

Employees' Retirement System of the State of Hawaii

GASB Statement Nos. 67 and 68 Accounting and
Financial Reporting for Pensions

June 30, 2019



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February 5, 2020

The Board of Trustees
Employees' Retirement System of
The State of Hawaii
City Financial Tower
201 Merchant St., Ste. 1400
Honolulu, HI 96813-9280

Dear Trustees:

This report provides information required by the Employees' Retirement System of the State of Hawaii ("ERS") in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 "Financial Reporting for Pension Plans." Additionally, this report provides information required by the employers covered by ERS in connection with the GASB Statement No. 68, "Accounting and Financial Reporting for Pensions." The GASB 68 information shown was determined as of June 30, 2019, but it is intended that the employers covered by ERS will use this information in financial reporting for their fiscal years ending June 30, 2020.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of satisfying the requirements of GASB Statement Nos. 67 and 68. The calculation of the plan's liability for this report may not be applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Nos. 67 and 68 may produce significantly different results. This report may be provided to parties other than the ERS only in its entirety and only with the permission of ERS.

This report is based upon information, furnished to us by ERS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. This information was checked for internal consistency, but it was not otherwise audited.

Certain tables included in the Required Supplementary Information should include a 10-year history of information. As provided for in GASB No. 67, this historical information is only presented for the years in which the information was measured in conformity with the requirements of GASB No. 67. The historical information in this report will begin with the information presented for the fiscal year ending June 30, 2014.

Section E of the report details the calculation of the single discount rate and is not required to be included in your financial statements. However, this information may be requested by your auditors, therefore, we have included it in this report. It should be noted that we reflected the enactment of SB936.SD2.HD1.CD1 in the single discount rate determination. In particular we reflected the increasing employer contributions rates that are being phased in through fiscal year 2021.

Section F currently contains both the aggregate GASB No. 68 information on a plan wide level and the schedules with the individual employers' information.

This report complements the actuarial valuation report that was provided to ERS and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2019 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

To the best of our knowledge, this report is complete, accurate, and in accordance with generally recognized actuarial methods. One or more of the undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the Academy of Actuaries to render the actuarial opinion herein.

The signing actuaries are independent of the plan sponsor.

Respectfully submitted,



By _____
Lewis Ward
Consultant



By _____
Joe Newton
FSA, EA, MAAA



SECTION A

EXECUTIVE SUMMARY

Executive Summary as of June 30, 2019

	2019
Actuarial Valuation Date	June 30, 2019
Pension Plan's Fiscal Year Ending Date (Measurement Date & Reporting Date)	June 30, 2019
 Membership	
Number of	
- Retirees and Beneficiaries	49,885
- Inactive, Nonretired Members	28,854
- Active Members	66,383
- Total	145,122
Reported Payroll for Fiscal Year	\$ 4,376,216,753
 Net Pension Liability	
Total Pension Liability	\$ 31,396,447,685
Plan Fiduciary Net Position	17,227,026,987
Net Pension Liability	\$ 14,169,420,698
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	54.87%
Net Pension Liability as a Percentage of Covered Payroll	323.78%
 Development of the Single Discount Rate	
Single Discount Rate	7.00%
Long-Term Expected Rate of Return	7.00%
Long-Term Municipal Bond Rate*	3.13%
Last year ending June 30 in the 2019 to 2118 projection period for which projected benefit payments are fully funded	None

**Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity's Index's "20-year Municipal GO AA Index" as of June 28, 2019. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax exempt securities.*



Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, “Financial Reporting for Pension Plans,” replaces the requirements of GASB Statement No. 25, “Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans,” and GASB Statement No. 50, “Pension Disclosures.” GASB Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability of employers and non-employer contributing entities for benefits provided through the pension plan.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 67 requires defined benefit pension plans to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position.

The *statement of fiduciary net position* presents the following items as of the end of the pension plan’s reporting period, such as:

- assets;
- deferred inflows and outflows of resources;
- liabilities; and
- fiduciary net position (assets, plus deferred outflows, minus liabilities, minus deferred inflows).

The *statement of changes in fiduciary net position* presents the following for the plan’s reporting period:

- additions, such as contributions and investment income;
- deductions, such as benefit payments and expenses; and
- net increase or decrease in the fiduciary net position (the difference between additions and deductions).

Notes to Financial Statements

GASB Statement No. 67 also requires the notes of the plan's financial statements to include additional disclosure information. This disclosure information should include:

- a description of the types of benefits provided by the plan, as well as automatic or ad hoc COLAs;
- the number and classes of employees covered by the benefit terms;
- the composition of the pension plan's Board and the authority under which benefit terms may be amended;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- a description of how fair value is determined;
- concentrations of investments greater than or equal to 5%;
- annual money-weighted rate of return on pension plan investments;
- the portion of the present value of benefits to be provided through the pension plan to current active and inactive plan members;
- the pension plan's fiduciary net position;
- the net pension liability;
- the pension plan's fiduciary net position as a percentage of the total pension liability;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Required Supplementary Information

Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll;
- comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy; and
- the annual money-weighted rate of return on pension plan investments for each year.

As shown above, you will need to include a determination of the annual money-weighted rate of return for your Notes to Financial Statements and Required Supplementary Information. Statement No. 67 requires that this information be determined using cash-flows with a frequency of not less than a monthly basis. We do not have the detailed financial information to determine this number. If you need our assistance please let us know.

Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).



Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2019 and a measurement date of June 30, 2019.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.00% the municipal bond rate is 3.13% (based on the daily rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting single discount rate is 7.00%.

Effective Date and Transition

GASB Statements No. 67 is effective for a pension plan's fiscal years beginning after June 15, 2013, however, earlier application is encouraged by the GASB. GASB Statement No. 68 is effective for an employer's fiscal year beginning after June 30, 2014.



SECTION B

FINANCIAL STATEMENTS

Statement of Fiduciary Net Position as of June 30, 2019

	2019
Assets	
Cash and Deposits	\$ 2,319,190,490
Receivables	
Accounts receivable and others	\$ 4,548,592
Investment sales proceeds	115,157,638
Accrued investment income	52,743,120
Employer contributions	49,826,612
Member contributions	-
Other	-
Total Receivables	\$ 222,275,962
Investments	
Equity securities	\$ 7,252,355,802
Fixed income securities	4,740,413,816
Real estate investments	1,285,347,317
Alternative investments	1,842,502,723
Total Investments	\$ 15,120,619,658
Invested Securities Lending Collateral	\$ 1,021,730,729
Equipment at cost, net of depreciation	\$ 6,617,009
Total Assets	\$ 18,690,433,848
 Liabilities	
Payables	
Accounts and other payables	\$ 105,797,810
Payables for securities purchased	193,066,322
Securities lending collateral	1,021,730,729
Notes payable	142,812,000
Total Liabilities	\$ 1,463,406,861
 Net Position Restricted for Pensions	 \$ 17,227,026,987



Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2019

	Year Ending June 30, 2019
Additions	
Contributions	
Non-Employer Contributing Entity	\$ -
Employer	922,635,334
Employer (picked-up employee contributions)	270,764,670
Employee	2,458,908
Other	-
Total Contributions	\$ 1,195,858,912
Investment Income	
Net Appreciation in Fair Value of Investments	\$ 498,552,514
Interest and Dividends	508,069,118
Less Investment Expense	(73,925,220)
Net Investment Income	\$ 932,696,412
Other	\$ -
Total Additions	\$ 2,128,555,324
 Deductions	
Benefit payments, including refunds of employee contributions	\$ 1,486,137,444
Pension Plan Administrative Expense	13,798,866
Other	-
Total Deductions	\$ 1,499,936,310
Net Increase in Net Position	\$ 628,619,014
 Net Position Restricted for Pensions	
Beginning of Year	\$ 16,598,407,973
End of Year	\$ 17,227,026,987



SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in the Net Pension Liability and Related Ratios

Fiscal Year Ended June 30, 2019

A. Total pension liability	
1. Service Cost	\$ 619,504,278
2. Interest on the Total Pension Liability	2,063,885,936
3. Changes of benefit terms	0
4. Difference between expected and actual experience of the Total Pension Liability	221,473,495
5. Changes of assumptions	60,320,037
6. Benefit payments, including refunds of employee contributions	(1,486,137,444)
7. Net change in total pension liability	\$ 1,479,046,302
8. Total pension liability – beginning	29,917,401,383
9. Total pension liability – ending	<u><u>\$ 31,396,447,685</u></u>
B. Plan fiduciary net position	
1. Contributions – employer	\$ 922,635,334
2. Contributions – employer (picked-up employee contributions)	270,764,670
3. Contributions – employee	2,458,908
4. Net investment income	932,696,412
5. Benefit payments, including refunds of employee contributions	(1,486,137,444)
6. Pension Plan Administrative Expense	(13,798,866)
7. Other	-
8. Net change in plan fiduciary net position	\$ 628,619,014
9. Plan fiduciary net position – beginning	16,598,407,973
10. Plan fiduciary net position – ending	<u><u>\$ 17,227,026,987</u></u>
C. Net pension liability	<u><u>\$ 14,169,420,698</u></u>
D. Plan fiduciary net position as a percentage of the total pension liability	54.87%
E. Covered-employee payroll	\$ 4,376,216,753
F. Net pension liability as a percentage of covered employee payroll	323.78%



Schedules of Required Supplementary Information Schedule of the Employers' Net Pension Liability

Last 10 Fiscal Years (which may be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2010						
2011						
2012						
2013	\$ 21,243,744,377	\$ 12,311,827,950	\$ 8,931,916,427	57.96%	\$ 3,720,809,962	240.05%
2014	22,220,097,547	14,203,015,303	8,017,082,244	63.92%	3,829,002,983	209.38%
2015	23,238,395,386	14,505,464,556	8,732,930,830	62.42%	3,995,447,345	218.57%
2016	27,439,233,629	14,069,978,917	13,369,254,712	51.28%	4,112,227,306	325.11%
2017	28,648,630,533	15,698,324,306	12,950,306,227	54.80%	4,243,521,876	305.18%
2018	29,917,401,383	16,598,407,973	13,318,993,410	55.48%	4,256,052,840	312.94%
2019	31,396,447,685	17,227,026,987	14,169,420,698	54.87%	4,376,216,753	323.78%



Schedules of Required Supplementary Information

Schedule of Changes in the Employers' Net Pension Liability and Related Ratios

Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending June 30,	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Total Pension Liability										
Service Cost	\$ 619,504,278	\$ 584,470,193	\$ 576,724,568	\$ 484,278,499	\$ 437,901,029	\$ 421,956,129				
Interest on the Total Pension Liability	2,063,885,936	1,976,275,120	1,894,622,190	1,748,619,873	1,693,252,684	1,618,917,776				
Benefit Changes	-	-	-	-	-	-				
Difference between Expected and Actual Experience	221,473,495	124,753,379	61,179,390	297,534,219	(192,816,757)	66,400,876				
Assumption Changes	60,320,037	-	-	2,915,922,677	261,213,541	-				
Benefit Payments	(1,469,634,809)	(1,395,881,342)	(1,306,788,954)	(1,232,589,353)	(1,170,744,770)	(1,122,445,642)				
Refunds	(16,502,635)	(20,846,500)	(16,340,290)	(12,927,672)	(10,507,888)	(8,475,969)				
Net Change in Total Pension Liability	1,479,046,302	1,268,770,850	1,209,396,904	4,200,838,243	1,018,297,839	976,353,170				
Total Pension Liability - Beginning	29,917,401,383	28,648,630,533	27,439,233,629	23,238,395,386	22,220,097,547	21,243,744,377				
Total Pension Liability - Ending (a)	\$ 31,396,447,685	\$ 29,917,401,383	\$ 28,648,630,533	\$ 27,439,233,629	\$ 23,238,395,386	\$ 22,220,097,547				
Plan Fiduciary Net Position										
Employer Contributions	\$ 922,635,334	\$ 847,595,466	\$ 781,244,218	\$ 756,558,222	\$ 717,792,981	\$ 653,127,697				
Employer Contributions (picked-up employee contributions)	270,764,670	257,294,033	249,211,751	235,079,968	221,909,859	204,821,010				
Employee Contributions	2,458,908	2,133,901	1,492,316	1,721,893	1,595,560	1,306,327				
Pension Plan Net Investment Income	932,696,412	1,225,572,599	1,934,512,507	(169,368,110)	556,436,475	2,175,479,960				
Benefit Payments	(1,469,634,809)	(1,395,881,342)	(1,306,788,954)	(1,232,589,353)	(1,170,744,770)	(1,122,445,642)				
Refunds	(16,502,635)	(20,846,500)	(16,340,290)	(12,927,672)	(10,507,888)	(8,475,969)				
Pension Plan Administrative Expense	(13,798,866)	(15,784,490)	(14,986,159)	(13,960,587)	(14,032,964)	(12,626,030)				
Other	-	-	-	-	-	-				
Net Change in Plan Fiduciary Net Position	628,619,014	900,083,667	1,628,345,389	(435,485,639)	302,449,253	1,891,187,353				
Plan Fiduciary Net Position - Beginning	16,598,407,973	15,698,324,306	14,069,978,917	14,505,464,556	14,203,015,303	12,311,827,950				
Plan Fiduciary Net Position - Ending (b)	\$ 17,227,026,987	\$ 16,598,407,973	\$ 15,698,324,306	\$ 14,069,978,917	\$ 14,505,464,556	\$ 14,203,015,303				
Net Pension Liability - Ending (a) - (b)	14,169,420,698	13,318,993,410	12,950,306,227	13,369,254,712	8,732,930,830	8,017,082,244				
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	54.87 %	55.48 %	54.80 %	51.28 %	62.42 %	63.92 %				
Covered Employee Payroll	\$ 4,376,216,753	\$ 4,256,052,840	\$ 4,243,521,876	\$ 4,112,227,306	\$ 3,995,447,345	\$ 3,829,002,983				
Net Pension Liability as a Percentage of Covered Employee Payroll	323.78 %	312.94 %	305.18 %	325.11 %	218.57 %	209.38 %				
Notes to Schedule:										
N/A										



SECTION D

NOTES TO FINANCIAL STATEMENTS

Single Discount Rate

A single discount rate of 7.00% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.00%. The projection of cash flows used to determine this single discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of 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.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 7.00%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

1% Decrease	Current Single Discount Rate Assumption	1% Increase
6.00%	7.00%	8.00%
\$18,460,974,101	\$14,169,420,698	\$11,079,581,746

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	49,885
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	28,854
Active Plan Members	<u>66,383</u>
Total Plan Members	145,122



SECTION E

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a tax-exempt municipal bond rate is required, as described in the following paragraph.

The *single discount rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.00%; the municipal bond rate is 3.13%(based on the daily rate closest to but not later than the measurement date of the Fidelity “20-Year Municipal GO AA Index”); and the resulting single discount rate is 7.00%.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

As noted in the cover letter, in determining the single discount rate we reflected the enactment of SB936.SD2.HD1.CD1. In particular we reflected the increasing employer contributions rates through fiscal year 2021.



Single Discount Rate Development

Projection of Contributions Beginning July 1, 2019

Year	Payroll for Current Employees	Payroll for Future Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Employer Contributions for Future Employees	Total Contributions
1	4,320,783,375	\$ 198,910,872	\$ 4,519,694,247	\$ 269,616,883	\$ 1,020,061,665	\$ 37,544,105	\$ 1,327,222,653
2	4,135,409,252	\$ 542,474,294	4,677,883,546	265,079,733	1,070,853,804	114,794,767	1,450,728,304
3	3,981,400,416	\$ 860,209,054	4,841,609,470	261,578,007	1,030,973,604	182,031,663	1,474,583,274
4	3,841,374,795	\$ 1,169,691,006	5,011,065,801	258,524,524	994,714,323	247,522,155	1,500,761,002
5	3,708,576,055	\$ 1,477,877,049	5,186,453,104	255,150,033	960,326,423	312,738,416	1,528,214,872
6	3,578,904,311	\$ 1,789,074,652	5,367,978,963	251,239,083	926,748,252	378,591,963	1,556,579,298
7	3,451,477,674	\$ 2,104,380,552	5,555,858,227	246,780,654	893,751,446	445,314,880	1,585,846,980
8	3,324,442,023	\$ 2,425,871,241	5,750,313,265	242,019,379	860,855,884	513,346,580	1,616,221,843
9	3,197,018,961	\$ 2,754,555,268	5,951,574,229	236,899,105	827,860,003	582,900,487	1,647,659,595
10	3,070,464,870	\$ 3,089,414,456	6,159,879,327	230,898,958	795,089,140	653,761,139	1,679,749,237
11	2,946,337,621	\$ 3,429,137,482	6,375,475,103	225,100,194	762,946,702	725,651,045	1,713,697,941
12	2,824,293,988	\$ 3,774,322,743	6,598,616,732	218,600,355	731,343,811	798,696,831	1,748,640,997
13	2,701,913,601	\$ 4,127,654,717	6,829,568,317	211,830,026	699,653,718	873,466,571	1,784,950,315
14	2,578,070,549	\$ 4,490,532,659	7,068,603,209	204,698,802	667,584,872	950,256,364	1,822,540,038
15	2,454,540,168	\$ 4,861,464,153	7,316,004,321	197,099,575	635,596,991	1,028,750,395	1,861,446,961
16	2,331,571,776	\$ 5,240,492,696	7,572,064,472	189,090,471	603,754,636	1,108,957,870	1,901,802,977
17	2,207,134,581	\$ 5,629,952,147	7,837,086,729	180,764,322	571,531,938	1,191,372,664	1,943,668,924
18	2,082,869,020	\$ 6,028,515,745	8,111,384,764	172,253,268	539,353,684	1,275,714,016	1,987,320,968
19	1,959,295,068	\$ 6,435,988,163	8,395,283,231	163,405,209	507,354,520	1,361,940,592	2,032,700,321
20	1,837,565,960	\$ 6,851,552,183	8,689,118,144	154,355,541	475,833,075	1,449,879,459	2,080,068,075
21	1,718,245,590	\$ 7,274,991,689	8,993,237,279	145,363,577	444,935,365	1,539,484,884	2,129,783,826
22	1,601,255,088	\$ 7,706,745,495	9,308,000,584	136,266,808	414,640,970	1,630,849,725	2,181,757,503
23	1,485,401,363	\$ 8,148,379,241	9,633,780,604	127,001,817	384,640,940	1,724,305,292	2,235,948,049
24	1,370,854,326	\$ 8,600,108,599	9,970,962,925	117,756,387	354,979,273	1,819,897,225	2,292,632,885
25	1,257,988,444	\$ 9,061,958,184	10,319,946,628	108,438,604	325,752,937	1,917,630,733	2,351,822,274
26	1,146,606,319	\$ 9,534,538,440	10,681,144,760	99,181,447	296,910,817	2,017,634,993	2,413,727,257
27	1,037,611,746	\$ 10,017,373,080	11,054,984,826	89,960,938	268,686,947	2,119,809,217	2,478,457,102
28	930,933,606	\$ 10,510,975,689	11,441,909,295	80,898,130	241,062,911	2,224,262,086	2,546,223,127
29	827,887,371	\$ 11,014,488,750	11,842,376,120	72,108,990	214,379,348	2,330,812,138	2,617,300,476
30	728,257,532	\$ 11,528,601,753	12,256,859,285	63,504,057	188,580,453	2,439,605,279	2,691,689,789
31	634,651,717	\$ 12,051,197,643	12,685,849,360	55,405,095	164,341,463	2,550,193,512	2,769,940,070
32	546,749,663	\$ 12,583,104,425	13,129,854,087	47,731,246	141,579,447	2,662,752,053	2,852,062,746
33	464,672,915	\$ 13,124,726,065	13,589,398,980	40,612,413	120,325,880	2,777,366,387	2,938,304,680
34	390,357,722	\$ 13,674,670,222	14,065,027,945	34,117,265	101,082,148	2,893,741,876	3,028,941,289
35	324,269,258	\$ 14,233,034,665	14,557,303,923	28,373,560	83,968,707	3,011,899,210	3,124,241,477
36	265,816,925	\$ 14,800,992,635	15,066,809,560	23,258,981	68,832,623	3,132,086,661	3,224,178,265
37	214,706,168	\$ 15,379,441,727	15,594,147,895	18,786,790	55,597,621	3,254,494,173	3,328,878,584
38	171,645,624	\$ 15,968,297,447	16,139,943,071	15,018,992	44,447,202	3,379,103,866	3,438,570,060
39	136,181,263	\$ 16,568,659,816	16,704,841,078	11,915,860	35,263,795	3,506,148,518	3,553,328,173
40	107,184,778	\$ 17,182,325,738	17,289,510,516	9,378,668	27,755,228	3,636,008,380	3,673,142,276
41	83,871,162	\$ 17,810,772,223	17,894,643,384	7,338,727	21,718,226	3,768,996,004	3,798,052,957
42	65,410,319	\$ 18,455,545,583	18,520,955,903	5,723,403	16,937,837	3,905,438,613	3,928,099,853
43	50,436,738	\$ 19,118,752,621	19,169,189,359	4,413,215	13,060,466	4,045,782,032	4,063,255,713
44	38,485,951	\$ 19,801,625,035	19,840,110,987	3,367,521	9,965,840	4,190,286,906	4,203,620,267
45	28,879,034	\$ 20,505,635,838	20,534,514,871	2,526,915	7,478,153	4,339,264,944	4,349,270,012
46	21,061,460	\$ 21,232,161,432	21,253,222,892	1,842,878	5,453,812	4,493,007,411	4,500,304,101
47	14,746,399	\$ 21,982,339,294	21,997,085,693	1,290,310	3,818,543	4,651,755,013	4,656,863,866
48	9,916,125	\$ 22,757,067,568	22,766,983,692	867,661	2,567,755	4,815,697,807	4,819,133,223
49	6,428,029	\$ 23,557,400,092	23,563,828,122	562,453	1,664,522	4,985,058,801	4,987,285,776
50	3,818,296	\$ 24,384,743,809	24,388,562,106	334,101	988,738	5,160,135,722	5,161,458,561



Single Discount Rate Development

Projection of Contributions Beginning July 1, 2019

(Continued)

Year	Payroll for Current Employees	Payroll for Future Employees	Total Employee Payroll	Contributions from Current Employees	Employer	Employer	Total Contributions
					Contributions for Current Employees	Contributions for Future Employees	
51	2,034,966	\$ 25,240,126,814	25,242,161,779	178,059	526,949	5,341,146,129	5,341,851,137
52	909,710	\$ 26,124,727,731	26,125,637,442	79,600	235,567	5,528,339,434	5,528,654,601
53	384,870	\$ 27,039,649,882	27,040,034,752	33,676	99,661	5,721,949,115	5,722,082,452
54	160,698	\$ 27,986,275,271	27,986,435,969	14,061	41,612	5,922,267,623	5,922,323,296
55	64,984	\$ 28,965,896,244	28,965,961,227	5,686	16,827	6,129,568,434	6,129,590,947
56	20,857	\$ 29,979,749,014	29,979,769,870	1,825	5,401	6,344,113,148	6,344,120,374
57	6,267	\$ 31,029,055,549	31,029,061,816	548	1,623	6,566,160,351	6,566,162,522
58	2,176	\$ 32,115,076,803	32,115,078,979	190	564	6,795,976,875	6,795,977,629
59	-	\$ 33,239,106,744	33,239,106,744	-	-	7,033,836,542	7,033,836,542
60	-	\$ 34,402,475,480	34,402,475,480	-	-	7,280,020,821	7,280,020,821
61	-	\$ 35,606,562,122	35,606,562,122	-	-	7,534,821,550	7,534,821,550
62	-	\$ 36,852,791,796	36,852,791,796	-	-	7,798,540,304	7,798,540,304
63	-	\$ 38,142,639,509	38,142,639,509	-	-	8,071,489,215	8,071,489,215
64	-	\$ 39,477,631,891	39,477,631,891	-	-	8,353,991,337	8,353,991,337
65	-	\$ 40,859,349,008	40,859,349,008	-	-	8,646,381,034	8,646,381,034
66	-	\$ 42,289,426,223	42,289,426,223	-	-	8,949,004,370	8,949,004,370
67	-	\$ 43,769,556,141	43,769,556,141	-	-	9,262,219,523	9,262,219,523
68	-	\$ 45,301,490,606	45,301,490,606	-	-	9,586,397,206	9,586,397,206
69	-	\$ 46,887,042,777	46,887,042,777	-	-	9,921,921,109	9,921,921,109
70	-	\$ 48,528,089,274	48,528,089,274	-	-	10,269,188,348	10,269,188,348
71	-	\$ 50,226,572,399	50,226,572,399	-	-	10,628,609,940	10,628,609,940
72	-	\$ 51,984,502,433	51,984,502,433	-	-	11,000,611,288	11,000,611,288
73	-	\$ 53,803,960,018	53,803,960,018	-	-	11,385,632,683	11,385,632,683
74	-	\$ 55,687,098,618	55,687,098,618	-	-	11,784,129,827	11,784,129,827
75	-	\$ 57,636,147,070	57,636,147,070	-	-	12,196,574,370	12,196,574,370
76	-	\$ 59,653,412,217	59,653,412,217	-	-	12,623,454,473	12,623,454,473
77	-	\$ 61,741,281,645	61,741,281,645	-	-	13,065,275,380	13,065,275,380
78	-	\$ 63,902,226,503	63,902,226,503	-	-	13,522,560,018	13,522,560,018
79	-	\$ 66,138,804,430	66,138,804,430	-	-	13,995,849,619	13,995,849,619
80	-	\$ 68,453,662,585	68,453,662,585	-	-	14,485,704,356	14,485,704,356
81	-	\$ 70,849,540,776	70,849,540,776	-	-	14,992,704,008	14,992,704,008
82	-	\$ 73,329,274,703	73,329,274,703	-	-	15,517,448,648	15,517,448,648
83	-	\$ 75,895,799,317	75,895,799,317	-	-	16,060,559,351	16,060,559,351
84	-	\$ 78,552,152,294	78,552,152,294	-	-	16,622,678,928	16,622,678,928
85	-	\$ 81,301,477,624	81,301,477,624	-	-	17,204,472,691	17,204,472,691
86	-	\$ 84,147,029,341	84,147,029,341	-	-	17,806,629,235	17,806,629,235
87	-	\$ 87,092,175,368	87,092,175,368	-	-	18,429,861,258	18,429,861,258
88	-	\$ 90,140,401,505	90,140,401,505	-	-	19,074,906,402	19,074,906,402
89	-	\$ 93,295,315,558	93,295,315,558	-	-	19,742,528,126	19,742,528,126
90	-	\$ 96,560,651,603	96,560,651,603	-	-	20,433,516,611	20,433,516,611
91	-	\$ 99,940,274,409	99,940,274,409	-	-	21,148,689,692	21,148,689,692
92	-	\$ 103,438,184,013	103,438,184,013	-	-	21,888,893,831	21,888,893,831
93	-	\$ 107,058,520,453	107,058,520,453	-	-	22,655,005,115	22,655,005,115
94	-	\$ 110,805,568,669	110,805,568,669	-	-	23,447,930,294	23,447,930,294
95	-	\$ 114,683,763,573	114,683,763,573	-	-	24,268,607,855	24,268,607,855
96	-	\$ 118,697,695,298	118,697,695,298	-	-	25,118,009,130	25,118,009,130
97	-	\$ 122,852,114,633	122,852,114,633	-	-	25,997,139,449	25,997,139,449
98	-	\$ 127,151,938,645	127,151,938,645	-	-	26,907,039,330	26,907,039,330
99	-	\$ 131,602,256,498	131,602,256,498	-	-	27,848,785,707	27,848,785,707
100	-	\$ 136,208,335,475	136,208,335,475	-	-	28,823,493,206	28,823,493,206



Single Discount Rate Development

Projection of Plan Fiduciary Net Position Beginning July 1, 2019

Year	Projected Beginning		Projected Total		Projected Benefit		Projected		Projected Investment		Projected Ending Plan	
	Plan Net Position	Contributions	Payments	Administrative Expenses	Earnings at 7.00%	Net Position						
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)						
1	\$ 17,227,026,987	\$ 1,327,222,653	\$ 1,571,404,694	\$ 14,281,826	\$ 1,196,998,653	\$ 18,165,561,773						
2	18,165,561,773	1,450,728,304	1,663,766,067	13,418,291	1,263,797,414	19,202,903,133						
3	19,202,903,133	1,474,583,274	1,753,894,399	12,787,814	1,334,152,666	20,244,956,861						
4	20,244,956,861	1,500,761,002	1,844,840,372	12,242,840	1,404,886,630	21,293,521,281						
5	21,293,521,281	1,528,214,872	1,936,569,691	11,762,270	1,476,091,083	22,349,495,274						
6	22,349,495,274	1,556,579,298	2,030,608,579	11,315,112	1,547,764,918	23,411,915,799						
7	23,411,915,799	1,585,846,980	2,126,814,591	10,886,314	1,619,845,892	24,479,907,765						
8	24,479,907,765	1,616,221,843	2,223,060,134	10,478,094	1,692,352,895	25,554,944,275						
9	25,554,944,275	1,647,659,595	2,319,962,522	10,071,618	1,765,366,926	26,637,936,656						
10	26,637,936,656	1,679,749,237	2,416,670,876	9,670,503	1,838,966,791	27,730,311,305						
11	27,730,311,305	1,713,697,941	2,512,520,491	9,279,888	1,913,316,568	28,835,525,435						
12	28,835,525,435	1,748,640,997	2,607,587,117	8,902,987	1,988,625,791	29,956,302,119						
13	29,956,302,119	1,784,950,315	2,701,994,409	8,531,390	2,065,093,907	31,095,820,542						
14	31,095,820,542	1,822,540,038	2,796,067,685	8,162,445	2,142,929,403	32,257,059,853						
15	32,257,059,853	1,861,446,961	2,888,282,541	7,792,758	2,222,394,653	33,444,826,168						
16	33,444,826,168	1,901,802,977	2,977,473,034	7,428,963	2,303,870,514	34,665,597,661						
17	34,665,597,661	1,943,668,924	3,065,484,679	7,066,256	2,387,749,215	35,924,464,866						
18	35,924,464,866	1,987,320,968	3,150,120,520	6,701,098	2,474,472,312	37,229,436,527						
19	37,229,436,527	2,032,700,321	3,230,714,888	6,338,816	2,564,621,114	38,589,704,258						
20	38,589,704,258	2,080,068,075	3,306,916,836	5,977,987	2,658,860,142	40,015,737,652						
21	40,015,737,652	2,129,783,826	3,378,089,430	5,621,584	2,757,956,455	41,519,766,918						
22	41,519,766,918	2,181,757,503	3,443,361,940	5,272,429	2,862,792,930	43,115,682,982						
23	43,115,682,982	2,235,948,049	3,502,805,240	4,927,990	2,974,338,169	44,818,235,969						
24	44,818,235,969	2,292,632,885	3,556,271,831	4,587,240	3,093,639,336	46,643,649,120						
25	46,643,649,120	2,351,822,274	3,603,243,809	4,248,650	3,221,850,284	48,609,829,219						
26	48,609,829,219	2,413,727,257	3,643,829,033	3,914,896	3,360,227,946	50,736,040,492						
27	50,736,040,492	2,478,457,102	3,677,868,291	3,586,254	3,510,130,046	53,043,173,096						
28	53,043,173,096	2,546,223,127	3,704,835,700	3,262,416	3,673,044,272	55,554,342,379						
29	55,554,342,379	2,617,300,476	3,723,656,180	2,947,320	3,850,635,020	58,295,674,375						
30	58,295,674,375	2,691,689,789	3,734,246,705	2,636,758	4,044,734,137	61,295,214,837						
31	61,295,214,837	2,769,940,070	3,735,648,617	2,333,957	4,257,356,590	64,584,528,923						
32	64,584,528,923	2,852,062,746	3,728,313,263	2,050,559	4,490,696,403	68,196,924,249						
33	68,196,924,249	2,938,304,680	3,712,631,394	1,777,836	4,747,080,458	72,167,900,158						
34	72,167,900,158	3,028,941,289	3,687,587,099	1,521,972	5,029,037,929	76,536,770,305						
35	76,536,770,305	3,124,241,477	3,653,059,528	1,286,812	5,339,334,050	81,345,999,493						
36	81,345,999,493	3,224,178,265	3,609,868,867	1,074,726	5,680,912,126	86,640,146,291						
37	86,640,146,291	3,328,878,584	3,557,995,601	884,786	6,056,896,328	92,467,040,816						
38	92,467,040,816	3,438,570,060	3,496,948,445	718,425	6,470,659,452	98,878,603,457						
39	98,878,603,457	3,553,328,173	3,427,065,315	576,954	6,925,826,848	105,930,116,210						
40	105,930,116,210	3,673,142,276	3,349,201,570	460,264	7,426,238,464	113,679,835,116						
41	113,679,835,116	3,798,052,957	3,263,946,434	363,902	7,975,953,497	122,189,531,234						
42	122,189,531,234	3,928,099,853	3,171,888,365	286,838	8,579,277,074	131,524,732,958						
43	131,524,732,958	4,063,255,713	3,074,096,939	224,755	9,240,758,592	141,754,425,569						
44	141,754,425,569	4,203,620,267	2,971,240,356	174,090	9,965,207,581	152,951,838,970						
45	152,951,838,970	4,349,270,012	2,863,949,416	133,194	10,757,731,120	165,194,757,494						
46	165,194,757,494	4,500,304,101	2,753,016,397	99,768	11,623,750,343	178,565,695,772						
47	178,565,695,772	4,656,863,866	2,638,895,670	72,615	12,569,030,542	193,152,621,895						
48	193,152,621,895	4,819,133,223	2,521,952,077	50,507	13,599,723,303	209,049,475,837						
49	209,049,475,837	4,987,285,776	2,402,723,035	34,026	14,722,391,884	226,356,396,436						
50	226,356,396,436	5,161,458,561	2,281,961,441	21,650	15,944,024,867	245,179,896,772						



Single Discount Rate Development

Projection of Plan Fiduciary Net Position Beginning July 1, 2019 (Continued)

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.00%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
51	245,179,896,772	5,341,851,137	\$ 2,160,141,242	12,591	17,272,068,753	\$ 265,633,662,829
52	265,633,662,829	5,528,654,601	\$ 2,037,728,460	6,307	18,714,472,119	\$ 287,839,054,781
53	287,839,054,781	5,722,082,452	\$ 1,915,118,538	2,862	20,279,723,915	\$ 311,925,739,749
54	311,925,739,749	5,922,323,296	\$ 1,792,890,175	1,095	21,976,887,458	\$ 338,032,059,233
55	338,032,059,233	6,129,590,947	\$ 1,671,517,557	451	23,815,637,713	\$ 366,305,769,885
56	366,305,769,885	6,344,120,374	\$ 1,551,401,202	149	25,806,311,976	\$ 396,904,800,883
57	396,904,800,883	6,566,162,522	\$ 1,432,933,071	27	27,959,960,442	\$ 429,997,990,750
58	429,997,990,750	6,795,977,629	\$ 1,316,526,786	22	30,288,396,533	\$ 465,765,838,105
59	465,765,838,105	7,033,836,542	\$ 1,202,632,715	-	32,804,248,981	\$ 504,401,290,913
60	504,401,290,913	7,280,020,821	\$ 1,091,748,381	-	35,521,016,710	\$ 546,110,580,063
61	546,110,580,063	7,534,821,550	\$ 984,394,500	-	38,453,127,982	\$ 591,114,135,095
62	591,114,135,095	7,798,540,304	\$ 881,102,775	-	41,616,004,947	\$ 639,647,577,570
63	639,647,577,570	8,071,489,215	\$ 782,435,077	-	45,026,132,520	\$ 691,962,764,228
64	691,962,764,228	8,353,991,337	\$ 688,948,895	-	48,701,132,608	\$ 748,328,939,278
65	748,328,939,278	8,646,381,034	\$ 601,134,950	-	52,659,846,925	\$ 809,034,032,288
66	809,034,032,288	8,949,004,370	\$ 519,409,635	-	56,922,428,121	\$ 874,386,055,143
67	874,386,055,143	9,262,219,523	\$ 444,093,636	-	61,510,438,317	\$ 944,714,619,347
68	944,714,619,347	9,586,397,206	\$ 375,414,448	-	66,446,955,248	\$ 1,020,372,557,352
69	1,020,372,557,352	9,921,921,109	\$ 313,512,484	-	71,756,685,554	\$ 1,101,737,651,532
70	1,101,737,651,532	10,269,188,348	\$ 258,425,298	-	77,466,086,376	\$ 1,189,214,500,958
71	1,189,214,500,958	10,628,609,940	\$ 210,060,599	-	83,603,496,964	\$ 1,283,236,547,262
72	1,283,236,547,262	11,000,611,288	\$ 168,204,614	-	90,199,280,226	\$ 1,384,268,234,162
73	1,384,268,234,162	11,385,632,683	\$ 132,560,468	-	97,285,972,587	\$ 1,492,807,278,964
74	1,492,807,278,964	11,784,129,827	\$ 102,723,975	-	104,898,443,846	\$ 1,609,387,128,662
75	1,609,387,128,662	12,196,574,370	\$ 78,208,447	-	113,074,068,265	\$ 1,734,579,562,850
76	1,734,579,562,850	12,623,454,473	\$ 58,463,411	-	121,852,906,156	\$ 1,868,997,460,068
77	1,868,997,460,068	13,065,275,380	\$ 42,894,076	-	131,277,896,864	\$ 2,013,297,738,236
78	2,013,297,738,236	13,522,560,018	\$ 30,896,725	-	141,395,063,411	\$ 2,168,184,464,940
79	2,168,184,464,940	13,995,849,619	\$ 21,875,879	-	152,253,729,639	\$ 2,334,412,168,319
80	2,334,412,168,319	14,485,704,356	\$ 15,255,965	-	163,906,751,597	\$ 2,512,789,368,307
81	2,512,789,368,307	14,992,704,008	\$ 10,510,101	-	176,410,763,758	\$ 2,704,182,325,972
82	2,704,182,325,972	15,517,448,648	\$ 7,189,458	-	189,826,440,487	\$ 2,909,519,025,649
83	2,909,519,025,649	16,060,559,351	\$ 4,918,490	-	204,218,774,981	\$ 3,129,793,441,491
84	3,129,793,441,491	16,622,678,928	\$ 3,395,792	-	219,657,377,918	\$ 3,366,070,102,545
85	3,366,070,102,545	17,204,472,691	\$ 2,386,735	-	236,216,797,296	\$ 3,619,488,985,797
86	3,619,488,985,797	17,806,629,235	\$ 1,717,467	-	253,976,861,180	\$ 3,891,270,758,745
87	3,891,270,758,745	18,429,861,258	\$ 1,268,039	-	273,023,044,945	\$ 4,182,722,396,909
88	4,182,722,396,909	19,074,906,402	\$ 959,159	-	293,446,864,986	\$ 4,495,243,209,138
89	4,495,243,209,138	19,742,528,126	\$ 739,672	-	315,346,300,951	\$ 4,830,331,298,544
90	4,830,331,298,544	20,433,516,611	\$ 578,035	-	338,826,248,333	\$ 5,189,590,485,453
91	5,189,590,485,453	21,148,689,692	\$ 455,193	-	363,999,003,350	\$ 5,574,737,723,301
92	5,574,737,723,301	21,888,893,831	\$ 359,149	-	390,984,782,280	\$ 5,987,611,040,264
93	5,987,611,040,264	22,655,005,115	\$ 283,009	-	419,912,277,477	\$ 6,430,178,039,846
94	6,430,178,039,846	23,447,930,294	\$ 221,991	-	450,919,252,551	\$ 6,904,545,000,701
95	6,904,545,000,701	24,268,607,855	\$ 172,870	-	484,153,179,410	\$ 7,412,966,615,096
96	7,412,966,615,096	25,118,009,130	\$ 133,285	-	519,771,920,016	\$ 7,957,856,410,957
97	7,957,856,410,957	25,997,139,449	\$ 101,597	-	557,944,455,971	\$ 8,541,797,904,780
98	8,541,797,904,780	26,907,039,330	\$ 76,278	-	598,851,669,284	\$ 9,167,556,537,116
99	9,167,556,537,116	27,848,785,707	\$ 56,162	-	642,687,177,890	\$ 9,838,092,444,551
100	9,838,092,444,551	28,823,493,206	\$ 40,353	-	689,658,229,732	\$ 10,556,574,127,136



Single Discount Rate Development

Present Values of Projected Benefit Payments Beginning July 1, 2019

Year	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^{(a)-.5}	(g)=(e)*vf ^{(a)-.5}	(h)=((c)/(1+sdr) ^{(a)-.5})
1	\$ 17,227,026,987	\$ 1,571,404,694	\$ 1,571,404,694	\$ -	\$ 1,519,134,257	\$ -	\$ 1,519,134,257
2	18,165,561,773	1,663,766,067	1,663,766,067	-	1,503,199,408	-	1,503,199,408
3	19,202,903,133	1,753,894,399	1,753,894,399	-	1,480,962,279	-	1,480,962,279
4	20,244,956,861	1,844,840,372	1,844,840,372	-	1,455,846,451	-	1,455,846,451
5	21,293,521,281	1,936,569,691	1,936,569,691	-	1,428,256,243	-	1,428,256,243
6	22,349,495,274	2,030,608,579	2,030,608,579	-	1,399,637,080	-	1,399,637,080
7	23,411,915,799	2,126,814,591	2,126,814,591	-	1,370,045,770	-	1,370,045,770
8	24,479,907,765	2,223,060,134	2,223,060,134	-	1,338,359,783	-	1,338,359,783
9	25,554,944,275	2,319,962,522	2,319,962,522	-	1,305,325,610	-	1,305,325,610
10	26,637,936,656	2,416,670,876	2,416,670,876	-	1,270,783,655	-	1,270,783,655
11	27,730,311,305	2,512,520,491	2,512,520,491	-	1,234,752,592	-	1,234,752,592
12	28,835,525,435	2,607,587,117	2,607,587,117	-	1,197,637,492	-	1,197,637,492
13	29,956,302,119	2,701,994,409	2,701,994,409	-	1,159,811,004	-	1,159,811,004
14	31,095,820,542	2,796,067,685	2,796,067,685	-	1,121,674,073	-	1,121,674,073
15	32,257,059,853	2,888,282,541	2,888,282,541	-	1,082,866,451	-	1,082,866,451
16	33,444,826,168	2,977,473,034	2,977,473,034	-	1,043,276,159	-	1,043,276,159
17	34,665,597,661	3,065,484,679	3,065,484,679	-	1,003,845,365	-	1,003,845,365
18	35,924,464,866	3,150,120,520	3,150,120,520	-	964,075,531	-	964,075,531
19	37,229,436,527	3,230,714,888	3,230,714,888	-	924,056,967	-	924,056,967
20	38,589,704,258	3,306,916,836	3,306,916,836	-	883,974,238	-	883,974,238
21	40,015,737,652	3,378,089,430	3,378,089,430	-	843,924,704	-	843,924,704
22	41,519,766,918	3,443,361,940	3,443,361,940	-	803,954,471	-	803,954,471
23	43,115,682,982	3,502,805,240	3,502,805,240	-	764,330,153	-	764,330,153
24	44,818,235,969	3,556,271,831	3,556,271,831	-	725,230,690	-	725,230,690
25	46,643,649,120	3,603,243,809	3,603,243,809	-	686,738,026	-	686,738,026
26	48,609,829,219	3,643,829,033	3,643,829,033	-	649,040,296	-	649,040,296
27	50,736,040,492	3,677,868,291	3,677,868,291	-	612,246,152	-	612,246,152
28	53,043,173,096	3,704,835,700	3,704,835,700	-	576,388,181	-	576,388,181
29	55,554,342,379	3,723,656,180	3,723,656,180	-	541,417,027	-	541,417,027
30	58,295,674,375	3,734,246,705	3,734,246,705	-	507,436,339	-	507,436,339
31	61,295,214,837	3,735,648,617	3,735,648,617	-	474,417,608	-	474,417,608
32	64,584,528,923	3,728,313,263	3,728,313,263	-	442,510,315	-	442,510,315
33	68,196,924,249	3,712,631,394	3,712,631,394	-	411,821,540	-	411,821,540
34	72,167,900,158	3,687,587,099	3,687,587,099	-	382,283,659	-	382,283,659
35	76,536,770,305	3,653,059,528	3,653,059,528	-	353,929,220	-	353,929,220
36	81,345,999,493	3,609,868,867	3,609,868,867	-	326,864,171	-	326,864,171
37	86,640,146,291	3,557,995,601	3,557,995,601	-	301,090,825	-	301,090,825
38	92,467,040,816	3,496,948,445	3,496,948,445	-	276,565,222	-	276,565,222
39	98,878,603,457	3,427,065,315	3,427,065,315	-	253,306,854	-	253,306,854
40	105,930,116,210	3,349,201,570	3,349,201,570	-	231,356,693	-	231,356,693
41	113,679,835,116	3,263,946,434	3,263,946,434	-	210,717,219	-	210,717,219
42	122,189,531,234	3,171,888,365	3,171,888,365	-	191,377,607	-	191,377,607
43	131,524,732,958	3,074,096,939	3,074,096,939	-	173,343,279	-	173,343,279
44	141,754,425,569	2,971,240,356	2,971,240,356	-	156,582,584	-	156,582,584
45	152,951,838,970	2,863,949,416	2,863,949,416	-	141,054,594	-	141,054,594
46	165,194,757,494	2,753,016,397	2,753,016,397	-	126,720,510	-	126,720,510
47	178,565,695,772	2,638,895,670	2,638,895,670	-	113,521,092	-	113,521,092
48	193,152,621,895	2,521,952,077	2,521,952,077	-	101,392,864	-	101,392,864
49	209,049,475,837	2,402,723,035	2,402,723,035	-	90,279,780	-	90,279,780
50	226,356,396,436	2,281,961,441	2,281,961,441	-	80,132,982	-	80,132,982

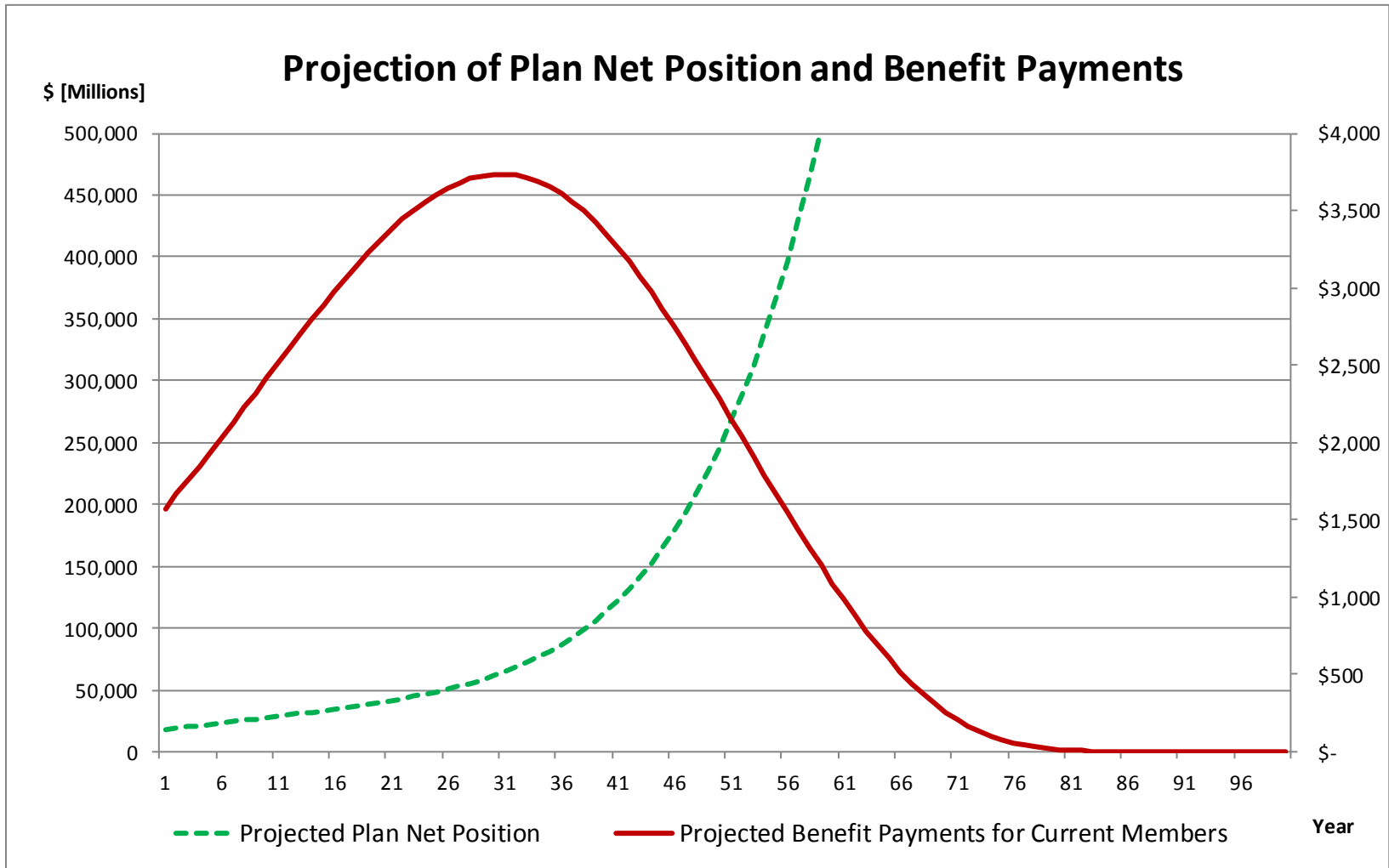


Single Discount Rate Development

PVs of Projected Benefit Payments Beginning July 1, 2019 (continued)

Year	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^{((a)-.5)}	(g)=(e)*vf ^{((a)-.5)}	(h)=((c)/(1+sdr)) ^(a-.5)
51	\$ 245,179,896,772	\$ 2,160,141,242	\$ 2,160,141,242	\$ -	\$ 70,892,677	\$ -	\$ 70,892,677
52	265,633,662,829	2,037,728,460	2,037,728,460	-	62,500,251	-	62,500,251
53	287,839,054,781	1,915,118,538	1,915,118,538	-	54,896,838	-	54,896,838
54	311,925,739,749	1,792,890,175	1,792,890,175	-	48,030,995	-	48,030,995
55	338,032,059,233	1,671,517,557	1,671,517,557	-	41,849,961	-	41,849,961
56	366,305,769,885	1,551,401,202	1,551,401,202	-	36,301,491	-	36,301,491
57	396,904,800,883	1,432,933,071	1,432,933,071	-	31,335,921	-	31,335,921
58	429,997,990,750	1,316,526,786	1,316,526,786	-	26,906,827	-	26,906,827
59	465,765,838,105	1,202,632,715	1,202,632,715	-	22,971,112	-	22,971,112
60	504,401,290,913	1,091,748,381	1,091,748,381	-	19,488,921	-	19,488,921
61	546,110,580,063	984,394,500	984,394,500	-	16,422,929	-	16,422,929
62	591,114,135,095	881,102,775	881,102,775	-	13,738,023	-	13,738,023
63	639,647,577,570	782,435,077	782,435,077	-	11,401,506	-	11,401,506
64	691,962,764,228	688,948,895	688,948,895	-	9,382,469	-	9,382,469
65	748,328,939,278	601,134,950	601,134,950	-	7,651,002	-	7,651,002
66	809,034,032,288	519,409,635	519,409,635	-	6,178,351	-	6,178,351
67	874,386,055,143	444,093,636	444,093,636	-	4,936,889	-	4,936,889
68	944,714,619,347	375,414,448	375,414,448	-	3,900,372	-	3,900,372
69	1,020,372,557,352	313,512,484	313,512,484	-	3,044,150	-	3,044,150
70	1,101,737,651,532	258,425,298	258,425,298	-	2,345,106	-	2,345,106
71	1,189,214,500,958	210,060,599	210,060,599	-	1,781,510	-	1,781,510
72	1,283,236,547,262	168,204,614	168,204,614	-	1,333,208	-	1,333,208
73	1,384,268,234,162	132,560,468	132,560,468	-	981,952	-	981,952
74	1,492,807,278,964	102,723,975	102,723,975	-	711,155	-	711,155
75	1,609,387,128,662	78,208,447	78,208,447	-	506,014	-	506,014
76	1,734,579,562,850	58,463,411	58,463,411	-	353,516	-	353,516
77	1,868,997,460,068	42,894,076	42,894,076	-	242,403	-	242,403
78	2,013,297,738,236	30,896,725	30,896,725	-	163,181	-	163,181
79	2,168,184,464,940	21,875,879	21,875,879	-	107,979	-	107,979
80	2,334,412,168,319	15,255,965	15,255,965	-	70,377	-	70,377
81	2,512,789,368,307	10,510,101	10,510,101	-	45,312	-	45,312
82	2,704,182,325,972	7,189,458	7,189,458	-	28,968	-	28,968
83	2,909,519,025,649	4,918,490	4,918,490	-	18,521	-	18,521
84	3,129,793,441,491	3,395,792	3,395,792	-	11,951	-	11,951
85	3,366,070,102,545	2,386,735	2,386,735	-	7,850	-	7,850
86	3,619,488,985,797	1,717,467	1,717,467	-	5,279	-	5,279
87	3,891,270,758,745	1,268,039	1,268,039	-	3,643	-	3,643
88	4,182,722,396,909	959,159	959,159	-	2,575	-	2,575
89	4,495,243,209,138	739,672	739,672	-	1,856	-	1,856
90	4,830,331,298,544	578,035	578,035	-	1,356	-	1,356
91	5,189,590,485,453	455,193	455,193	-	998	-	998
92	5,574,737,723,301	359,149	359,149	-	736	-	736
93	5,987,611,040,264	283,009	283,009	-	542	-	542
94	6,430,178,039,846	221,991	221,991	-	397	-	397
95	6,904,545,000,701	172,870	172,870	-	289	-	289
96	7,412,966,615,096	133,285	133,285	-	208	-	208
97	7,957,856,410,957	101,597	101,597	-	148	-	148
98	8,541,797,904,780	76,278	76,278	-	104	-	104
99	9,167,556,537,116	56,162	56,162	-	72	-	72
100	9,838,092,444,551	40,353	40,353	-	48	-	48
Totals	\$ 36,738,052,999	\$ -	\$ 36,738,052,999		\$ -	\$ -	\$ 36,738,052,999





SECTION F

GASB No. 68 INFORMATION

GASB No. 68 Disclosure Information

This section of the report shows the GASB No. 68 information for the employers covered by ERS. Pages F-1, F-2 and F-3 show the aggregate pension expense and Deferred Outflows and (Inflows) of resources for the employers with employees covered by ERS. Pages F-4 through F-6 show the disclosure information for the individual employers that need to be incorporated into the employers' financial statements.

Page F-4 shows the employers their proportionate share of the Net Pension Liability and Pension Expense. Page F-5 shows the employers their deferred inflows and outflows by component. Page F-6 shows the employers the deferred outflows and inflows of resources to be recognized in future years' pension expense.

Pension Expense

The table below shows the aggregate Pension Expense for the ERS employers for the fiscal year ending June 30, 2019. Pension Expense for each employer is determined on a proportionate share basis and is shown on page F-4.

A. Expense

1. Service Cost	\$ 619,504,278
2. Interest on the Total Pension Liability	2,063,885,936
3. Current-Period Benefit Changes	0
4. Employee Contributions (made negative for addition here)	(273,223,578)
5. Projected Earnings on Plan Investments (made negative for addition here)	(1,151,245,849)
6. Pension Plan Administrative Expense	13,798,866
7. Other Changes in Plan Fiduciary Net Position	0
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	665,863,911
9. Recognition of Outflow (Inflow) of Resources due to Assets	184,689,984
10. Total Pension Expense	\$ 2,123,273,548

Recognition of Deferred Outflows and Inflows of Resources

According to paragraph 33 of GASB No. 68, *differences between expected and actual experience and changes in assumptions* are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pensions through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the 2019 fiscal year, the expected remaining service lives of all employees was 754,024.81 years. Additionally, the plan membership (active employees and inactive employees) was 141,908. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the 2019 fiscal year is 5.3135 years.



Additionally, *differences between projected and actual earnings on pension plan investments* should be recognized in pension expense using a systematic and rational method over a closed five-year period.

For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.

The current year's Deferred Outflows and (Inflows) are shown below. The aggregate Deferred Outflows and (Inflows) for the current and prior reporting periods is shown on the following page. The amounts by employer are shown on pages F-5 and F-6.

Statement of Outflows and Inflows Arising from Current Reporting Period for Fiscal Year Ending June 30, 2019

A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$ 221,473,495
2. Assumption Changes (gains) or losses	\$ 60,320,037
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	5.3135
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the Difference between expected and actual experience of the Total Pension Liability	\$ 41,681,283
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$ 11,352,223
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	\$ 53,033,506
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the Difference between expected and actual experience of the Total Pension Liability	\$ 179,792,212
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$ 48,967,814
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	\$ 228,760,026

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ 218,549,437
2. Recognition period for Assets {in years}	5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ 43,709,888
3. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ 174,839,549



Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods for Fiscal Year Ending June 30, 2019

A. Outflows and Inflows of Resources due to Liabilities and Assets to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. due to Liabilities	\$ 717,628,232	\$ 51,764,321	\$ 665,863,911
2. due to Assets	404,372,354	219,682,370	184,689,984
3. Total	\$ 1,122,000,586	\$ 271,446,691	\$ 850,553,895

B. Outflows and Inflows of Resources by Source to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 152,079,854	\$ 50,987,815	\$ 101,092,039
2. Assumption Changes	565,548,378	776,506	564,771,872
3. Net Difference between projected and actual earnings on pension plan investments	404,372,354	219,682,370	184,689,984
4. Total	\$ 1,122,000,586	\$ 271,446,691	\$ 850,553,895

C. Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ 383,507,158	\$ 23,314,962	\$ 360,192,196
2. Assumption Changes	968,363,415	3,349,458	965,013,957
3. Net Difference between projected and actual earnings on pension plan investments	428,610,978	466,981,135	(38,370,157)
4. Total	\$ 1,780,481,551	\$ 493,645,555	\$ 1,286,835,996

D. Deferred Outflows and Deferred Inflows of Resources by Year to be recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2020	\$ 728,751,425
2021	336,271,125
2022	99,456,039
2023	105,731,405
2024	16,626,002
Thereafter	0
Total	\$ 1,286,835,996



**Recognition of Deferred Outflows and Inflows of Resources
for Fiscal Year Ending June 30, 2019**

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) due to Differences Between Expected and Actual Experience on Liabilities					
2014	66,400,876	5.7661	8,822,201	0	0.0000
2015	(192,816,757)	5.5095	(34,997,143)	(17,831,042)	0.5095
2016	297,534,219	5.7626	51,631,941	91,006,455	1.7626
2017	61,179,390	5.6644	10,800,684	28,777,338	2.6644
2018	124,753,379	5.3882	23,153,073	78,447,233	3.3882
2019	221,473,495	5.3135	41,681,283	179,792,212	4.3135
Total			101,092,039	360,192,196	
Deferred Outflow (Inflow) due to Assumption Changes					
2014	0	5.7661	0	0	0.0000
2015	261,213,541	5.5095	47,411,479	24,156,146	0.5095
2016	2,915,922,677	5.7626	506,008,170	891,889,997	1.7626
2017	0	5.6644	0	0	2.6644
2018	0	5.3882	0	0	3.3882
2019	60,320,037	5.3135	11,352,223	48,967,813	4.3135
Total			564,771,872	965,013,957	
Deferred Outflow (Inflow) due to Differences Between Projected and Actual Earnings on Plan Investment					
2014	(1,232,329,632)	5.0000	0	0	0.0000
2015	534,455,207	5.0000	106,891,035	0	0.0000
2016	1,268,857,153	5.0000	253,771,431	253,771,429	1.0000
2017	(960,329,832)	5.0000	(192,065,967)	(384,131,931)	2.0000
2018	(138,082,010)	5.0000	(27,616,403)	(82,849,204)	3.0000
2019	218,549,437	5.0000	43,709,888	174,839,549	4.0000
Total			184,689,984	(38,370,157)	



**Schedule of Employer Allocations
and Pension Amounts
At June 30, 2019
Exhibit 1**

Employer (1)	Proportionate Share as of June 30, 2019 (2)	Change in Proportioante Share (3)	Proportionate Share of Net Pension Liability as of June 30, 2019 7.00% (4)	Sensitivity Analysis		Proportionate Share of Pension Expense as of June 30, 2019 (7)
				Proportionate Share of Net Pension Liability 1% Decrease 6.00% (5)	Proportionate Share of Net Pension Liability 1% Increase 8.00% (6)	
State of Hawaii	55.74911270%	-0.34063734%	7,899,326,314	10,251,381,356	6,205,890,255	1,141,661,254
City and County of Honolulu	18.81205777%	0.60875382%	2,665,559,607	3,507,090,451	2,059,672,988	442,596,764
County of Hawaii	4.71588203%	-0.05695239%	668,213,164	878,868,976	516,544,882	109,621,758
County of Maui	4.57575053%	0.08841147%	648,357,343	850,921,030	502,515,239	102,322,406
County of Kauai	2.13286336%	-0.11864780%	302,214,383	396,437,989	234,375,132	47,612,238
BWS City and County of Honolulu	0.81025063%	-0.09333372%	114,807,821	148,949,493	90,226,450	16,642,432
DWS County of Hawaii	0.22604487%	-0.02564122%	32,029,248	41,554,140	25,171,502	4,855,184
DOW County of Kauai	0.15506275%	0.03375727%	21,971,493	28,505,399	17,267,202	4,107,936
HART	0.18239087%	-0.00410355%	25,843,729	33,529,164	20,310,358	4,044,809
University of Hawaii	12.64058450%	-0.09160654%	1,791,097,596	2,323,736,103	1,407,607,738	249,808,767



Schedule of Employer Allocations
and Pension Amounts
At June 30, 2019
Exhibit 2

Deferred Outflows and Inflows of Resources by Source to be recognized in Future Pension Expenses

Employer	Deferred Outflows					Deferred Inflows				
	Differences Between Expected and Actual Experience	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Outflows of Resources	Differences Between Expected and Actual Experience	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Inflows of Resources
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
State of Hawaii	143,339,141	233,440,246	537,953,951	17,934,850	932,668,188	15,619,059	255,104,221	126,729	41,545,386	312,395,395
City and County of Honolulu	131,726,393	85,286,710	183,775,711	61,736,166	462,524,980	2,169,651	92,274,126	2,101,863	24,578,058	121,123,698
County of Hawaii	32,494,705	21,338,830	46,055,421	11,940,916	111,829,872	563,501	23,092,505	513,885	13,860,078	38,029,969
County of Maui	28,336,756	20,455,271	44,600,809	15,283,324	108,676,160	665,511	22,169,202	419,758	15,031,502	38,285,973
County of Kauai	12,866,933	9,507,989	20,780,262	18,832,402	61,987,586	322,913	10,308,215	187,223	20,819,119	31,637,470
BWS City and County of Honolulu	2,008,709	3,386,964	7,816,545	2,581,424	15,793,642	229,779	3,702,115	0	9,738,233	13,670,127
DWS County of Hawaii	560,393	944,900	2,180,671	2,442,051	6,128,015	64,104	1,032,821	0	2,602,620	3,699,545
DOW County of Kauai	384,419	648,185	1,495,901	3,606,955	6,135,460	43,974	708,497	0	353,843	1,106,314
HART	452,169	762,420	1,759,537	1,233,980	4,208,106	51,724	833,362	0	1,180,780	2,065,866
University of Hawaii	31,337,540	52,839,463	121,944,607	881,406	207,003,016	3,584,746	57,756,071	0	6,763,855	68,104,672



**Schedule of Employer Allocations
and Pension Amounts
At June 30, 2019
Exhibit 3**

Employer	Deferred Outflows and (Inflows) to be Recognized in Future Years					
	Total Deferred Outflow and (Inflow) 2019	Total Deferred Outflow and (Inflow) 2020	Total Deferred Outflow and (Inflow) 2021	Total Deferred Outflows of 2022	Total Deferred Outflows of 2023	Total Deferred Outflows of Thereafter
(1)	(2)	(3)	(4)	(5)	(6)	(7)
State of Hawaii	370,160,625	164,142,293	34,123,014	45,316,986	6,529,875	-
City and County of Honolulu	171,690,340	85,678,869	38,656,890	37,800,030	7,575,153	-
County of Hawaii	42,180,334	19,859,728	6,457,817	4,791,456	510,568	-
County of Maui	37,771,022	18,402,905	6,673,823	6,125,751	1,416,686	-
County of Kauai	17,836,623	8,420,494	3,425,922	1,042,411	(375,334)	-
BWS City and County of Honolulu	3,742,588	610,554	(684,203)	(1,024,724)	(520,700)	-
DWS County of Hawaii	1,458,414	888,038	306,430	(81,909)	(142,503)	-
DOW County of Kauai	1,847,697	1,147,655	849,680	924,538	259,576	-
HART	1,349,584	665,242	128,669	(1,695)	440	-
University of Hawaii	80,714,198	36,455,347	9,517,997	10,838,561	1,372,241	-



SECTION G

GLOSSARY OF TERMS

Glossary of Terms

Actuarial Accrued Liability (AAL)

The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability".

Actuarial Assumptions

These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.

Accrued Service

Service credited under the system which was rendered before the date of the actuarial valuation.

Actuarial Equivalent

A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.

Actuarial Cost Method

A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.

Actuarial Gain (Loss)

The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.

Actuarial Present Value

The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.

Actuarial Valuation

The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions.

Actuarial Valuation Date

The date as of which an actuarial valuation is performed.

Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)

A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.



Glossary of Terms (continued)

Amortization Payment

The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.

Amortization Method

The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).

Cost-of-Living Adjustments

Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.

Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)

A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.

Covered-Employee Payroll

The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.

Deferred Retirement Option Program (DROP)

A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.

Deferred Inflows and Outflows

The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.

Discount Rate

For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically:

1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period and;
2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.



Glossary of Terms (continued)

Entry Age Actuarial Cost Method (EAN)

The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

GASB

The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.

Fiduciary Net Position

The fiduciary net position is the value of the assets of the trust.

Long-Term Expected Rate of Return

The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.

Money-Weighted Rate of Return

The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

Multiple-Employer Defined Benefit Pension Plan

A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.

Municipal Bond Rate

The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.

Net Pension Liability (NPL)

The NPL is the liability of employers and nonemployer contribution entities to plan members for benefits provided through a defined benefit pension plan.

Nonemployer Contribution Entities

Nonemployer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting statement plan members are not considered nonemployer contribution entities.



Glossary of Terms (continued)

Normal Cost

The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.

Other Postemployment Benefits (OPEB)

All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.

Real Rate of Return

The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.

Service Cost

The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

Total Pension Expense

The total pension expense is the sum of the following pension expense items that are recognized from the beginning to the end of the employer's fiscal year:

1. Total service cost;
2. Interest on total pension liability;
3. Current-period benefit changes;
4. Member contributions;
5. Projected earnings on plan investments;
6. Administrative expense;
7. Other Changes in Plan Fiduciary Net Position;
8. Recognition of beginning deferred outflows (inflows) due to liabilities; and
9. Recognition of beginning deferred outflows (inflows) due to assets.

Total Pension Liability (TPL)

The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL)

The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets

The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of the GASB Statement No. 67, the valuation asset is equal to the market value of assets.

