

Employees' Retirement System of the State of Hawaii

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

June 30, 2020



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April 15, 2021

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, 2020, but it is intended that the employers covered by ERS will use this information in financial reporting for their fiscal years ending June 30, 2021.

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 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, 2020 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, 2020

	2020
Actuarial Valuation Date	June 30, 2020
Pension Plan's Fiscal Year Ending Date (Measurement Date & Reporting Date)	June 30, 2020
 Membership	
Number of	
- Retirees and Beneficiaries	51,153
- Inactive, Nonretired Members	30,189
- Active Members	66,750
- Total	148,092
Reported Payroll for Fiscal Year	\$ 4,481,443,808
 Net Pension Liability	
Total Pension Liability	\$ 32,691,755,844
Plan Fiduciary Net Position	17,385,480,476
Net Pension Liability	\$ 15,306,275,368
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	53.18%
Net Pension Liability as a Percentage of Covered Payroll	341.55%
 Development of the Single Discount Rate	
Single Discount Rate	7.00%
Long-Term Expected Rate of Return	7.00%
Long-Term Municipal Bond Rate*	2.45%
Last year ending June 30 in the 2020 to 2119 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 30, 2020. 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, 2020 and a measurement date of June 30, 2020.

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 2.45% (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, 2020

	2020
Assets	
Cash and Deposits	\$ 3,312,051,850
Receivables	
Accounts receivable and others	\$ 5,728,204
Investment sales proceeds	150,789,478
Accrued investment income	38,399,145
Employer contributions	54,670,412
Member contributions	-
Other	-
Total Receivables	\$ 249,587,239
Investments	
Equity securities	\$ 6,422,516,554
Fixed income securities	4,131,855,027
Real estate investments	1,531,902,816
Alternative investments	2,199,495,724
Total Investments	\$ 14,285,770,121
Invested Securities Lending Collateral	\$ 992,602,987
Equipment at cost, net of depreciation	\$ 7,654,129
Total Assets	\$ 18,847,666,326
 Liabilities	
Payables	
Accounts and other payables	\$ 128,401,072
Payables for securities purchased	150,439,791
Securities lending collateral	992,602,987
Notes payable	190,742,000
Total Liabilities	\$ 1,462,185,850
 Net Position Restricted for Pensions	 \$ 17,385,480,476



Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2020

	Year Ending June 30, 2020
Additions	
Contributions	
Non-Employer Contributing Entity	\$ -
Employer	1,098,589,013
Employer (picked-up employee contributions)	284,142,994
Employee	3,255,037
Other	-
Total Contributions	\$ 1,385,987,044
Investment Income	
Net Appreciation in Fair Value of Investments	\$ (39,409,286)
Interest and Dividends	274,959,017
Less Investment Expense	(86,461,633)
Net Investment Income	\$ 149,088,098
Other	\$ 209,194,566
Total Additions	\$ 1,744,269,708
 Deductions	
Benefit payments, including refunds of employee contributions	\$ 1,568,033,354
Pension Plan Administrative Expense	17,782,865
Other	-
Total Deductions	\$ 1,585,816,219
 Net Increase in Net Position	 \$ 158,453,489
 Net Position Restricted for Pensions	
Beginning of Year	\$ 17,227,026,987
End of Year	\$ 17,385,480,476



SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in the Net Pension Liability and Related Ratios

Fiscal Year Ended June 30, 2020

A. Total pension liability	
1. Service Cost	\$ 626,699,489
2. Interest on the Total Pension Liability	2,164,804,653
3. Changes of benefit terms	0
4. Difference between expected and actual experience of the Total Pension Liability	71,837,371
5. Changes of assumptions	0
6. Benefit payments, including refunds of employee contributions	(1,568,033,354)
7. Net change in total pension liability	\$ 1,295,308,159
8. Total pension liability – beginning	31,396,447,685
9. Total pension liability – ending	<u><u>\$ 32,691,755,844</u></u>
B. Plan fiduciary net position	
1. Contributions – employer	\$ 1,098,589,013
2. Contributions – employer (picked-up employee contributions)	284,142,994
3. Contributions – employee	3,255,037
4. Net investment income	358,282,664
5. Benefit payments, including refunds of employee contributions	(1,568,033,354)
6. Pension Plan Administrative Expense	(17,782,865)
7. Other	-
8. Net change in plan fiduciary net position	\$ 158,453,489
9. Plan fiduciary net position – beginning	17,227,026,987
10. Plan fiduciary net position – ending	<u><u>\$ 17,385,480,476</u></u>
C. Net pension liability	<u><u>\$ 15,306,275,368</u></u>
D. Plan fiduciary net position as a percentage of the total pension liability	53.18%
E. Covered-employee payroll	\$ 4,481,443,808
F. Net pension liability as a percentage of covered employee payroll	341.55%



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
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%
2020	32,691,755,844	17,385,480,476	15,306,275,368	53.18%	4,481,443,808	341.55%



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,	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Total Pension Liability										
Service Cost	\$ 626,699,489	\$ 619,504,278	\$ 584,470,193	\$ 576,724,568	\$ 484,278,499	\$ 437,901,029	\$ 421,956,129			
Interest on the Total Pension Liability	2,164,804,653	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	71,837,371	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	(1,545,589,761)	(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	(22,443,593)	(16,502,635)	(20,846,500)	(16,340,290)	(12,927,672)	(10,507,888)	(8,475,969)			
Net Change in Total Pension Liability	1,295,308,159	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	31,396,447,685	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)	\$ 32,691,755,844	\$ 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	\$ 1,098,589,013	\$ 922,635,334	\$ 847,595,466	\$ 781,244,218	\$ 756,558,222	\$ 717,792,981	\$ 653,127,697			
Employer Contributions (picked-up employee contributions)	284,142,994	\$ 270,764,670	\$ 257,294,033	\$ 249,211,751	\$ 235,079,968	\$ 221,909,859	\$ 204,821,010			
Employee Contributions	3,255,037	2,458,908	2,133,901	1,492,316	1,721,893	1,595,560	1,306,327			
Pension Plan Net Investment Income	358,282,664	932,696,412	1,225,572,599	1,934,512,507	(169,368,110)	556,436,475	2,175,479,960			
Benefit Payments	(1,545,589,761)	(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	(22,443,593)	(16,502,635)	(20,846,500)	(16,340,290)	(12,927,672)	(10,507,888)	(8,475,969)			
Pension Plan Administrative Expense	(17,782,865)	(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	158,453,489	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	17,227,026,987	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)	\$ 17,385,480,476	\$ 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)	15,306,275,368	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	53.18 %	54.87 %	55.48 %	54.80 %	51.28 %	62.42 %	63.92 %			
Covered Employee Payroll	\$ 4,481,443,808	\$ 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	341.55 %	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%
\$19,732,216,656	\$15,306,275,368	\$11,657,505,156

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	51,153
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	30,189
Active Plan Members	66,750
Total Plan Members	148,092



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 2.45%(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, 2020

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	4,448,680,826	\$ 181,549,465	\$ 4,630,230,291	\$ 284,270,705	\$ 1,156,672,940	\$ 38,811,503	\$ 1,479,755,148
2	4,256,977,890	\$ 535,310,461	4,792,288,351	279,683,447	1,106,558,054	114,404,122	1,500,645,623
3	4,099,327,134	\$ 860,691,309	4,960,018,444	275,474,783	1,065,355,476	183,896,246	1,524,726,505
4	3,954,735,256	\$ 1,178,883,833	5,133,619,089	271,690,312	1,027,506,164	251,800,530	1,550,997,006
5	3,818,066,227	\$ 1,495,229,530	5,313,295,757	267,646,443	991,705,502	319,255,278	1,578,607,223
6	3,685,923,507	\$ 1,813,337,601	5,499,261,109	263,543,531	956,960,192	386,968,542	1,607,472,265
7	3,556,718,639	\$ 2,135,016,609	5,691,735,247	258,929,117	922,908,180	455,310,840	1,637,148,137
8	3,427,986,510	\$ 2,462,959,471	5,890,945,981	253,671,002	888,608,701	524,603,974	1,666,883,677
9	3,300,826,504	\$ 2,796,302,586	6,097,129,091	248,222,153	855,646,060	595,605,192	1,699,473,405
10	3,172,751,282	\$ 3,137,777,327	6,310,528,609	242,080,923	822,446,175	668,338,426	1,732,865,524
11	3,045,703,243	\$ 3,485,693,867	6,531,397,110	235,432,861	789,512,559	742,443,746	1,767,389,166
12	2,920,009,580	\$ 3,839,986,429	6,759,996,009	228,636,750	756,930,026	817,907,142	1,803,473,918
13	2,793,196,303	\$ 4,203,399,566	6,996,595,869	221,500,467	724,057,265	895,313,197	1,840,870,929
14	2,667,201,397	\$ 4,574,275,328	7,241,476,725	213,909,552	691,396,644	974,308,771	1,879,614,967
15	2,541,941,243	\$ 4,952,987,167	7,494,928,410	206,151,435	658,926,486	1,054,973,410	1,920,051,331
16	2,415,134,036	\$ 5,342,116,868	7,757,250,904	197,799,478	626,055,298	1,137,857,026	1,961,711,802
17	2,288,408,933	\$ 5,740,345,753	8,028,754,686	189,022,578	593,205,394	1,222,678,745	2,004,906,717
18	2,162,716,251	\$ 6,147,044,849	8,309,761,100	180,154,264	560,623,116	1,309,304,597	2,050,081,977
19	2,038,702,522	\$ 6,561,900,216	8,600,602,738	171,047,142	528,476,058	1,397,667,713	2,097,190,913
20	1,917,155,894	\$ 6,984,467,940	8,901,623,834	161,999,673	496,968,527	1,487,673,541	2,146,641,741
21	1,798,025,910	\$ 7,415,154,758	9,213,180,668	152,832,202	466,087,443	1,579,408,716	2,198,328,361
22	1,679,948,854	\$ 7,855,693,138	9,535,641,992	143,635,627	435,479,301	1,673,242,247	2,252,357,175
23	1,562,901,915	\$ 8,306,487,547	9,869,389,462	134,253,274	405,138,187	1,769,260,286	2,308,651,747
24	1,446,654,113	\$ 8,768,163,980	10,214,818,093	124,701,585	375,004,227	1,867,596,168	2,367,301,980
25	1,330,197,610	\$ 9,242,139,115	10,572,336,726	115,062,093	344,816,167	1,968,551,641	2,428,429,901
26	1,215,228,125	\$ 9,727,140,386	10,942,368,511	105,360,278	315,013,575	2,071,855,653	2,492,229,506
27	1,102,721,805	\$ 10,222,629,605	11,325,351,409	95,826,525	285,849,488	2,177,393,570	2,559,069,583
28	993,615,421	\$ 10,728,123,288	11,721,738,709	86,543,903	257,566,739	2,285,062,413	2,629,173,055
29	886,130,278	\$ 11,245,869,286	12,131,999,563	77,270,560	229,704,251	2,395,340,966	2,702,315,777
30	780,737,468	\$ 11,775,882,081	12,556,619,548	68,158,381	202,384,141	2,508,232,316	2,778,774,838
31	679,765,299	\$ 12,316,335,934	12,996,101,232	59,411,487	176,209,958	2,623,347,584	2,858,969,029
32	584,519,466	\$ 12,866,445,309	13,450,964,775	51,087,001	151,520,165	2,740,519,453	2,943,126,619
33	496,784,745	\$ 13,424,963,798	13,921,748,543	43,418,987	128,777,416	2,859,482,441	3,031,678,844
34	417,359,753	\$ 13,991,649,989	14,409,009,742	36,518,978	108,188,730	2,980,185,129	3,124,892,837
35	346,257,815	\$ 14,567,067,267	14,913,325,083	30,297,559	89,757,561	3,102,747,515	3,222,802,635
36	283,418,899	\$ 15,151,872,562	15,435,291,460	24,799,154	73,468,346	3,227,309,525	3,325,577,025
37	229,227,878	\$ 15,746,298,784	15,975,526,662	20,057,439	59,420,854	3,353,920,767	3,433,399,060
38	183,544,928	\$ 16,351,125,167	16,534,670,095	16,060,181	47,578,840	3,482,747,217	3,546,386,238
39	145,576,177	\$ 16,967,807,371	17,113,383,548	12,737,915	37,736,513	3,614,098,926	3,664,573,354
40	114,628,141	\$ 17,597,723,831	17,712,351,972	10,029,962	29,714,109	3,748,269,497	3,788,013,568
41	90,042,890	\$ 18,242,241,401	18,332,284,291	7,878,753	23,341,077	3,885,550,066	3,916,769,896
42	69,999,616	\$ 18,903,914,625	18,973,914,241	6,124,966	18,145,424	4,026,484,745	4,050,755,135
43	53,855,397	\$ 19,584,145,843	19,638,001,240	4,712,347	13,960,491	4,171,372,229	4,190,045,067
44	40,942,724	\$ 20,284,388,559	20,325,331,283	3,582,488	10,613,245	4,320,522,110	4,334,717,843
45	30,515,978	\$ 21,006,201,900	21,036,717,878	2,670,148	7,910,405	4,474,266,478	4,484,847,031
46	22,111,107	\$ 21,750,891,897	21,773,003,004	1,934,722	5,731,680	4,632,883,514	4,640,549,916
47	15,553,833	\$ 22,519,504,276	22,535,058,109	1,360,960	4,031,892	4,796,595,956	4,801,988,808
48	10,675,210	\$ 23,313,109,933	23,323,785,143	934,081	2,767,247	4,965,631,900	4,969,333,228
49	6,835,714	\$ 24,133,281,909	24,140,117,623	598,125	1,771,966	5,140,326,402	5,142,696,493
50	4,083,025	\$ 24,980,938,715	24,985,021,740	357,265	1,058,409	5,320,875,102	5,322,290,776



Single Discount Rate Development

Projection of Contributions Beginning July 1, 2020

(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	2,161,489	\$ 25,857,336,012	25,859,497,501	189,130	560,305	5,507,545,451	5,508,294,886
52	1,038,055	\$ 26,763,541,858	26,764,579,913	90,830	269,087	5,700,564,944	5,700,924,861
53	416,832	\$ 27,700,923,378	27,701,340,210	36,473	108,052	5,900,224,775	5,900,369,300
54	174,129	\$ 28,670,712,988	28,670,887,117	15,236	45,138	6,106,787,444	6,106,847,818
55	70,646	\$ 29,674,297,521	29,674,368,166	6,181	18,313	6,320,548,345	6,320,572,839
56	22,059	\$ 30,712,948,993	30,712,971,052	1,930	5,718	6,541,778,412	6,541,786,060
57	974	\$ 31,787,924,065	31,787,925,039	85	252	6,770,745,312	6,770,745,649
58	-	\$ 32,900,502,415	32,900,502,415	-	-	7,007,721,613	7,007,721,613
59	-	\$ 34,052,020,000	34,052,020,000	-	-	7,252,991,869	7,252,991,869
60	-	\$ 35,243,840,700	35,243,840,700	-	-	7,506,846,585	7,506,846,585
61	-	\$ 36,477,375,124	36,477,375,124	-	-	7,769,586,215	7,769,586,215
62	-	\$ 37,754,083,254	37,754,083,254	-	-	8,041,521,733	8,041,521,733
63	-	\$ 39,075,476,168	39,075,476,168	-	-	8,322,974,993	8,322,974,993
64	-	\$ 40,443,117,834	40,443,117,834	-	-	8,614,279,118	8,614,279,118
65	-	\$ 41,858,626,958	41,858,626,958	-	-	8,915,778,887	8,915,778,887
66	-	\$ 43,323,678,901	43,323,678,901	-	-	9,227,831,148	9,227,831,148
67	-	\$ 44,840,007,663	44,840,007,663	-	-	9,550,805,238	9,550,805,238
68	-	\$ 46,409,407,931	46,409,407,931	-	-	9,885,083,422	9,885,083,422
69	-	\$ 48,033,737,209	48,033,737,209	-	-	10,231,061,341	10,231,061,341
70	-	\$ 49,714,918,011	49,714,918,011	-	-	10,589,148,488	10,589,148,488
71	-	\$ 51,454,940,141	51,454,940,141	-	-	10,959,768,685	10,959,768,685
72	-	\$ 53,255,863,046	53,255,863,046	-	-	11,343,360,589	11,343,360,589
73	-	\$ 55,119,818,253	55,119,818,253	-	-	11,740,378,210	11,740,378,210
74	-	\$ 57,049,011,892	57,049,011,892	-	-	12,151,291,447	12,151,291,447
75	-	\$ 59,045,727,308	59,045,727,308	-	-	12,576,586,648	12,576,586,648
76	-	\$ 61,112,327,764	61,112,327,764	-	-	13,016,767,181	13,016,767,181
77	-	\$ 63,251,259,235	63,251,259,235	-	-	13,472,354,032	13,472,354,032
78	-	\$ 65,465,053,309	65,465,053,309	-	-	13,943,886,423	13,943,886,423
79	-	\$ 67,756,330,175	67,756,330,175	-	-	14,431,922,448	14,431,922,448
80	-	\$ 70,127,801,731	70,127,801,731	-	-	14,937,039,734	14,937,039,734
81	-	\$ 72,582,274,791	72,582,274,791	-	-	15,459,836,124	15,459,836,124
82	-	\$ 75,122,654,409	75,122,654,409	-	-	16,000,930,389	16,000,930,389
83	-	\$ 77,751,947,313	77,751,947,313	-	-	16,560,962,952	16,560,962,952
84	-	\$ 80,473,265,469	80,473,265,469	-	-	17,140,596,656	17,140,596,656
85	-	\$ 83,289,829,761	83,289,829,761	-	-	17,740,517,539	17,740,517,539
86	-	\$ 86,204,973,802	86,204,973,802	-	-	18,361,435,653	18,361,435,653
87	-	\$ 89,222,147,885	89,222,147,885	-	-	19,004,085,900	19,004,085,900
88	-	\$ 92,344,923,061	92,344,923,061	-	-	19,669,228,907	19,669,228,907
89	-	\$ 95,576,995,368	95,576,995,368	-	-	20,357,651,919	20,357,651,919
90	-	\$ 98,922,190,206	98,922,190,206	-	-	21,070,169,736	21,070,169,736
91	-	\$ 102,384,466,864	102,384,466,864	-	-	21,807,625,677	21,807,625,677
92	-	\$ 105,967,923,204	105,967,923,204	-	-	22,570,892,575	22,570,892,575
93	-	\$ 109,676,800,516	109,676,800,516	-	-	23,360,873,815	23,360,873,815
94	-	\$ 113,515,488,534	113,515,488,534	-	-	24,178,504,399	24,178,504,399
95	-	\$ 117,488,530,633	117,488,530,633	-	-	25,024,752,053	25,024,752,053
96	-	\$ 121,600,629,205	121,600,629,205	-	-	25,900,618,375	25,900,618,375
97	-	\$ 125,856,651,227	125,856,651,227	-	-	26,807,140,018	26,807,140,018
98	-	\$ 130,261,634,020	130,261,634,020	-	-	27,745,389,918	27,745,389,918
99	-	\$ 134,820,791,211	134,820,791,211	-	-	28,716,478,566	28,716,478,566
100	-	\$ 139,539,518,903	139,539,518,903	-	-	29,721,555,315	29,721,555,315



Single Discount Rate Development

Projection of Plan Fiduciary Net Position Beginning July 1, 2020

Year	Projected					
	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Administrative Expenses	Projected Investment Earnings at 7.00%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	\$ 17,385,480,476	\$ 1,479,755,148	\$ 1,656,031,807	\$ 18,405,265	\$ 1,210,285,009	\$ 18,401,083,561
2	18,401,083,561	1,500,645,623	\$ 1,750,995,164	17,286,440	1,278,867,019	\$ 19,412,314,598
3	19,412,314,598	1,524,726,505	\$ 1,842,846,921	16,464,017	1,347,349,626	\$ 20,425,079,791
4	20,425,079,791	1,550,997,006	\$ 1,936,747,363	15,767,773	1,415,940,132	\$ 21,439,501,794
5	21,439,501,794	1,578,607,223	\$ 2,031,109,802	15,148,084	1,484,674,181	\$ 22,456,525,311
6	22,456,525,311	1,607,472,265	\$ 2,127,565,543	14,569,997	1,553,560,055	\$ 23,475,422,090
7	23,475,422,090	1,637,148,137	\$ 2,224,338,992	14,032,939	1,622,592,612	\$ 24,496,790,907
8	24,496,790,907	1,666,883,677	\$ 2,322,748,824	13,508,453	1,691,743,528	\$ 25,519,160,834
9	25,519,160,834	1,699,473,405	\$ 2,420,152,939	12,994,303	1,761,096,977	\$ 26,546,583,976
10	26,546,583,976	1,732,865,524	\$ 2,517,679,504	12,495,895	1,830,827,006	\$ 27,580,101,105
11	27,580,101,105	1,767,389,166	\$ 2,615,799,509	11,997,170	1,901,002,138	\$ 28,620,695,730
12	28,620,695,730	1,803,473,918	\$ 2,713,165,057	11,514,365	1,971,751,822	\$ 29,671,242,048
13	29,671,242,048	1,840,870,929	\$ 2,810,324,824	11,038,770	2,043,250,109	\$ 30,733,999,492
14	30,733,999,492	1,879,614,967	\$ 2,905,803,210	10,563,776	2,115,707,356	\$ 31,812,954,829
15	31,812,954,829	1,920,051,331	\$ 2,998,275,203	10,100,058	2,189,459,741	\$ 32,914,090,640
16	32,914,090,640	1,961,711,802	\$ 3,089,810,083	9,636,722	2,264,839,110	\$ 34,041,194,745
17	34,041,194,745	2,004,906,717	\$ 3,178,157,967	9,170,434	2,342,198,816	\$ 35,200,971,877
18	35,200,971,877	2,050,081,977	\$ 3,262,420,021	8,708,252	2,422,054,218	\$ 36,401,979,798
19	36,401,979,798	2,097,190,913	\$ 3,342,543,884	8,248,434	2,505,004,614	\$ 37,653,383,008
20	37,653,383,008	2,146,641,741	\$ 3,418,032,490	7,793,574	2,591,722,581	\$ 38,965,921,266
21	38,965,921,266	2,198,328,361	\$ 3,487,709,076	7,347,621	2,682,996,604	\$ 40,352,189,533
22	40,352,189,533	2,252,357,175	\$ 3,551,852,642	6,908,110	2,779,702,477	\$ 41,825,488,433
23	41,825,488,433	2,308,651,747	\$ 3,610,451,055	6,471,707	2,882,769,145	\$ 43,399,986,563
24	43,399,986,563	2,367,301,980	\$ 3,663,061,961	6,036,482	2,993,206,790	\$ 45,091,396,889
25	45,091,396,889	2,428,429,901	\$ 3,710,059,278	5,603,583	3,112,106,615	\$ 46,916,270,544
26	46,916,270,544	2,492,229,506	\$ 3,751,091,799	5,172,665	3,240,645,969	\$ 48,892,881,555
27	48,892,881,555	2,559,069,583	\$ 3,785,178,961	4,747,005	3,380,150,349	\$ 51,042,175,521
28	51,042,175,521	2,629,173,055	\$ 3,811,396,537	4,332,138	3,532,125,229	\$ 53,387,745,131
29	53,387,745,131	2,702,315,777	\$ 3,830,411,599	3,921,945	3,698,191,643	\$ 55,953,919,007
30	55,953,919,007	2,778,774,838	\$ 3,842,424,400	3,510,773	3,880,055,431	\$ 58,766,814,103
31	58,766,814,103	2,858,969,029	\$ 3,846,391,173	3,108,814	4,079,594,755	\$ 61,855,877,901
32	61,855,877,901	2,943,126,619	\$ 3,841,995,670	2,722,810	4,298,889,441	\$ 65,253,175,481
33	65,253,175,481	3,031,678,844	\$ 3,828,204,081	2,356,865	4,540,234,314	\$ 68,994,527,693
34	68,994,527,693	3,124,892,837	\$ 3,804,725,536	2,016,545	4,806,155,840	\$ 73,118,834,289
35	73,118,834,289	3,222,802,635	\$ 3,771,855,053	1,704,654	5,099,367,927	\$ 77,667,445,144
36	77,667,445,144	3,325,577,025	\$ 3,729,370,895	1,422,598	5,422,778,454	\$ 82,685,007,131
37	82,685,007,131	3,433,399,060	\$ 3,677,008,257	1,171,146	5,779,528,087	\$ 88,219,754,875
38	88,219,754,875	3,546,386,238	\$ 3,614,938,783	951,227	6,172,991,353	\$ 94,323,242,456
39	94,323,242,456	3,664,573,354	\$ 3,543,764,196	765,202	6,606,757,450	\$ 101,050,043,863
40	101,050,043,863	3,788,013,568	\$ 3,463,979,072	609,290	7,084,631,499	\$ 108,458,100,569
41	108,458,100,569	3,916,769,896	\$ 3,375,964,565	483,608	7,610,658,453	\$ 116,609,080,744
42	116,609,080,744	4,050,755,135	\$ 3,281,074,143	381,868	8,189,105,730	\$ 125,567,485,598
43	125,567,485,598	4,190,045,067	\$ 3,180,066,732	298,190	8,824,465,110	\$ 135,401,630,854
44	135,401,630,854	4,334,717,843	\$ 3,073,538,985	230,621	9,521,500,921	\$ 146,184,080,012
45	146,184,080,012	4,484,847,031	\$ 2,962,459,397	175,707	10,285,261,935	\$ 157,991,553,873
46	157,991,553,873	4,640,549,916	\$ 2,847,420,727	131,093	11,121,102,327	\$ 170,905,654,296
47	170,905,654,296	4,801,988,808	\$ 2,728,916,234	94,653	12,034,722,915	\$ 185,013,355,132
48	185,013,355,132	4,969,333,228	\$ 2,607,526,953	66,757	13,032,197,695	\$ 200,407,292,344
49	200,407,292,344	5,142,696,493	\$ 2,484,160,809	45,335	14,119,983,915	\$ 217,185,766,608
50	217,185,766,608	5,322,290,776	\$ 2,359,227,784	28,545	15,304,955,880	\$ 235,453,756,934



Single Discount Rate Development

Projection of Plan Fiduciary Net Position Beginning July 1, 2020 (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	235,453,756,934	5,508,294,886	\$ 2,233,288,449	16,556	16,594,448,979	\$ 255,323,195,794
52	255,323,195,794	5,700,924,861	\$ 2,106,734,991	8,897	17,996,292,440	\$ 276,913,669,207
53	276,913,669,207	5,900,369,300	\$ 1,980,144,458	3,849	19,518,843,978	\$ 300,352,734,178
54	300,352,734,178	6,106,847,818	\$ 1,853,950,451	1,499	21,171,025,218	\$ 325,776,655,264
55	325,776,655,264	6,320,572,839	\$ 1,728,683,926	531	22,962,363,763	\$ 353,330,907,409
56	353,330,907,409	6,541,786,060	\$ 1,604,785,456	195	24,903,036,042	\$ 383,170,943,860
57	383,170,943,860	6,770,745,649	\$ 1,482,660,330	17	27,003,918,738	\$ 415,462,947,900
58	415,462,947,900	7,007,721,613	\$ 1,362,745,878	-	29,276,638,922	\$ 450,384,562,558
59	450,384,562,558	7,252,991,869	\$ 1,245,541,259	-	31,733,624,000	\$ 488,125,637,168
60	488,125,637,168	7,506,846,585	\$ 1,131,553,120	-	34,388,155,975	\$ 528,889,086,607
61	528,889,086,607	7,769,586,215	\$ 1,021,301,380	-	37,254,431,339	\$ 572,891,802,782
62	572,891,802,782	8,041,521,733	\$ 915,348,055	-	40,347,623,887	\$ 620,365,600,347
63	620,365,600,347	8,322,974,993	\$ 814,256,294	-	43,683,952,342	\$ 671,558,271,389
64	671,558,271,389	8,614,279,118	\$ 718,531,680	-	47,280,756,217	\$ 726,734,775,043
65	726,734,775,043	8,915,778,887	\$ 628,625,640	-	51,156,578,981	\$ 786,178,507,270
66	786,178,507,270	9,227,831,148	\$ 544,902,884	-	55,331,258,080	\$ 850,192,693,615
67	850,192,693,615	9,550,805,238	\$ 467,646,113	-	59,826,022,285	\$ 919,101,875,025
68	919,101,875,025	9,885,083,422	\$ 397,059,569	-	64,663,595,587	\$ 993,253,494,465
69	993,253,494,465	10,231,061,341	\$ 333,253,123	-	69,868,308,826	\$ 1,073,019,611,509
70	1,073,019,611,509	10,589,148,488	\$ 276,218,064	-	75,466,220,562	\$ 1,158,798,762,495
71	1,158,798,762,495	10,959,768,685	\$ 225,847,170	-	81,485,246,611	\$ 1,251,017,930,621
72	1,251,017,930,621	11,343,360,589	\$ 181,973,182	-	87,955,296,644	\$ 1,350,134,614,672
73	1,350,134,614,672	11,740,378,210	\$ 144,328,669	-	94,908,420,402	\$ 1,456,639,084,614
74	1,456,639,084,614	12,151,291,447	\$ 112,557,196	-	102,378,965,212	\$ 1,571,056,784,078
75	1,571,056,784,078	12,576,586,648	\$ 86,226,656	-	110,403,743,733	\$ 1,693,950,887,803
76	1,693,950,887,803	13,016,767,181	\$ 64,838,773	-	119,022,212,659	\$ 1,825,925,028,870
77	1,825,925,028,870	13,472,354,032	\$ 47,840,487	-	128,276,663,264	\$ 1,967,626,205,679
78	1,967,626,205,679	13,943,886,423	\$ 34,643,518	-	138,212,424,229	\$ 2,119,747,872,813
79	2,119,747,872,813	14,431,922,448	\$ 24,643,415	-	148,878,077,377	\$ 2,283,033,229,223
80	2,283,033,229,223	14,937,039,734	\$ 17,249,042	-	160,325,686,849	\$ 2,458,278,706,765
81	2,458,278,706,765	15,459,836,124	\$ 11,918,890	-	172,611,042,078	\$ 2,646,337,666,077
82	2,646,337,666,077	16,000,930,389	\$ 8,173,760	-	185,793,916,088	\$ 2,848,124,338,793
83	2,848,124,338,793	16,560,962,952	\$ 5,606,661	-	199,938,341,131	\$ 3,064,618,036,216
84	3,064,618,036,216	17,140,596,656	\$ 3,882,614	-	215,112,903,334	\$ 3,296,867,653,591
85	3,296,867,653,591	17,740,517,539	\$ 2,739,270	-	231,391,057,994	\$ 3,545,996,489,854
86	3,545,996,489,854	18,361,435,653	\$ 1,980,089	-	248,851,467,231	\$ 3,813,207,412,649
87	3,813,207,412,649	19,004,085,900	\$ 1,468,430	-	267,578,361,770	\$ 4,099,788,391,888
88	4,099,788,391,888	19,669,228,907	\$ 1,113,769	-	287,661,928,789	\$ 4,407,118,435,816
89	4,407,118,435,816	20,357,651,919	\$ 859,005	-	309,198,727,919	\$ 4,736,673,956,648
90	4,736,673,956,648	21,070,169,736	\$ 669,067	-	332,292,137,256	\$ 5,090,035,594,573
91	5,090,035,594,573	21,807,625,677	\$ 522,719	-	357,052,831,362	\$ 5,468,895,528,893
92	5,468,895,528,893	22,570,892,575	\$ 407,907	-	383,599,293,236	\$ 5,875,065,306,797
93	5,875,065,306,797	23,360,873,815	\$ 316,769	-	412,058,362,534	\$ 6,310,484,226,377
94	6,310,484,226,377	24,178,504,399	\$ 244,137	-	442,565,822,472	\$ 6,777,228,309,111
95	6,777,228,309,111	25,024,752,053	\$ 186,341	-	475,267,027,978	\$ 7,277,519,902,800
96	7,277,519,902,800	25,900,618,375	\$ 140,587	-	510,317,577,957	\$ 7,813,737,958,545
97	7,813,737,958,545	26,807,140,018	\$ 104,803	-	547,884,034,726	\$ 8,388,429,028,486
98	8,388,429,028,486	27,745,389,918	\$ 77,038	-	588,144,693,920	\$ 9,004,319,035,287
99	9,004,319,035,287	28,716,478,566	\$ 55,516	-	631,290,408,397	\$ 9,664,325,866,733
100	9,664,325,866,733	29,721,555,315	\$ 39,055	-	677,525,469,889	\$ 10,371,572,852,883



Single Discount Rate Development

Present Values of Projected Benefit Payments Beginning July 1, 2020

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	\$ 17,385,480,476	\$ 1,656,031,807	\$ 1,656,031,807	\$ -	\$ 1,600,946,375	\$ -	\$ 1,600,946,375
2	18,401,083,561	1,750,995,164	1,750,995,164	-	1,582,010,203	-	1,582,010,203
3	19,412,314,598	1,842,846,921	1,842,846,921	-	1,556,072,463	-	1,556,072,463
4	20,425,079,791	1,936,747,363	1,936,747,363	-	1,528,374,388	-	1,528,374,388
5	21,439,501,794	2,031,109,802	2,031,109,802	-	1,497,981,337	-	1,497,981,337
6	22,456,525,311	2,127,565,543	2,127,565,543	-	1,466,466,583	-	1,466,466,583
7	23,475,422,090	2,224,338,992	2,224,338,992	-	1,432,868,780	-	1,432,868,780
8	24,496,790,907	2,322,748,824	2,322,748,824	-	1,398,375,854	-	1,398,375,854
9	25,519,160,834	2,420,152,939	2,420,152,939	-	1,361,697,692	-	1,361,697,692
10	26,546,583,976	2,517,679,504	2,517,679,504	-	1,323,898,093	-	1,323,898,093
11	27,580,101,105	2,615,799,509	2,615,799,509	-	1,285,508,014	-	1,285,508,014
12	28,620,695,730	2,713,165,057	2,713,165,057	-	1,246,128,336	-	1,246,128,336
13	29,671,242,048	2,810,324,824	2,810,324,824	-	1,206,311,029	-	1,206,311,029
14	30,733,999,492	2,905,803,210	2,905,803,210	-	1,165,695,716	-	1,165,695,716
15	31,812,954,829	2,998,275,203	2,998,275,203	-	1,124,104,578	-	1,124,104,578
16	32,914,090,640	3,089,810,083	3,089,810,083	-	1,082,637,914	-	1,082,637,914
17	34,041,194,745	3,178,157,967	3,178,157,967	-	1,040,742,159	-	1,040,742,159
18	35,200,971,877	3,262,420,021	3,262,420,021	-	998,444,121	-	998,444,121
19	36,401,979,798	3,342,543,884	3,342,543,884	-	956,042,570	-	956,042,570
20	37,653,383,008	3,418,032,490	3,418,032,490	-	913,676,641	-	913,676,641
21	38,965,921,266	3,487,709,076	3,487,709,076	-	871,310,222	-	871,310,222
22	40,352,189,533	3,551,852,642	3,551,852,642	-	829,284,827	-	829,284,827
23	41,825,488,433	3,610,451,055	3,610,451,055	-	787,819,024	-	787,819,024
24	43,399,986,563	3,663,061,961	3,663,061,961	-	747,008,407	-	747,008,407
25	45,091,396,889	3,710,059,278	3,710,059,278	-	707,095,861	-	707,095,861
26	46,916,270,544	3,751,091,799	3,751,091,799	-	668,145,983	-	668,145,983
27	48,892,881,555	3,785,178,961	3,785,178,961	-	630,109,908	-	630,109,908
28	51,042,175,521	3,811,396,537	3,811,396,537	-	592,966,623	-	592,966,623
29	53,387,745,131	3,830,411,599	3,830,411,599	-	556,939,191	-	556,939,191
30	55,953,919,007	3,842,424,400	3,842,424,400	-	522,136,303	-	522,136,303
31	58,766,814,103	3,846,391,173	3,846,391,173	-	488,481,623	-	488,481,623
32	61,855,877,901	3,841,995,670	3,841,995,670	-	456,003,183	-	456,003,183
33	65,253,175,481	3,828,204,081	3,828,204,081	-	424,641,375	-	424,641,375
34	68,994,527,693	3,804,725,536	3,804,725,536	-	394,427,131	-	394,427,131
35	73,118,834,289	3,771,855,053	3,771,855,053	-	365,438,807	-	365,438,807
36	77,667,445,144	3,729,370,895	3,729,370,895	-	337,684,766	-	337,684,766
37	82,685,007,131	3,677,008,257	3,677,008,257	-	311,162,118	-	311,162,118
38	88,219,754,875	3,614,938,783	3,614,938,783	-	285,896,793	-	285,896,793
39	94,323,242,456	3,543,764,196	3,543,764,196	-	261,932,492	-	261,932,492
40	101,050,043,863	3,463,979,072	3,463,979,072	-	239,285,312	-	239,285,312
41	108,458,100,569	3,375,964,565	3,375,964,565	-	217,949,001	-	217,949,001
42	116,609,080,744	3,281,074,143	3,281,074,143	-	197,965,390	-	197,965,390
43	125,567,485,598	3,180,066,732	3,180,066,732	-	179,318,741	-	179,318,741
44	135,401,630,854	3,073,538,985	3,073,538,985	-	161,973,660	-	161,973,660
45	146,184,080,012	2,962,459,397	2,962,459,397	-	145,906,386	-	145,906,386
46	157,991,553,873	2,847,420,727	2,847,420,727	-	131,065,913	-	131,065,913
47	170,905,654,296	2,728,916,234	2,728,916,234	-	117,393,633	-	117,393,633
48	185,013,355,132	2,607,526,953	2,607,526,953	-	104,833,326	-	104,833,326
49	200,407,292,344	2,484,160,809	2,484,160,809	-	93,339,719	-	93,339,719
50	217,185,766,608	2,359,227,784	2,359,227,784	-	82,846,255	-	82,846,255



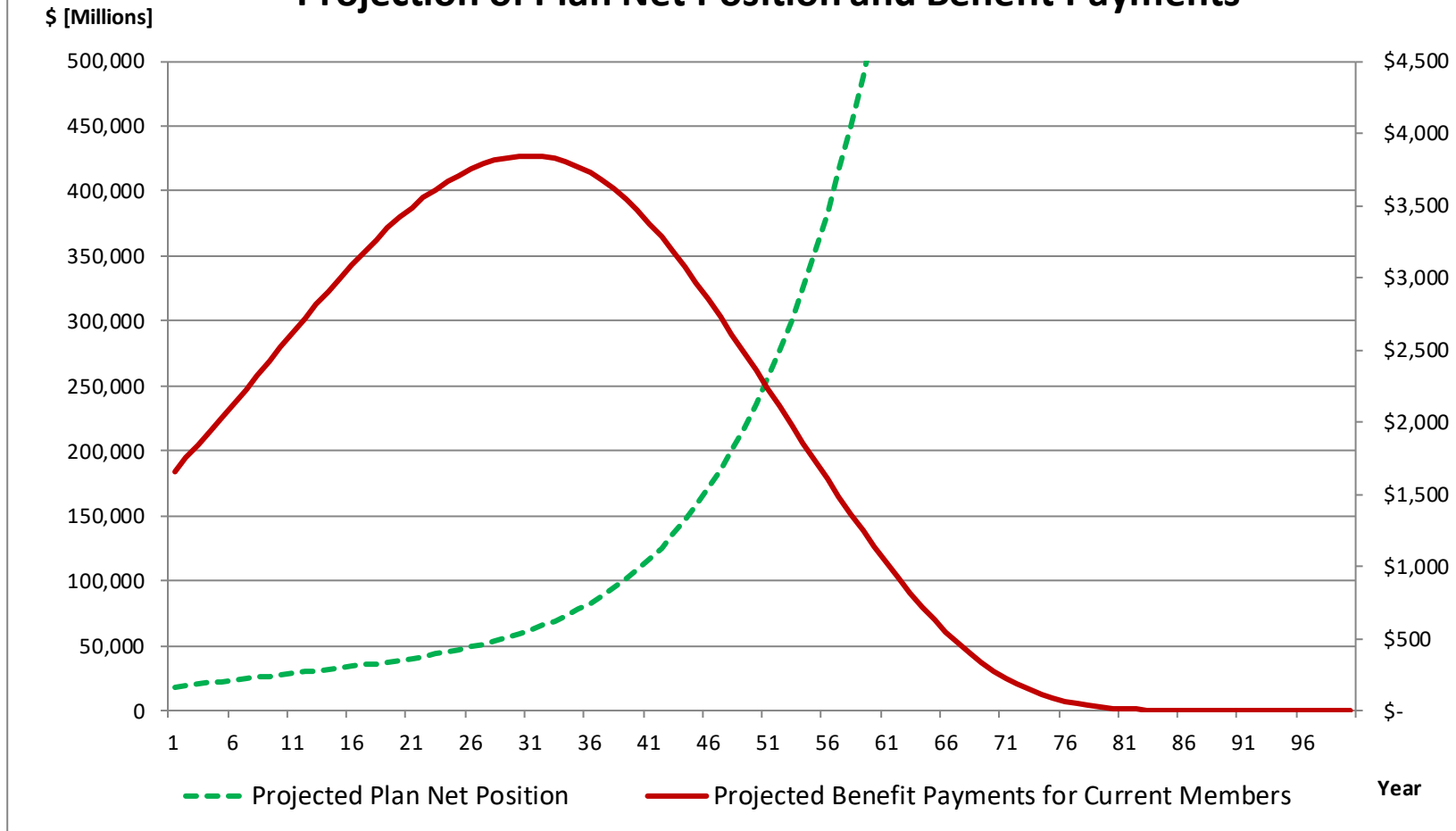
Single Discount Rate Development

PVs of Projected Benefit Payments Beginning July 1, 2020 (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	\$ 235,453,756,934	\$ 2,233,288,449	\$ 2,233,288,449	\$ -	\$ 73,293,261	\$ -	\$ 73,293,261
52	255,323,195,794	2,106,734,991	2,106,734,991	-	64,616,787	-	64,616,787
53	276,913,669,207	1,980,144,458	1,980,144,458	-	56,760,805	-	56,760,805
54	300,352,734,178	1,853,950,451	1,853,950,451	-	49,666,781	-	49,666,781
55	325,776,655,264	1,728,683,926	1,728,683,926	-	43,281,242	-	43,281,242
56	353,330,907,409	1,604,785,456	1,604,785,456	-	37,550,638	-	37,550,638
57	383,170,943,860	1,482,660,330	1,482,660,330	-	32,423,376	-	32,423,376
58	415,462,947,900	1,362,745,878	1,362,745,878	-	27,851,440	-	27,851,440
59	450,384,562,558	1,245,541,259	1,245,541,259	-	23,790,695	-	23,790,695
60	488,125,637,168	1,131,553,120	1,131,553,120	-	20,199,479	-	20,199,479
61	528,889,086,607	1,021,301,380	1,021,301,380	-	17,038,657	-	17,038,657
62	572,891,802,782	915,348,055	915,348,055	-	14,271,970	-	14,271,970
63	620,365,600,347	814,256,294	814,256,294	-	11,865,199	-	11,865,199
64	671,558,271,389	718,531,680	718,531,680	-	9,785,343	-	9,785,343
65	726,734,775,043	628,625,640	628,625,640	-	8,000,892	-	8,000,892
66	786,178,507,270	544,902,884	544,902,884	-	6,481,592	-	6,481,592
67	850,192,693,615	467,646,113	467,646,113	-	5,198,716	-	5,198,716
68	919,101,875,025	397,059,569	397,059,569	-	4,125,254	-	4,125,254
69	993,253,494,465	333,253,123	333,253,123	-	3,235,828	-	3,235,828
70	1,073,019,611,509	276,218,064	276,218,064	-	2,506,568	-	2,506,568
71	1,158,798,762,495	225,847,170	225,847,170	-	1,915,395	-	1,915,395
72	1,251,017,930,621	181,973,182	181,973,182	-	1,442,339	-	1,442,339
73	1,350,134,614,672	144,328,669	144,328,669	-	1,069,126	-	1,069,126
74	1,456,639,084,614	112,557,196	112,557,196	-	779,230	-	779,230
75	1,571,056,784,078	86,226,656	86,226,656	-	557,892	-	557,892
76	1,693,950,887,803	64,838,773	64,838,773	-	392,066	-	392,066
77	1,825,925,028,870	47,840,487	47,840,487	-	270,356	-	270,356
78	1,967,626,205,679	34,643,518	34,643,518	-	182,970	-	182,970
79	2,119,747,872,813	24,643,415	24,643,415	-	121,639	-	121,639
80	2,283,033,229,223	17,249,042	17,249,042	-	79,571	-	79,571
81	2,458,278,706,765	11,918,890	11,918,890	-	51,386	-	51,386
82	2,646,337,666,077	8,173,760	8,173,760	-	32,934	-	32,934
83	2,848,124,338,793	5,606,661	5,606,661	-	21,113	-	21,113
84	3,064,618,036,216	3,882,614	3,882,614	-	13,664	-	13,664
85	3,296,867,653,591	2,739,270	2,739,270	-	9,010	-	9,010
86	3,545,996,489,854	1,980,089	1,980,089	-	6,087	-	6,087
87	3,813,207,412,649	1,468,430	1,468,430	-	4,218	-	4,218
88	4,099,788,391,888	1,113,769	1,113,769	-	2,990	-	2,990
89	4,407,118,435,816	859,005	859,005	-	2,155	-	2,155
90	4,736,673,956,648	669,067	669,067	-	1,569	-	1,569
91	5,090,035,594,573	522,719	522,719	-	1,146	-	1,146
92	5,468,895,528,893	407,907	407,907	-	835	-	835
93	5,875,065,306,797	316,769	316,769	-	606	-	606
94	6,310,484,226,377	244,137	244,137	-	437	-	437
95	6,777,228,309,111	186,341	186,341	-	312	-	312
96	7,277,519,902,800	140,587	140,587	-	220	-	220
97	7,813,737,958,545	104,803	104,803	-	153	-	153
98	8,388,429,028,486	77,038	77,038	-	105	-	105
99	9,004,319,035,287	55,516	55,516	-	71	-	71
100	9,664,325,866,733	39,055	39,055	-	47	-	47
Totals	\$ 38,197,248,984	\$ -	\$ 38,197,248,984				



Projection of Plan Net Position and Benefit Payments



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, 2020. Pension Expense for each employer is determined on a proportionate share basis and is shown on page F-4.

A. Expense

1. Service Cost	\$ 626,699,489
2. Interest on the Total Pension Liability	2,164,804,653
3. Current-Period Benefit Changes	0
4. Employee Contributions (made negative for addition here)	(287,398,031)
5. Projected Earnings on Plan Investments (made negative for addition here)	(1,198,897,868)
6. Pension Plan Administrative Expense	17,782,865
7. Other Changes in Plan Fiduciary Net Position	0
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	664,754,884
9. Recognition of Outflow (Inflow) of Resources due to Assets	245,921,988
10. Total Pension Expense	\$ 2,233,667,979

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 2020 fiscal year, the expected remaining service lives of all employees was 755,325.69 years. Additionally, the plan membership (active employees and inactive employees) was 145,122. 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 2020 fiscal year is 5.2047 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, 2020

A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$	71,837,371
2. Assumption Changes (gains) or losses	\$	-
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		5.2047
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	\$	13,802,405
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$	-
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	\$	13,802,405
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	\$	58,034,966
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$	-
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	\$	58,034,966

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$	840,615,204
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	\$	168,123,041
3. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$	672,492,163



Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods for Fiscal Year Ending June 30, 2020

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	\$ 688,846,351	\$ 24,091,468	\$ 664,754,883
2. due to Assets	465,604,358	219,682,370	245,921,988
3. Total	\$ 1,154,450,709	\$ 243,773,838	\$ 910,676,871

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	\$ 146,553,306	\$ 23,314,962	\$ 123,238,344
2. Assumption Changes	542,293,045	776,506	541,516,539
3. Net Difference between projected and actual earnings on pension plan investments	465,604,358	219,682,370	245,921,988
4. Total	\$ 1,154,450,709	\$ 243,773,838	\$ 910,676,871

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	\$ 308,791,223	\$ 0	\$ 308,791,223
2. Assumption Changes	426,070,370	2,572,952	423,497,418
3. Net Difference between projected and actual earnings on pension plan investments	803,621,824	247,298,765	556,323,059
4. Total	\$ 1,538,483,417	\$ 249,871,717	\$ 1,288,611,700

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	\$ 518,196,571
2021	281,381,485
2022	287,656,851
2023	198,551,447
2024	2,825,346
Thereafter	0
Total	\$ 1,288,611,700



Recognition of Deferred Outflows and Inflows of Resources for Fiscal Year Ending June 30, 2020

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					
2015	(192,816,757)	5.5095	(17,831,042)	0	0.0000
2016	297,534,219	5.7626	51,631,941	39,374,514	0.7626
2017	61,179,390	5.6644	10,800,684	17,976,654	1.6644
2018	124,753,379	5.3882	23,153,073	55,294,160	2.3882
2019	221,473,495	5.3135	41,681,283	138,110,929	3.3135
2020	71,837,371	5.2047	13,802,405	58,034,966	4.2047
Total			123,238,344	308,791,223	
Deferred Outflow (Inflow) due to Assumption Changes					
2015	261,213,541	5.5095	24,156,146	0	0.0000
2016	2,915,922,677	5.7626	506,008,170	385,881,827	0.7626
2017	0	5.6644	0	0	1.6644
2018	0	5.3882	0	0	2.3882
2019	60,320,037	5.3135	11,352,223	37,615,591	3.3135
2020	0	5.2047	0	0	4.2047
Total			541,516,540	423,497,418	
Deferred Outflow (Inflow) due to Differences Between Projected and Actual Earnings on Plan Investments					
2015	534,455,207	5.0000	0	0	0.0000
2016	1,268,857,153	5.0000	253,771,429	0	0.0000
2017	(960,329,832)	5.0000	(192,065,967)	(192,065,964)	1.0000
2018	(138,082,010)	5.0000	(27,616,403)	(55,232,801)	2.0000
2019	218,549,437	5.0000	43,709,888	131,129,661	3.0000
2020	840,615,204	5.0000	168,123,041	672,492,163	4.0000
Total			245,921,988	556,323,059	



**Schedule of Employer Allocations
and Pension Amounts
At June 30, 2020
Exhibit 1**

Employer (1)	Proportionate Share as of June 30, 2020 (2)	Change in Proportioante Share (3)	Proportionate Share of Net Pension Liability as of June 30, 2020 7.00% (4)	Sensitivity Analysis		Proportionate Share of Pension Expense as of June 30, 2020 (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	55.83856351%	0.08945081%	8,546,804,293	10,979,531,325	6,541,250,817	1,209,260,790
City and County of Honolulu	19.07654392%	0.26448615%	2,919,908,343	3,797,307,096	2,196,576,012	470,905,612
County of Hawaii	4.54879870%	-0.16708333%	696,251,655	905,105,687	524,071,250	105,931,229
County of Maui	4.67283825%	0.09708772%	715,237,490	928,040,307	539,801,682	111,863,587
County of Kauai	2.11123951%	-0.02162385%	323,152,133	418,997,281	244,136,867	49,104,510
BWS City and County of Honolulu	0.86885324%	0.05860261%	132,989,070	170,790,555	101,825,319	18,606,707
DWS County of Hawaii	0.23056071%	0.00451584%	35,290,257	45,321,338	27,020,579	5,052,444
DOW County of Kauai	0.13579945%	-0.01926330%	20,785,838	26,694,110	15,915,027	3,268,547
HART	0.17260519%	-0.00978567%	26,419,426	33,929,018	20,228,478	3,622,181
University of Hawaii	12.34419751%	-0.29638699%	1,889,436,863	2,426,499,939	1,446,679,125	256,052,372



Schedule of Employer Allocations
and Pension Amounts
At June 30, 2020
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	101,738,818	435,770,791	240,346,036	49,403,314	827,258,959	0	136,004,622	114,272	26,950,635	163,069,529
City and County of Honolulu	119,401,703	164,394,909	79,196,016	47,215,381	410,208,009	0	48,959,141	1,622,604	18,587,590	69,169,335
County of Hawaii	27,810,166	39,078,718	18,907,047	6,322,283	92,118,214	0	11,654,812	374,540	32,702,576	44,731,928
County of Maui	25,375,029	39,558,822	19,532,602	15,459,009	99,925,462	0	11,878,495	325,008	9,781,867	21,985,370
County of Kauai	10,913,394	17,772,025	8,844,031	13,954,258	51,483,708	0	5,350,584	136,528	20,138,444	25,625,556
BWS City and County of Honolulu	1,488,024	6,763,208	3,743,080	8,268,083	20,262,395	0	2,113,443	0	7,036,558	9,150,001
DWS County of Hawaii	394,865	1,794,699	993,272	2,287,341	5,470,177	0	560,828	0	1,774,106	2,334,934
DOW County of Kauai	232,574	1,057,071	585,033	2,665,313	4,539,991	0	330,326	0	2,163,285	2,493,611
HART	295,609	1,343,570	743,595	762,608	3,145,382	0	419,854	0	1,759,533	2,179,387
University of Hawaii	21,141,041	96,088,011	53,179,658	550,597	170,959,307	0	30,026,660	0	25,993,593	56,020,253



**Schedule of Employer Allocations
and Pension Amounts
At June 30, 2020
Exhibit 3**

Employer	Deferred Outflows and (Inflows) to be Recognized in Future Years					
	Total Deferred Outflow and (Inflow) 2021	Total Deferred Outflow and (Inflow) 2022	Total Deferred Outflow and (Inflow) 2023	Total Deferred Outflows of 2024	Total Deferred Outflows of 2025	Total Deferred Outflows of Thereafter
(1)	(2)	(3)	(4)	(5)	(6)	(7)
State of Hawaii	267,873,525	136,921,863	148,123,580	108,960,994	2,309,468	-
City and County of Honolulu	128,184,476	81,089,268	80,216,319	49,937,680	1,610,931	-
County of Hawaii	23,462,251	10,656,820	9,008,939	5,002,316	(744,040)	-
County of Maui	29,698,978	17,840,770	17,293,222	12,531,362	575,760	-
County of Kauai	11,655,305	6,783,712	4,411,814	3,061,955	(54,634)	-
BWS City and County of Honolulu	3,826,250	2,388,660	2,055,799	2,511,712	329,973	-
DWS County of Hawaii	1,432,140	837,447	449,810	384,809	31,037	-
DOW County of Kauai	853,806	597,431	670,056	19,106	(94,019)	-
HART	703,630	186,873	55,446	64,255	(44,209)	-
University of Hawaii	50,506,210	24,078,641	25,371,866	16,077,258	(1,094,921)	-



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.

