Net Pension Liability will be immediately recognized as Pension Expense on the income statement or reported as deferred inflows/outflows of resources depending on the nature of the change.

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Relationship Between Valuation Date and Measurement Date

Relationship Between Valuation Date and Measurement Date

The Valuation Date is July 1, 2018. This is the date as of which the actuarial valuation is performed. The Measurement Date is June 30, 2018.

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Schedule of Employer Contributions

Fiscal Year Ending June 30	Actuarially Determined Contribution[1]	Actual Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll[2]	Contribution as a % of Covered Payroll
2009	$2,535,854,000	$2,808,418,000	($272,564,000)	$26,554,114,000	10.58%
2010	2,447,374,000	2,721,618,000	(274,244,000)	25,747,369,000	10.57%
2011	3,680,042,000	3,050,684,000	629,358,000	25,668,958,000	11.88%
2012	1,962,816,000	1,185,310,000	777,506,000	24,476,272,000	4.84%
2013	2,091,343,000	1,388,656,000	702,687,000	24,553,693,000	5.66%
2014	2,190,424,344	2,190,424,344	0	24,723,565,000	8.86%
2015	2,438,084,925	2,438,084,925	0	32,726,034,000	7.45%
2016	2,438,659,458	2,438,659,458	0	33,214,217,000	7.34%
2017	2,603,246,196	2,603,246,196	0	33,775,800,000	7.71%
2018	2,849,919,659	2,849,919,659	0	34,675,000,000	8.22%

[1] For fiscal years prior to 2013-14 the Annual Required Contribution (ARC) under GASB Statement No. 27 is shown.

[2] For the fiscal years ending 2014 and before, covered payroll shown includes Pension Plan actives and members in DROP, but excludes the payroll for Investment Plan members and other payroll on which only statutory UAL rates are charged. For the fiscal years ending 2015 and later, covered payroll shown includes the payroll for Investment Plan members and other payroll on which only statutory UAL rates are charged.

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Actuarial Methods and Assumptions Used for Funding Policy

The following actuarial methods and assumptions were used in the July 1, 2018 funding valuation. Please see the actuarial valuation report for funding purposes to be published in December 2018 for further details.

Valuation Timing	Actuarially determined contribution rates for a given plan year are calculated in the valuation conducted as of the beginning of the preceding plan year (e.g., rates for the 2019-2020 plan year are calculated in the 7/1/2018 actuarial valuation).
Actuarial Cost Method	Ultimate entry age
Amortization Method	
Level percent or level dollar	Level percent
Closed, open, or layered periods	Closed, layered
Amortization period at 07/01/2018	30 years
Payroll growth rate	3.25%
Asset Valuation Method	
Smoothing period	5 years
Recognition method	Asymptotic
Corridor	80% - 120% of fair market value
Inflation	2.60%
Salary Increases	Varies by membership class, length of service and sex; details in actuarial valuation report for funding purposes
Investment Rate of Return[1]	7.40%
Cost of Living Adjustments	3% for pre-July 2011 benefit service; 0% thereafter
Retirement Age	Varies by tier, membership class, age, and sex; details in actuarial valuation report for funding purposes
Turnover	Varies by membership class, length of service, age and sex; details in actuarial valuation report for funding purposes
Mortality	Generational RP-2000 with Projection Scale BB, details in actuarial valuation report for plan funding purposes

[1]The 7.40% return was chosen by the 2018 FRS Actuarial Assumptions Conference, and differs from the 7.00% investment return assumption that is used as the discount rate for GASB calculations in this report.

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Statement of Fiduciary Net Position

	June 30, 2017	June 30, 2018
Assets		
Cash and cash equivalents	$130,731,187	$114,331,484
State treasury investment pool	60,429,448	63,345,811
Total cash and cash equivalents	191,160,635	177,677,295
Investments:		
Certificates of deposit	800,168,500	200,076,800
U.S. government and federally guaranteed obligations	10,910,710,262	12,308,169,896
Federal agencies	8,418,178,463	9,641,445,668
Commercial paper	4,050,193,462	4,182,321,798
Other Investments	17,211,447	545,621
Repurchase agreements	750,000,000	800,000,000
International bonds and notes	1,952,266,136	2,197,600,424
Bonds and Notes	6,859,418,307	7,005,684,663
Real estate contracts	10,984,655,199	11,406,346,371
International Equity commingled	7,911,256,458	8,569,818,429
Short-term investment funds	16,866,516	35,980,595
Domestic equity / domestic equity commingled	45,250,542,923	47,062,304,076
Alternative investments	24,004,242,055	26,432,706,661
International equity	34,509,634,866	33,319,165,217
Total investments	156,435,344,594	163,162,166,219
Receivables:		
Contributions receivable	189,585,664	226,542,399
Pending investment sales	1,221,252,475	2,877,499,942
Forward contracts receivable	4,510,178,954	3,799,471,850
Other receivables	855,430,166	1,949,156,579
Total receivables	6,776,447,259	8,852,670,770
Security lending collateral	1,289,851,618	2,631,692,319
Prepaid items; furniture & equipment net accumulated depreciation	8,145,291	5,510,659
Restatement of beginning net position	(10,152,810)	N/A
Total assets	164,690,796,587	174,829,717,262
Deferred outflows: other postemployment benefits	0	518,695
Liabilities		
Accrued DROP liability[1]	216,703,029	247,610,920
Obligations under security lending agreements	1,328,234,288	2,659,232,586
Pending investment purchases	3,701,087,157	5,000,809,838
Forward contracts payable	4,494,947,721	3,793,382,917
Other liabilities and payables	906,714,234	1,930,472,029
Total liabilities	10,647,686,429	13,631,508,290
Deferred inflows: other postemployment benefits	0	1,847,058
Fiduciary Net Position		
Held in trust for pension benefits	$154,043,110,158 [2]	$161,196,880,609

[1] Per our understanding, the accrued DROP liability represents lump sum DROP exit payments made early in the subsequent plan year for members exiting the DROP on or shortly before the asset measurement date.
[2] Reflects restatement of beginning net position at July 1, 2017 due to implementation of GASB 75, Accounting and Financial Reporting for Postemployment Benefits Other than Pensions.

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Statement of Changes in Fiduciary Net Position

	June 30, 2017	June 30, 2018
Additions		
Member contributions	$744,839,410	$746,370,411
Employer contributions	2,603,246,196	2,849,919,659
Total contributions	3,348,085,606	3,596,290,070
Transfers from the Investment Plan	71,109,940	70,597,178
Investment income (loss):		
Interest	683,643,798	767,603,995
Dividends	1,790,068,722	1,863,240,710
Net increase in fair value of investments	14,192,417,077	9,026,875,605
Securities lending income	63,625,418	71,625,252
Net real estate operating income	469,305,831	464,194,571
Other investment income	2,186,430,639	2,390,246,445
Less investment expenses:		
Direct investment expense	571,859,418	601,775,463
Securities lending expense	14,200,232	29,042,640
Net investment income	18,799,431,835	13,952,968,475
Other income	2,484,713	2,264,871
Total additions	22,221,112,094	17,622,120,594
Deductions		
Benefit payments[1]	9,348,035,738	9,831,837,726
Transfers to the Investment Plan	568,911,732	597,009,913
Refunds of member contributions	13,481,914	19,324,969
Administrative expenses	18,340,257	20,177,535
Total deductions	9,948,769,641	10,468,350,143
Net increase (decrease)	$12,272,342,453	$7,153,770,451
Net position restricted for pensions		
Beginning of year	$141,780,920,515	$154,043,110,158 [3]
End of year	$154,053,262,968 [2]	$161,196,880,609

[1] Includes transfers to other funds and general revenue-funded benefit payments net of general revenue contributions.

[2] As reported in June 30, 2017 GASB 67 Disclosure Report.

[3] Reflects restatement of beginning net position at July 1, 2017 due to implementation of GASB 75, Accounting and Financial Reporting for Postemployment Benefits Other than Pensions.

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Money-Weighted Rate of Return

Fiscal Year Ending June 30	Net Money-Weighted Rate of Return
2014	17.57%
2015	3.77%
2016	0.57%
2017	13.59%
2018	9.28%

Calculation of Money-Weighted Rate of Return

The money-weighted rate of return considers the changing amounts estimated as invested during a period and weights the amount of pension plan investments by the proportion of time they are available to earn a return during that period. Cash flows are estimated on a monthly basis and are assumed to occur at the beginning of each month. Cash inflows are netted with cash outflows, resulting in a net cash flow in each month. The money-weighted rate of return is calculated net of investment expenses.

	Net External Cash Flows	Periods Invested	Period Weight	Net External Cash Flows with Interest
Beginning value - July 1, 2017	$154,043,110,158	12	1.00	$168,334,572,098
Monthly net external cash flows:				
July	(566,788,575)	12	1.00	(619,372,798)
August	(566,788,575)	11	0.92	(614,992,252)
September	(566,788,575)	10	0.83	(610,101,160)
October	(566,788,575)	9	0.75	(605,786,189)
November	(566,788,575)	8	0.67	(601,501,735)
December	(566,788,575)	7	0.58	(596,717,934)
January	(566,788,575)	6	0.50	(592,497,616)
February	(566,788,575)	5	0.42	(588,307,147)
March	(566,788,575)	4	0.33	(583,628,284)
April	(566,788,575)	3	0.25	(579,500,543)
May	(566,788,575)	2	0.17	(575,401,996)
June	(566,788,575)	1	0.08	(569,883,835)
Ending value - June 30, 2018				161,196,880,609
Money-weighted plan rate of return	9.28% [1]			

[1]The money-weighted plan rate of this return is an estimate using estimated level monthly net external cash flows. It can differ from the more precise return calculated by the Florida State Board of Administration.

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Long-Term Expected Rate of Return

The long-term expected rate of return assumption of 7.0% used in GASB discount rate calculations consists of two building block components: 1) a real (in excess of inflation) return of 4.4%, which is consistent with one capital market outlook model developed during 2018 by the outside investment consultant to the Florida State Board of Administration; 2) a long-term average annual inflation assumption of 2.6% as most recently adopted in October 2018 by the FRS Actuarial Assumption Conference. In our opinion, both components and the overall 7.0% return assumption are reasonable and appropriate per Actuarial Standards of Practice.

For reference, the table below contains a summary of Milliman's in-house assumptions for each of the asset classes in which the plan was invested at that time based on the long-term target asset allocation. Each asset class assumption is based on a consistent set of underlying assumptions, and includes an adjustment for the 2.6% inflation assumption. The Milliman assumptions are not based on historical returns, but instead are based on a forward-looking capital market economic model. The table is a summary of the model output listed in more detail on slide 43 of Milliman's presentation to the 2018 FRS Actuarial Assumption Conference on October 31, 2018.

Asset Class	Target Allocation*	Annual Arithmetic Return	Compound Annual (Geometric) Return	Annual Standard Deviation
Cash Equivalents	1%	2.9%	2.9%	1.8%
Fixed income	18%	4.4%	4.3%	4.0%
Global equity	54%	7.6%	6.3%	17.0%
Real estate	11%	6.6%	6.0%	11.3%
Private equity	10%	10.7%	7.8%	26.5%
Strategic investments	6%	6.0%	5.7%	8.6%
Assumed inflation - mean			2.6%	1.9%

* As outlined in the Plan's investment policy

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Depletion Date Projection

In order to determine if the plan's fiduciary net position is projected to be sufficient to make projected benefit payments, we have prepared a depletion date projection using the following techniques and assumptions:

- Current active members contribute the required employee contribution amounts.
- The employer contributes the actuarially determined contribution amounts based on the 7.40% investment rate of return assumption selected by the 2018 FRS Actuarial Assumption Conference.
- Benefit payments are projected based on the actuarial assumptions and the current plan provisions.
- Members are assumed to receive pay increases, terminate, retire, become disabled, die, and so forth according to the actuarial assumptions used for the July 1, 2018 valuation.
- Terminating and retiring members are replaced in a manner such that the proportions of Pension Plan and Investment Plan payroll modify gradually to 50% and 50% over a thirty-year timeframe.
- All cash flows are assumed to occur on average halfway through the year.
- In the depletion date test's projections, the actual return achieved each year on invested assets is 7.00%.
- The funding policy used to determine actuarially determined contributions does not change.
- The actuarial assumptions do not change.

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Projection of Payroll Measures

Year	Current Member Non-DROP PP Payroll	Future Member Non-DROP PP Payroll	Total Member Non-DROP PP Payroll	Payroll for Statutory UAL Rate Contributions	DROP PP Payroll
1	$24,096,750,110	$346,199,890	$24,442,950,000	$35,783,166,000	$2,223,535,000
2	23,304,392,406	1,529,644,794	24,834,037,200	36,963,435,771	2,295,799,888
3	22,606,621,342	2,624,760,453	25,231,381,795	38,164,747,434	2,370,413,384
4	22,012,977,825	3,622,106,078	25,635,083,904	39,405,101,725	2,447,451,819
5	21,450,781,743	4,594,463,503	26,045,245,246	40,685,767,532	2,526,994,003
6	20,878,502,356	5,583,466,814	26,461,969,170	42,008,054,976	2,609,121,308
7	20,302,115,739	6,583,244,938	26,885,360,677	43,373,316,763	2,693,917,751
8	19,731,987,257	7,583,539,191	27,315,526,448	44,782,949,558	2,781,470,077
9	19,147,228,928	8,605,345,943	27,752,574,871	46,238,395,418	2,871,867,855
10	18,551,542,441	9,645,073,628	28,196,616,069	47,741,143,270	2,965,203,560
11	17,933,406,031	10,714,355,895	28,647,761,926	49,292,730,426	3,061,572,676
12	17,292,466,112	11,813,660,005	29,106,126,117	50,894,744,165	3,161,073,788
13	16,619,941,221	12,951,882,914	29,571,824,135	52,548,823,350	3,263,808,686
14	15,926,609,618	14,118,363,703	30,044,973,321	54,256,660,109	3,369,882,468
15	15,233,057,733	15,292,635,161	30,525,692,894	56,020,001,562	3,479,403,649
16	14,524,466,004	16,489,637,977	31,014,103,980	57,840,651,613	3,592,484,267
17	13,821,586,350	17,688,743,294	31,510,329,644	59,720,472,791	3,709,240,006
18	13,116,541,365	18,897,953,553	32,014,494,918	61,661,388,156	3,829,790,306
19	12,418,014,768	20,108,712,069	32,526,726,837	63,665,383,271	3,954,258,491
20	11,767,483,772	21,279,670,694	33,047,154,466	65,734,508,228	4,082,771,892
21	11,160,859,694	22,415,049,244	33,575,908,938	67,870,879,745	4,215,461,978
22	10,575,745,271	23,537,378,210	34,113,123,481	70,076,683,337	4,352,464,493
23	9,974,381,814	24,684,551,643	34,658,933,457	72,354,175,545	4,493,919,589
24	9,429,584,053	25,783,892,339	35,213,476,392	74,705,686,250	4,639,971,975
25	8,868,257,774	26,908,634,240	35,776,892,014	77,133,621,054	4,790,771,064
26	8,283,790,490	28,065,531,796	36,349,322,286	79,640,463,738	4,946,471,124
27	7,612,586,006	29,318,325,437	36,930,911,443	82,228,778,809	5,107,231,436
28	6,873,580,197	30,648,225,829	37,521,806,026	84,901,214,121	5,273,216,457
29	6,118,043,923	32,004,111,000	38,122,154,923	87,660,503,580	5,444,595,992
30	5,366,013,897	33,366,095,505	38,732,109,401	90,509,469,946	5,621,545,362

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Projection of Payroll Measures

Year	Current Member Non-DROP PP Payroll	Future Member Non-DROP PP Payroll	Total Member Non-DROP PP Payroll	Payroll for Statutory UAL Rate Contributions	DROP PP Payroll
31	$4,696,084,670	$34,655,738,482	$39,351,823,152	$93,451,027,719	$5,804,245,586
32	4,107,503,228	36,523,254,176	40,630,757,404	96,488,186,120	5,897,113,516
33	3,568,219,650	38,383,037,370	41,951,257,020	99,624,052,169	5,991,467,332
34	3,176,496,066	40,138,176,807	43,314,672,873	102,861,833,864	6,087,330,809
35	2,842,108,261	41,880,291,481	44,722,399,741	106,204,843,465	6,184,728,102
36	2,528,731,731	43,647,146,002	46,175,877,733	109,656,500,878	6,283,683,752
37	2,234,631,175	45,441,962,584	47,676,593,759	113,220,337,156	6,384,222,692
38	1,961,266,422	47,264,816,634	49,226,083,056	116,899,998,114	6,486,370,255
39	1,707,405,740	49,118,525,015	50,825,930,756	120,699,248,052	6,590,152,179
40	1,473,716,392	51,004,057,113	52,477,773,505	124,621,973,614	6,695,594,614
41	1,259,541,224	52,923,759,920	54,183,301,144	128,672,187,757	6,802,724,128
42	1,064,869,797	54,879,388,635	55,944,258,431	132,854,033,859	6,911,567,714
43	890,797,546	56,871,649,284	57,762,446,830	137,171,789,959	7,022,152,797
44	739,355,686	58,900,370,666	59,639,726,352	141,629,873,133	7,134,507,242
45	607,474,822	60,970,542,637	61,578,017,459	146,232,844,010	7,248,659,358
46	494,186,650	63,085,116,376	63,579,303,026	150,985,411,440	7,364,637,907
47	399,932,059	65,245,698,315	65,645,630,375	155,892,437,312	7,482,472,114
48	321,054,766	67,458,058,595	67,779,113,362	160,958,941,524	7,602,191,668
49	255,207,174	69,726,727,372	69,981,934,546	166,190,107,124	7,723,826,734
50	201,500,919	72,054,846,500	72,256,347,419	171,591,285,605	7,847,407,962
51	156,678,582	74,448,000,128	74,604,678,710	177,168,002,388	7,972,966,489
52	119,655,298	76,909,675,470	77,029,330,768	182,925,962,465	8,100,533,953
53	88,503,743	79,444,280,275	79,532,784,018	188,871,056,245	8,230,142,497
54	62,908,943	82,054,690,556	82,117,599,498	195,009,365,573	8,361,824,777
55	42,584,149	84,743,837,333	84,786,421,482	201,347,169,954	8,495,613,973
56	26,724,962	87,515,255,218	87,541,980,180	207,890,952,978	8,631,543,796
57	14,958,381	90,372,136,155	90,387,094,536	214,647,408,950	8,769,648,497
58	7,933,519	93,316,741,590	93,324,675,109	221,623,449,741	8,909,962,873
59	4,078,944	96,353,648,106	96,357,727,050	228,826,211,857	9,052,522,279
60	1,825,103	99,487,528,076	99,489,353,179	236,263,063,742	9,197,362,636

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Projection of Payroll Measures

Year	Current Member Non-DROP PP Payroll	Future Member Non-DROP PP Payroll	Total Member Non-DROP PP Payroll	Payroll for Statutory UAL Rate Contributions	DROP PP Payroll
61	$605,416	$102,722,151,741	$102,722,757,157	$243,941,613,314	$9,344,520,438
62	111,355	106,061,135,410	106,061,246,765	251,869,715,747	9,648,217,352
63	35,484	109,508,201,800	109,508,237,285	260,055,481,509	9,961,784,416
64	6,243	113,067,248,754	113,067,254,996	268,507,284,658	10,285,542,409
65	-	116,741,940,784	116,741,940,784	277,233,771,409	10,619,822,538
66	-	120,536,053,859	120,536,053,859	286,243,868,980	10,964,966,770
67	-	124,453,475,610	124,453,475,610	295,546,794,722	11,321,328,190
68	-	128,498,213,567	128,498,213,567	305,152,065,550	11,689,271,357
69	-	132,674,405,508	132,674,405,508	315,069,507,680	12,069,172,676
70	-	136,986,323,687	136,986,323,687	325,309,266,680	12,461,420,788
71	-	141,438,379,207	141,438,379,207	335,881,817,847	12,866,416,963
72	-	146,035,126,531	146,035,126,531	346,797,976,927	13,284,575,514
73	-	150,781,268,143	150,781,268,143	358,068,911,177	13,716,324,219
74	-	155,681,659,358	155,681,659,358	369,706,150,791	14,162,104,756
75	-	160,741,313,287	160,741,313,287	381,721,600,691	14,622,373,160

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Projection of Crossover Test-Eligible Contributions

	Current Non-DROP Member		UAL Contributions		DROP	Net NC	
Year	Member Contributions	Employer Normal Cost Contributions	Blended Statutory UAL Rate	Statutory UAL Rate Contributions	Payroll Normal Cost Contributions	Contributions from Future Employees[1]	Total Test-Eligible Contributions
1	$722,902,503	$1,127,727,905	5.15%	$1,842,833,049	$104,061,438	($2,838,839)	$3,794,686,056
2	699,131,772	1,090,645,565	5.34%	1,973,847,470	107,443,435	(12,543,087)	3,858,525,154
3	678,198,640	1,057,989,879	5.24%	1,999,832,766	110,935,346	(21,523,036)	3,825,433,595
4	660,389,335	1,030,207,362	5.16%	2,033,303,249	114,540,745	(29,701,270)	3,808,739,421
5	643,523,452	1,003,896,586	5.12%	2,083,111,298	118,263,319	(37,674,601)	3,811,120,054
6	626,355,071	977,113,910	5.12%	2,150,812,415	122,106,877	(45,784,428)	3,830,603,845
7	609,063,472	950,139,017	5.14%	2,229,388,482	126,075,351	(53,982,608)	3,860,683,713
8	591,959,618	923,457,004	5.18%	2,319,756,787	130,172,800	(62,185,021)	3,903,161,187
9	574,416,868	896,090,314	5.24%	2,422,891,920	134,403,416	(70,563,837)	3,957,238,680
10	556,546,273	868,212,186	5.31%	2,535,054,708	138,771,527	(79,089,604)	4,019,495,090
11	538,002,181	839,283,402	5.40%	2,661,807,443	143,281,601	(87,857,718)	4,094,516,909
12	518,773,983	809,287,414	5.49%	2,794,121,455	147,938,253	(96,872,012)	4,173,249,093
13	498,598,237	777,813,249	5.70%	2,995,282,931	152,746,247	(106,205,440)	4,318,235,223
14	477,798,289	745,365,330	5.73%	3,108,906,624	157,710,500	(115,770,582)	4,374,010,160
15	456,991,732	712,907,102	5.84%	3,271,568,091	162,836,091	(125,399,608)	4,478,903,408
16	435,733,980	679,745,009	5.96%	3,447,302,836	168,128,264	(135,215,031)	4,595,695,058
17	414,647,591	646,850,241	6.08%	3,631,004,746	173,592,432	(145,047,695)	4,721,047,315
18	393,496,241	613,854,136	6.99%	4,310,131,032	179,234,186	(154,963,219)	5,341,752,376
19	372,540,443	581,163,091	7.12%	4,532,975,289	185,059,297	(164,891,439)	5,506,846,682
20	353,024,513	550,718,241	7.24%	4,759,178,396	191,073,725	(174,493,300)	5,679,501,574
21	334,825,791	522,328,234	7.36%	4,995,296,749	197,283,621	(183,803,404)	5,865,930,990
22	317,272,358	494,944,879	7.49%	5,248,743,582	203,695,338	(193,006,501)	6,071,649,656
23	299,231,454	466,801,069	3.54%	2,561,337,814	210,315,437	(202,413,323)	3,335,272,451
24	282,887,522	441,304,534	3.68%	2,749,169,254	217,150,688	(211,427,917)	3,479,084,081
25	266,047,733	415,034,464	3.28%	2,529,982,771	224,208,086	(220,650,801)	3,214,622,253
26	248,513,715	387,681,395	3.42%	2,723,703,860	231,494,849	(230,137,361)	3,361,256,457
27	228,377,580	356,269,025	3.03%	2,491,531,998	239,018,431	(240,410,269)	3,074,786,766
28	206,207,406	321,683,553	3.28%	2,784,759,823	246,786,530	(251,315,452)	3,308,121,861
29	183,541,318	286,324,456	3.30%	2,892,796,618	254,807,092	(262,433,710)	3,355,035,774
30	160,980,417	251,129,450	3.00%	2,715,284,098	263,088,323	(273,601,983)	3,116,880,305

[1]Reflects the net effect of a 4.68% employer normal cost rate contribution being made for future members using the 7.40% assumption adopted by the 2018 FRS Actuarial Assumption Conference, compared to the employer normal cost rate of 5.50% of payroll for those members under the 7.00% discount rate used in the GASB crossover test.

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Projection of Crossover Test-Eligible Contributions

	Current Non-DROP Member		UAL Contributions		DROP	Net NC	
Year	Member Contributions	Employer Normal Cost Contributions	Blended Statutory UAL Rate	Statutory UAL Rate Contributions	Payroll Normal Cost Contributions	Contributions from Future Employees[1]	Total Test-Eligible Contributions
31	$140,882,540	$219,776,763	2.65%	$2,476,452,235	$271,638,693	($284,177,056)	$2,824,573,175
32	123,225,097	192,231,151	2.52%	2,431,502,290	275,984,913	(299,490,684)	2,723,452,766
33	107,046,589	166,992,680	2.74%	2,729,699,029	280,400,671	(314,740,906)	2,969,398,063
34	95,294,882	148,660,016	2.92%	3,003,565,549	284,887,082	(329,133,050)	3,203,274,479
35	85,263,248	133,010,667	3.07%	3,260,488,694	289,445,275	(343,418,390)	3,424,789,494
36	75,861,952	118,344,645	3.18%	3,487,076,728	294,076,400	(357,906,597)	3,617,453,127
37	67,038,935	104,580,739	3.26%	3,690,982,991	298,781,622	(372,624,093)	3,788,760,194
38	58,837,993	91,787,269	3.32%	3,881,079,937	303,562,128	(387,571,496)	3,947,695,830
39	51,222,172	79,906,589	3.37%	4,067,564,659	308,419,122	(402,771,905)	4,104,340,637
40	44,211,492	68,969,927	3.39%	4,224,684,906	313,353,828	(418,233,268)	4,232,986,884
41	37,786,237	58,946,529	3.41%	4,387,721,602	318,367,489	(433,974,831)	4,368,847,026
42	31,946,094	49,835,906	3.41%	4,530,322,555	323,461,369	(450,010,987)	4,485,554,937
43	26,723,926	41,689,325	3.41%	4,677,558,038	328,636,751	(466,347,524)	4,608,260,516
44	22,180,671	34,601,846	3.41%	4,829,578,674	333,894,939	(482,983,039)	4,737,273,090
45	18,224,245	28,429,822	3.41%	4,986,539,981	339,237,258	(499,958,450)	4,872,472,855
46	14,825,600	23,127,935	3.41%	5,148,602,530	344,665,054	(517,297,954)	5,013,923,165
47	11,997,962	18,716,820	3.41%	5,315,932,112	350,179,695	(535,014,726)	5,161,811,863
48	9,631,643	15,025,363	3.41%	5,488,699,906	355,782,570	(553,156,080)	5,315,983,402
49	7,656,215	11,943,696	3.41%	5,667,082,653	361,475,091	(571,759,164)	5,476,398,491
50	6,045,028	9,430,243	3.41%	5,851,262,839	367,258,693	(590,849,741)	5,643,147,061
51	4,700,357	7,332,558	3.41%	6,041,428,881	373,134,832	(610,473,601)	5,816,123,027
52	3,589,659	5,599,868	3.41%	6,237,775,320	379,104,989	(630,659,339)	5,995,410,497
53	2,655,112	4,141,975	3.41%	6,440,503,018	385,170,669	(651,443,098)	6,181,027,676
54	1,887,268	2,944,139	3.41%	6,649,819,366	391,333,400	(672,848,463)	6,373,135,710
55	1,277,524	1,992,938	3.41%	6,865,938,495	397,594,734	(694,899,466)	6,571,904,226
56	801,749	1,250,728	3.41%	7,089,081,497	403,956,250	(717,625,093)	6,777,465,131
57	448,751	700,052	3.41%	7,319,476,645	410,419,550	(741,051,516)	6,989,993,482
58	238,006	371,289	3.41%	7,557,359,636	416,986,262	(765,197,281)	7,209,757,912
59	122,368	190,895	3.41%	7,802,973,824	423,658,043	(790,099,914)	7,436,845,215
60	54,753	85,415	3.41%	8,056,570,474	430,436,571	(815,797,730)	7,671,349,483

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Projection of Crossover Test-Eligible Contributions

	Current Non-DROP Member		UAL Contributions		DROP	Net NC	
Year	Member Contributions	Employer Normal Cost Contributions	Blended Statutory UAL Rate	Statutory UAL Rate Contributions	Payroll Normal Cost Contributions	Contributions from Future Employees[1]	Total Test-Eligible Contributions
61	$18,162	$28,333	3.41%	$8,318,409,014	$437,323,556	($842,321,644)	$7,913,457,422
62	3,341	5,211	3.41%	8,588,757,307	451,536,572	(869,701,310)	8,170,601,121
63	1,065	1,661	3.41%	8,867,891,919	466,211,511	(897,967,255)	8,436,138,901
64	187	292	3.41%	9,156,098,407	481,363,385	(927,151,440)	8,710,310,831
65	-	-	3.41%	9,453,671,605	497,007,695	(957,283,914)	8,993,395,385
66	-	-	3.41%	9,760,915,932	513,160,445	(988,395,642)	9,285,680,735
67	-	-	3.41%	10,078,145,700	529,838,159	(1,020,518,500)	9,587,465,359
68	-	-	3.41%	10,405,685,435	547,057,899	(1,053,685,351)	9,899,057,983
69	-	-	3.41%	10,743,870,212	564,837,281	(1,087,930,125)	10,220,777,368
70	-	-	3.41%	11,093,045,994	583,194,493	(1,123,287,854)	10,552,952,632
71	-	-	3.41%	11,453,569,989	602,148,314	(1,159,794,709)	10,895,923,593
72	-	-	3.41%	11,825,811,013	621,718,134	(1,197,488,038)	11,250,041,110
73	-	-	3.41%	12,210,149,871	641,923,973	(1,236,406,399)	11,615,667,446
74	-	-	3.41%	12,606,979,742	662,786,503	(1,276,589,607)	11,993,176,638
75	-	-	3.41%	13,016,706,584	684,327,064	(1,318,078,769)	12,382,954,879

[1]Reflects the net effect of a 4.68% employer normal cost rate contribution being made for future members using the 7.40% assumption adopted by the 2018 FRS Actuarial Assumption Conference, compared to the employer normal cost rate of 5.50% of payroll for those members under the 7.00% discount rate used in the GASB crossover test.

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Projection of Fiduciary Net Position

Year	Projected Beginning Fiduciary Net Position	Projected Test-Eligible Contributions	Projected Payments for Current PP Members	Projected Administrative Expenses	Projected Investment Earnings	Projected Ending Fiduciary Net Position
1	$161,196,880,609	$3,794,686,056	$10,303,477,390	$20,581,086	$11,059,826,869	$165,727,335,058
2	165,727,335,058	3,858,525,154	10,946,032,141	20,992,707	11,357,046,207	169,975,881,571
3	169,975,881,571	3,825,433,595	11,719,929,354	21,412,562	11,626,677,558	173,686,650,809
4	173,686,650,809	3,808,739,421	12,486,387,090	21,840,813	11,859,484,680	176,846,647,008
5	176,846,647,008	3,811,120,054	12,677,925,359	22,277,629	12,074,175,870	180,031,739,944
6	180,031,739,944	3,830,603,845	12,553,422,731	22,723,182	12,302,086,666	183,588,284,542
7	183,588,284,542	3,860,683,713	12,798,548,557	23,177,645	12,543,645,478	187,170,887,530
8	187,170,887,530	3,903,161,187	13,254,791,038	23,641,198	12,780,190,842	190,575,807,323
9	190,575,807,323	3,957,238,680	13,729,347,105	24,114,022	13,004,067,383	193,783,652,260
10	193,783,652,260	4,019,495,090	14,217,909,551	24,596,303	13,213,948,172	196,774,589,668
11	196,774,589,668	4,094,516,909	14,714,723,211	25,088,229	13,408,800,759	199,538,095,896
12	199,538,095,896	4,173,249,093	15,219,964,732	25,589,993	13,587,570,843	202,053,361,107
13	202,053,361,107	4,318,235,223	15,732,265,916	26,101,793	13,751,000,815	204,364,229,437
14	204,364,229,437	4,374,010,160	16,252,145,174	26,623,829	13,896,792,677	206,356,263,271
15	206,356,263,271	4,478,903,408	16,768,178,510	27,156,306	14,022,088,519	208,061,920,383
16	208,061,920,383	4,595,695,058	17,268,497,976	27,699,432	14,128,288,076	209,489,706,108
17	209,489,706,108	4,721,047,315	17,742,589,075	28,253,420	14,216,233,655	210,656,144,583
18	210,656,144,583	5,341,752,376	18,186,057,635	28,818,489	14,303,982,710	212,087,003,545
19	212,087,003,545	5,506,846,682	18,598,310,211	29,394,858	14,395,638,604	213,361,783,761
20	213,361,783,761	5,679,501,574	18,964,652,616	29,982,756	14,478,208,811	214,524,858,775
21	214,524,858,775	5,865,930,990	19,271,530,911	30,582,411	14,555,479,652	215,644,156,096
22	215,644,156,096	6,071,649,656	19,525,041,818	31,194,059	14,632,186,027	216,791,755,901
23	216,791,755,901	3,335,272,451	19,736,640,116	31,817,940	14,611,083,945	214,969,654,241
24	214,969,654,241	3,479,084,081	19,903,663,820	32,454,299	14,482,738,146	212,995,358,349
25	212,995,358,349	3,214,622,253	20,030,148,117	33,103,385	14,331,085,743	210,477,814,842
26	210,477,814,842	3,361,256,457	20,130,865,234	33,765,453	14,156,437,614	207,830,878,228
27	207,830,878,228	3,074,786,766	20,224,429,565	34,440,762	13,958,075,824	204,604,870,491
28	204,604,870,491	3,308,121,861	20,317,185,715	35,129,577	13,737,092,329	201,297,769,389
29	201,297,769,389	3,355,035,774	20,392,647,845	35,832,168	13,504,612,964	197,728,938,113
30	197,728,938,113	3,116,880,305	20,437,732,089	36,548,812	13,245,049,050	193,616,586,568

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Projection of Fiduciary Net Position

Year	Projected Beginning Fiduciary Net Position	Projected Test-Eligible Contributions	Projected Payments for Current PP Members	Projected Administrative Expenses	Projected Investment Earnings	Projected Ending Fiduciary Net Position
31	$193,616,586,568	$2,824,573,175	$20,419,856,127	$37,279,788	$12,947,741,802	$188,931,765,630
32	188,931,765,630	2,723,452,766	20,312,587,347	38,025,384	12,620,015,890	183,924,621,556
33	183,924,621,556	2,969,398,063	20,134,569,569	38,785,891	12,284,103,545	179,004,767,704
34	179,004,767,704	3,203,274,479	19,874,639,576	39,561,609	11,956,704,687	174,250,545,685
35	174,250,545,685	3,424,789,494	19,535,571,939	40,352,841	11,643,197,698	169,742,608,097
36	169,742,608,097	3,617,453,127	19,151,627,403	41,159,898	11,347,482,026	165,514,755,949
37	165,514,755,949	3,788,760,194	18,731,511,482	41,983,096	11,071,882,083	161,601,903,648
38	161,601,903,648	3,947,695,830	18,271,292,932	42,822,758	10,819,286,306	158,054,770,094
39	158,054,770,094	4,104,340,637	17,774,037,580	43,679,213	10,593,486,383	154,934,880,321
40	154,934,880,321	4,232,986,884	17,240,715,741	44,552,798	10,397,871,125	152,280,469,791
41	152,280,469,791	4,368,847,026	16,675,566,223	45,443,854	10,236,182,759	150,164,489,499
42	150,164,489,499	4,485,554,937	16,081,733,243	46,352,731	10,112,512,460	148,634,470,923
43	148,634,470,923	4,608,260,516	15,462,272,789	47,279,785	10,030,947,641	147,764,126,505
44	147,764,126,505	4,737,273,090	14,820,797,394	48,225,381	9,996,534,515	147,628,911,335
45	147,628,911,335	4,872,472,855	14,164,799,321	49,189,889	10,014,293,022	148,301,688,003
46	148,301,688,003	5,013,923,165	13,498,790,722	50,173,686	10,089,170,470	149,855,817,229
47	149,855,817,229	5,161,811,863	12,824,981,802	51,177,160	10,226,232,523	152,367,702,654
48	152,367,702,654	5,315,983,402	12,148,852,491	52,200,703	10,430,633,530	155,913,266,391
49	155,913,266,391	5,476,398,491	11,474,843,503	53,244,717	10,707,533,892	160,569,110,554
50	160,569,110,554	5,643,147,061	10,805,562,467	54,309,612	11,062,209,126	166,414,594,662
51	166,414,594,662	5,816,123,027	10,145,669,819	55,395,804	11,500,050,393	173,529,702,459
52	173,529,702,459	5,995,410,497	9,497,629,391	56,503,720	12,026,574,673	181,997,554,518
53	181,997,554,518	6,181,027,676	8,864,265,401	57,633,794	12,647,503,856	191,904,186,855
54	191,904,186,855	6,373,135,710	8,246,447,673	58,786,470	13,368,836,081	203,340,924,503
55	203,340,924,503	6,571,904,226	7,644,895,287	59,962,200	14,196,945,192	216,404,916,434
56	216,404,916,434	6,777,465,131	7,060,679,677	61,161,444	15,138,599,292	231,199,139,736
57	231,199,139,736	6,989,993,482	6,494,590,339	62,384,673	16,200,985,634	247,833,143,841
58	247,833,143,841	7,209,757,912	5,946,657,979	63,632,366	17,391,780,866	266,424,392,274
59	266,424,392,274	7,436,845,215	5,418,836,092	64,905,013	18,719,143,204	287,096,639,588
60	287,096,639,588	7,671,349,483	4,913,176,109	66,203,114	20,191,668,120	309,980,277,968

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Projection of Fiduciary Net Position

Year	Projected Beginning Fiduciary Net Position	Projected Test-Eligible Contributions	Projected Payments for Current PP Members	Projected Administrative Expenses	Projected Investment Earnings	Projected Ending Fiduciary Net Position
61	$309,980,277,968	$2,824,573,175	$4,430,861,711	$67,527,176	$26,907,333,009	$335,213,795,265
62	335,213,795,265	2,723,452,766	3,972,810,790	68,877,719	29,056,551,774	362,952,111,297
63	362,952,111,297	2,969,398,063	3,540,032,444	70,255,274	31,041,854,071	393,353,075,713
64	393,353,075,713	3,203,274,479	3,133,479,751	71,660,379	33,233,639,498	426,584,849,559
65	426,584,849,559	3,424,789,494	2,753,632,840	73,093,587	35,644,243,380	462,827,156,007
66	462,827,156,007	3,617,453,127	2,400,899,969	74,555,459	38,303,020,363	502,272,174,069
67	502,272,174,069	3,788,760,194	2,075,550,219	76,046,568	41,216,227,651	545,125,565,128
68	545,125,565,128	3,947,695,830	1,777,683,209	77,567,499	44,389,592,327	591,607,602,577
69	591,607,602,577	4,104,340,637	1,507,384,908	79,118,849	47,828,779,696	641,954,219,154
70	641,954,219,154	4,232,986,884	1,264,551,048	80,701,226	51,576,356,813	696,418,310,576
71	696,418,310,576	4,368,847,026	1,048,781,533	82,315,251	55,615,179,197	755,271,240,016
72	755,271,240,016	4,485,554,937	859,333,325	83,961,556	59,990,996,897	818,804,496,970
73	818,804,496,970	4,608,260,516	695,116,782	85,640,787	64,699,476,498	887,331,476,415
74	887,331,476,415	4,737,273,090	554,761,442	87,353,602	69,762,680,382	961,189,314,842
75	961,189,314,842	4,872,472,855	436,596,068	89,100,674	75,204,784,893	1,040,740,875,848

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Net Pension Liability

Net Pension Liability	June 30, 2017	June 30, 2018
Total pension liability	$183,632,592,000	$191,317,399,000
Fiduciary net position	154,053,262,968 [1]	161,196,880,609
Net pension liability	29,579,329,032	30,120,518,391
Fiduciary net position as a % of total pension liability	83.89% [1]	84.26%
Covered payroll	33,775,800,000	34,675,000,000
Net pension liability as a % of covered payroll	87.58% [1]	86.87%

The total pension liability was determined by an actuarial valuation as of the valuation date, calculated based on the discount rate and actuarial assumptions below. The total pension liability is calculated using the Individual Entry Age Normal cost allocation method, which differs from the Ultimate Entry Age Normal cost allocation method used in the actuarial valuation for funding purposes for the System.

[1]As reported in June 30, 2017 GASB 67 Disclosure Report.

Discount Rate

Discount rate	7.10%	7.00%
Long-term expected rate of return, net of investment expense	7.10%	7.00%
Municipal bond rate	N/A	N/A

The plan's fiduciary net position was projected to be available to make all projected future benefit payments of current active and inactive employees if future experience follows assumptions and the Actuarially Determined Contribution (ADC) is contributed in full each year. Therefore, the discount rate for calculating the total pension liability is equal to the long-term expected rate of return. The 7.0% rate of return assumption used in the June 30, 2018 calculations in Milliman's professional opinion is reasonable and appropriate per Actuarial Standard of Practice Number 27 (ASOP 27).

Other Key Actuarial Assumptions

The actuarial assumptions that determined the total pension liability as of June 30, 2018 were based on the results of an actuarial experience study for the July 1, 2008 - June 30, 2013 experience observation period.

Valuation date	July 1, 2017	July 1, 2018
Measurement date	June 30, 2017	June 30, 2018
Inflation	2.60%	2.60%
Salary increases including inflation	3.25%	3.25%
Mortality	Generational RP-2000 with Projection Scale BB*	Generational RP-2000 with Projection Scale BB**
Actuarial cost method	Individual Entry Age	Individual Entry Age

* See July 1, 2017 Actuarial Valuation Report for funding purposes for details
** See July 1, 2018 Actuarial Valuation Report for funding purposes for details

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Changes in Net Pension Liability

Changes in Net Pension Liability	Increase (Decrease) Total Pension Liability (a)	Increase (Decrease) Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances as of June 30, 2017	$183,632,592,000	$154,043,110,158 [1]	$29,589,481,842
Changes for the year:			
Service cost	2,423,986,932		2,423,986,932
Interest on total pension liability	12,847,930,021		12,847,930,021
Effect of plan changes	0		0
Effect of economic/demographic gains or losses	554,811,477		554,811,477
Effect of assumptions changes or inputs	2,235,654,000		2,235,654,000
Benefit payments[2]	(10,377,575,430)	(10,377,575,430)	0
Employer contributions		2,849,919,659	(2,849,919,659)
Member contributions		746,370,411	(746,370,411)
Net investment income		13,955,233,346	(13,955,233,346)
Administrative expenses		(20,177,535)	20,177,535
Balances as of June 30, 2018	191,317,399,000	161,196,880,609	30,120,518,391

[1] Reflects restatement of beginning net position at July 1, 2017 due to implementation of GASB 75, Accounting and Financial Reporting for Postemployment Benefits Other than Pensions.

[2] Benefit payments shown above include outbound transfers to the Investment Plan and returns of contributions, net of $70,597,178 inbound transfers from the Investment Plan, plus general revenue-funded benefit payments net of general revenue contributions.

Sensitivity Analysis

The following presents the net pension liability of the Pension Plan, calculated using the discount rate of 7.00%, as well as what the Pension Plan's net pension liability would be if it were calculated using a discount rate that is one percentage point lower (6.00%) or one percentage point higher (8.00%) than the current rate.

	1% Decrease 6.00%	Current Discount Rate 7.00%	1% Increase 8.00%
Total pension liability	$216,168,090,000	$191,317,399,000	$170,677,431,000
Fiduciary net position	161,196,880,609	161,196,880,609	161,196,880,609
Net pension liability	54,971,209,391	30,120,518,391	9,480,550,391

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Schedule of Changes in Net Pension Liability and Related Ratios [1]

(in 1,000s)

	Fiscal Year Ending June 30				
	2014	2015	2016	2017	2018
Total Pension Liability					
Service cost	$2,256,738	$2,114,047	$2,132,906	$2,073,754	$2,423,987
Interest on total pension liability	11,489,921	11,721,563	12,109,114	12,484,167	12,847,930
Effect of plan changes	0	0	32,310	92,185	0
Effect of economic/demographic gains or (losses)	(448,818)	1,620,863	980,192	1,412,462	554,811
Effect of assumption changes or inputs	1,256,045	0	1,030,667	10,398,344	2,235,654
Benefit payments	(8,714,251)	(10,201,501)	(10,624,925)	(9,859,319)	(10,377,575)
Net change in total pension liability	5,839,635	5,254,972	5,660,264	16,601,593	7,684,807
Total pension liability, beginning	150,276,128	156,115,763	161,370,735	167,030,999	183,632,592
Total pension liability, ending (a)	156,115,763	161,370,735	167,030,999	183,632,592	191,317,399
Fiduciary Net Position					
Employer contributions	$2,190,424	$2,438,085	$2,438,659	$2,603,246	$2,849,920
Member contributions	682,507	698,304	710,717	744,839	746,370
Investment income net of investment expenses	22,812,286	5,523,287	820,582	18,801,917	13,955,233
Benefit payments	(8,714,251)	(10,201,501)	(10,624,925)	(9,859,319)	(10,377,575)
Administrative expenses	(18,352)	(18,074)	(18,507)	(18,340)	(20,178)
Net change in plan fiduciary net position	16,952,615	(1,559,898)	(6,673,473)	12,272,342	7,153,770
Fiduciary net position, beginning	133,061,677	150,014,292	148,454,394	141,780,921	154,043,110 [2]
Fiduciary net position, ending (b)	150,014,292	148,454,394	141,780,921	154,053,263 [2]	161,196,881
Net pension liability, ending = (a) - (b)	$6,101,471	$12,916,341	$25,250,078	$29,579,329 [2]	$30,120,518
Fiduciary net position as a % of total pension liability	96.09%	92.00%	84.88%	83.89%	84.26%
Covered payroll [2]	$24,723,565	$32,726,034	$33,214,217	$33,775,800	$34,675,000
Net pension liability as a % of covered payroll	24.68%	39.47%	76.02%	87.58% [2]	86.87%

[1] This schedule is presented to illustrate the requirement to show information for 10 years. However, recalculations of prior years are not required, and if prior years are not reported in accordance with the current GASB standards, they should not be reported. Amounts shown in exhibit are rounded to the nearest thousand. As such, sums may differ from amounts displayed due to rounding.

[2] As reported in June 30, 2017 GASB 67 Disclosure Report; reflects restatement of beginning net position at July 1, 2017 due to implementation of GASB 75, Accounting and Financial Reporting for Postemployment Benefits Other than Pensions.

[3] For the fiscal year ending 2014, covered payroll shown includes Pension Plan actives and members in DROP, but excludes the payroll for Investment Plan members and other payroll on which only statutory UAL rates are charged. For the fiscal years ending 2015 and later, covered payroll shown includes the payroll for Investment Plan members and other payroll on which only statutory UAL rates are charged.

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Glossary

Actuarially Determined Contribution	A target contribution to a defined benefit pension plan for the reporting period, determined based on the funding policy and the most recent actuarial measurement available when the contribution for the reporting period was adopted.
Deferred Inflows/Outflows of Resources	Portion of changes in net pension liability that is not immediately recognized in pension expense. These changes include differences between expected and actual experience, changes in assumptions, and differences between expected and actual earnings on plan investments.
Discount Rate	Single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the sum of: 1) The actuarial present value of benefit payments projected to be made in future periods where the plan assets are projected to be sufficient to meet benefit payments, calculated using the Long-Term Expected Rate of Return. 2) The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.
Fiduciary Net Position	Equal to market value of assets.
Long-Term Expected Rate of Return	Long-term expected rate of return on pension plan investments expected to be used to finance the payment of benefits, net of investment expenses.
Money-Weighted Rate of Return	The internal rate of return on pension plan investments, net of investment expenses.
Municipal Bond Rate	Yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher.
Net Pension Liability	Total pension liability minus the plan's fiduciary net position.
Projected Benefit Payments	All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and expected future service.
Service Cost	The portion of the actuarial present value of projected benefit payments that is attributed to a valuation year by the cost allocation method.
Total Pension Liability	The portion of actuarial present value of projected benefit payments that is attributable to past periods of member service using the individual entry age cost allocationmethod based on the requirements of GASB 67 and 68.

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