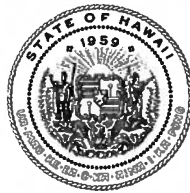


JOSH GREEN, M.D.  
GOVERNOR

SYLVIA LUKE  
LIEUTENANT GOVERNOR



SETH S. COLBY, Ph.D.  
ACTING DIRECTOR

SABRINA NASIR  
DEPUTY DIRECTOR

EMPLOYEES' RETIREMENT SYSTEM  
HAWAII EMPLOYER-UNION HEALTH BENEFITS TRUST FUND  
OFFICE OF THE PUBLIC DEFENDER

STATE OF HAWAII  
DEPARTMENT OF BUDGET AND FINANCE  
*Ka 'Oihana Mālama Mo'ohelu a Kālā*

P.O. BOX 150  
HONOLULU, HAWAII 96810-0150

ADMINISTRATIVE AND RESEARCH OFFICE  
BUDGET, PROGRAM PLANNING AND MANAGEMENT DIVISION  
FINANCIAL ADMINISTRATION DIVISION  
OFFICE OF FEDERAL AWARDS MANAGEMENT

December 15, 2025

The Honorable Ronald D. Kouchi  
President and Members  
of the Senate  
Thirty-Third State Legislature  
State Capitol, Room 409  
Honolulu, Hawaii 96813

The Honorable Nadine K. Nakamura  
Speaker and Members of the  
House of Representatives  
Thirty-Third State Legislature  
State Capitol, Room 431  
Honolulu, Hawaii 96813

Dear President Kouchi, Speaker Nakamura and Members of the Legislature:

For your information and consideration, I am transmitting a copy of the Actuarial Asset and Liability Stress Test 2025 report, as required by Act 85, Session Laws of Hawaii 2017. In accordance with Section 93-16, Hawaii Revised Statutes, a copy of this report has been transmitted to the Legislative Reference Bureau and the report may be viewed electronically at <http://ers.ehawaii.gov/resources/reports-to-legislature>.

Sincerely,

SETH S. COLBY, Ph.D.  
Acting Director of Finance

Enclosure

c: Legislative Reference Bureau

ec: Governor's Office: [Gov.ReportsDistribution@hawaii.gov](mailto:Gov.ReportsDistribution@hawaii.gov)  
Lieutenant Governor's Office: [LtGov.ReportsDistribution@hawaii.gov](mailto:LtGov.ReportsDistribution@hawaii.gov)  
Legislative Auditor: [auditors2@auditor.state.hi.us](mailto:auditors2@auditor.state.hi.us)  
Department of Budget and Finance: [DBFLeg.DIR@hawaii.gov](mailto:DBFLeg.DIR@hawaii.gov)



December 12, 2025

Board of Trustees  
Employees' Retirement System of  
The State of Hawaii  
City Financial Tower  
201 Merchant St., Ste. 1400  
Honolulu, HI 96813-2980

**Re: Stress Test Annual Report**

Dear Members of the Board:

The purpose of this report is to provide the Employees' Retirement System of the State of Hawaii (ERS) with the information it must submit to the legislature as required by ACT – 85 (2017). Act – 85 (2017) requires that the actuary of the ERS perform an annual stress test as defined by the legislation and described below. This stress test is based on the preliminary valuation results of ERS as of July 1, 2025.

**Requirements of Annual Stress Test Report**

The annual stress test must address the following scenarios:

1. A 30-year projection of the ERS's assets, liabilities, pension debt, service costs, employee contributions, employer contributions, net amortization, benefit payments, payroll, and funded ratio assuming the current actuarial assumptions are met, including a 7% return projected from the actuarial, or smoothed, value of assets. See Stress Test Exhibit 1.
2. Two 30-year projections of the same items above assuming the actual investment performance in future years is 2% less than the assumed rate of return, starting from the market value of assets as of the valuation date, but with two different contribution policies.
  - a. The first scenario shows the projected items assuming that the employer contribution rate in future years would increase if necessary to meet the current funding policy. In other words, if the funding period in a future year exceeds maximum funding period under the statute for the given valuation, the contribution rates would be adjusted to bring the funding period down to the maximum funding period (see discussion of maximum funding period later in this report). See Stress Test Exhibit 2A.
  - b. The second scenario shows the projected items assuming no change in the current statutory contribution rates. See Stress Test Exhibit 2B.

3. Two 30-year projections of the same items above assuming the actual investment performance in the first year is a negative 20% followed by a 20-year period where investment performance is 2% less than the assumed rate of return, but with two different contribution policies.
  - a. The first scenario shows the projected items assuming that the employer contribution rate in future years would increase if necessary to meet the current funding policy. In other words, if the funding period in a future year exceeds maximum funding period under the statute for the given valuation, the contribution rates would be adjusted to bring the funding period down to the maximum funding period (see discussion of maximum funding period later in this report). See Stress Test Exhibit 3A.
  - b. The second scenario shows the projected items assuming no change in the current statutory contribution rates. See Stress Test Exhibit 3B.
4. The estimated actuarial accrued liability, the total normal cost for each benefit tier, and the employer normal cost for each benefit tier under the current investment return assumption and using the 10-year average of the 30-year treasuries notes as of the valuation date. See Stress Test Exhibit 4.

### **Stress Test Summary Results**

The information required by the legislation is contained in the tables that follow this letter. The following is some brief commentary concerning the results themselves.

1. As shown in Stress Test Exhibit 1, the ERS is expected to be fully funded (100% funded ratio) in fiscal year ending 2046. **Important Note:** the Statutes governing the ERS contemplate that the employer contribution rates would be changed when the ERS is fully funded. However, because the statutes governing the stress test require the use of the same contribution pattern for Scenario's 1, 2B and 3B, we felt it would be inappropriate to change the contribution rates for Scenario #1 since the contribution rates would not change under the ERS statute in Scenarios 2B and 3B.
2. Under the first part of the 2<sup>nd</sup> Stress Test (see Stress Test Exhibit 2A) the employer contribution rates would remain constant at 24.00% of pay for All Other Employees and would gradually increase to 48.00% of pay for Police and Firefighters and remain at that level for the foreseeable future. As shown in both the Stress Test Exhibit 2a and Stress Test Exhibit 2B (Employer Contributions remain at statutory rates) the funded ratios would stay relatively stable in the mid to low 60's%, but over the next 30 years there would be no marked improvement in the funded ratio.



3. Under the first part of the 3<sup>rd</sup> Stress Test (see Stress Test Exhibit 3A) the employer contribution rates would increase over several years to 31.00% of pay and then remain constant for All Other Employees and increase over several years to 64.00% of pay for Police and Firefighters and remain at that level for the foreseeable future. As shown in Stress Test Exhibit 3B (Employer Contributions remain at statutory rates) the funded ratio would decline to the mid 30's% but the trust is never exhausted. The funded ratio would begin to slowly climb once the impact of the 20-year period of 5% returns ends.
4. The 10-year average of the 30-year treasury notes is 3.02% as of July 1, 2025.

Based on the information reviewed for this report, the stress test shows that the System is sustainable in the protracted low return environment of Scenario #2, but would require an increase in the Police and Fire contribution rate and the rates would need to be maintained for a much longer period of time than is currently expected. While we believe the likelihood of Scenario #3 occurring is remote, if it did occur it would require an increase in the employer contribution rates under the current statutes and the higher rates would be required for many years.

#### **Maximum Funding Period**

As the Board is aware, in 2024 Legislation was passed by the Legislature and signed by the Governor that gradually lowers the maximum funding period of ERS. With the new law the maximum funding period for the June 30, 2025 valuation is 24 years and that maximum will decrease by 1 each year in the future until it reaches 20 with the June 30, 2029 valuation. It will then remain at 20 years. While this new law is not expected to impact the ERS in consistent financial markets, it does impact the Stress Test because the Stress Test scenarios have severe underperformance which causes larger increases in the contribution rates than shown in stress tests from years prior to 2024.

#### **Disclosures**

The information contained in this report is based on the liabilities associated with the preliminary valuation results of the ERS as of June 30, 2025. The assets used in this report were estimated based on information provided by ERS. While the actual valuation results may be slightly different, it is not expected that those changes will have any material impact on the information contained herein.

Except as noted, the data, financial information, and actuarial methods and assumptions are those used in the June 30, 2025 actuarial valuation. These assumptions are detailed in the actuarial valuation report dated January 2026. The results of the actuarial valuation and this "Stress Test" are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. Based on the scope of this engagement, we have not performed analysis on the potential range of future measurements based on other factors. The actuarial calculations are intended to provide information for rational decision making.



### Temporary Hazardous Duty Pay

As you are aware there have been many settlements between the employers and the employee groups regarding Temporary Hazardous Duty Pay (THDP) as a result of employment during the COVID-19 period. If the payments to employees from the settlements occurred prior to April 1<sup>st</sup> 2025, then they are reflected in those employees' liabilities in this valuation. If the payments had not yet occurred then they will be reflected in the June 30, 2026 valuation. In addition, many retirees will have their benefits adjusted due to these settlements. For most retirees these adjustments had not occurred when the census data was prepared as of March 31, 2025. We will reflect the changes to the retirees' benefits when it is reflected in the census data provided for the actuarial valuation.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

Joe Newton is a member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

We look forward to discussing the results of this analysis with the Board.

Sincerely,



Lewis Ward  
Consultant



Joseph P. Newton  
Pension Market Leader and Actuary  
Enclosures



**Hawaii Employees Retirement System**  
**Stress Test Projections**  
(Dollar Amounts in \$ Millions)

Valuation Date	Market Value of Assets	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Normal Cost	Projected Employee Contributions	Projected Employer Contributions	Net Amortization	Benefit Payments	Covered Payroll	Funded Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
30-Jun-25	\$ 24,608	\$ 24,963	\$ 39,560	\$ 14,597	\$ 787	\$ 377	\$ 1,395	\$ 2	\$ 2,094	\$ 5,400	63.1%
30-Jun-26	26,356	26,356	40,955	14,599	801	394	1,427	(34)	2,218	5,528	64.4%
30-Jun-27	27,767	27,767	42,333	14,566	819	412	1,465	(75)	2,336	5,681	65.6%
30-Jun-28	29,212	29,212	43,704	14,491	838	430	1,505	(120)	2,454	5,838	66.8%
30-Jun-29	30,697	30,697	45,068	14,371	858	449	1,546	(170)	2,570	6,002	68.1%
30-Jun-30	32,226	32,226	46,428	14,201	879	468	1,589	(225)	2,686	6,172	69.4%
30-Jun-31	33,805	33,805	47,782	13,977	900	488	1,633	(285)	2,804	6,347	70.7%
30-Jun-32	35,438	35,438	49,131	13,692	922	508	1,678	(350)	2,922	6,527	72.1%
30-Jun-33	37,130	37,130	50,473	13,343	944	529	1,725	(422)	3,040	6,713	73.6%
30-Jun-34	38,888	38,888	51,810	12,922	967	550	1,775	(500)	3,157	6,905	75.1%
30-Jun-35	40,720	40,720	53,142	12,422	991	573	1,826	(586)	3,275	7,104	76.6%
30-Jun-36	42,634	42,634	54,471	11,836	1,016	595	1,879	(679)	3,393	7,308	78.3%
30-Jun-37	44,637	44,637	55,795	11,158	1,042	618	1,933	(780)	3,508	7,520	80.0%
30-Jun-38	46,740	46,740	57,119	10,379	1,069	642	1,990	(889)	3,622	7,741	81.8%
30-Jun-39	48,955	48,955	58,445	9,490	1,098	666	2,049	(1,008)	3,732	7,971	83.8%
30-Jun-40	51,297	51,297	59,779	8,482	1,128	691	2,111	(1,137)	3,839	8,211	85.8%
30-Jun-41	53,780	53,780	61,125	7,345	1,160	717	2,175	(1,277)	3,945	8,461	88.0%
30-Jun-42	56,420	56,420	62,489	6,069	1,193	743	2,241	(1,428)	4,048	8,720	90.3%
30-Jun-43	59,232	59,232	63,874	4,642	1,228	769	2,310	(1,590)	4,150	8,988	92.7%
30-Jun-44	62,234	62,234	65,286	3,052	1,264	796	2,382	(1,766)	4,250	9,267	95.3%
30-Jun-45	65,443	65,443	66,730	1,287	1,302	824	2,456	(1,956)	4,349	9,554	98.1%
30-Jun-46	68,877	68,877	68,209	(668)	1,341	852	2,532	(2,161)	4,446	9,852	101.0%
30-Jun-47	72,559	72,559	69,731	(2,828)	1,382	881	2,612	(2,382)	4,542	10,161	104.1%
30-Jun-48	76,510	76,510	71,301	(5,209)	1,424	910	2,694	(2,619)	4,637	10,479	107.3%
30-Jun-49	80,752	80,752	72,925	(7,827)	1,468	940	2,778	(2,875)	4,734	10,808	110.7%
30-Jun-50	85,309	85,309	74,607	(10,702)	1,514	971	2,865	(3,151)	4,832	11,147	114.3%
30-Jun-51	90,204	90,204	76,352	(13,852)	1,561	1,002	2,955	(3,448)	4,932	11,495	118.1%
30-Jun-52	95,462	95,462	78,162	(17,300)	1,610	1,035	3,047	(3,768)	5,035	11,854	122.1%
30-Jun-53	101,109	101,109	80,041	(21,067)	1,660	1,068	3,142	(4,113)	5,140	12,223	126.3%
30-Jun-54	107,173	107,173	81,993	(25,179)	1,711	1,101	3,239	(4,482)	5,250	12,602	130.7%
30-Jun-55	113,681	113,681	84,020	(29,661)	1,764	1,137	3,339	(4,881)	5,363	12,992	135.3%





## Hawaii Employees' Retirement System

Stress Test Exhibit 2A - Actual Returns are 5% (2% Less than Assumed)

Scenario A - Contribution Rates Adjusted if Necessary to Keep Future Valuations' Funding Periods at Maximum Funding Period or Less  
(Dollar Amounts in \$ Millions)

Valuation Date	Market Value of Assets	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded		Normal Cost	Projected Employee Contributions	Projected Employer Contributions	Net Amortization	Benefit Payments	Covered Payroll	Funded Ratio
				Actuarial Accrued Liability								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
30-Jun-25	\$ 24,608	\$ 24,963	\$ 39,560	\$ 14,597	\$ 787	\$ 377	\$ 1,395	\$ 2	\$ 2,094	\$ 5,400	63.1%	
30-Jun-26	25,487	26,080	40,955	14,875	801	394	1,433	(20)	2,218	5,528	63.7%	
30-Jun-27	26,338	27,096	42,333	15,237	819	412	1,477	(40)	2,336	5,681	64.0%	
30-Jun-28	27,173	28,007	43,704	15,697	838	430	1,523	(55)	2,454	5,838	64.1%	
30-Jun-29	27,995	28,867	45,068	16,201	858	449	1,571	(68)	2,570	6,002	64.1%	
30-Jun-30	28,808	29,711	46,428	16,717	879	468	1,627	(88)	2,686	6,172	64.0%	
30-Jun-31	29,616	30,548	47,782	17,234	900	488	1,672	(97)	2,804	6,347	63.9%	
30-Jun-32	30,411	31,370	49,131	17,761	922	508	1,724	(112)	2,922	6,527	63.8%	
30-Jun-33	31,198	32,182	50,473	18,291	944	529	1,773	(124)	3,040	6,713	63.8%	
30-Jun-34	31,973	32,983	51,810	18,827	967	550	1,823	(137)	3,157	6,905	63.7%	
30-Jun-35	32,739	33,776	53,142	19,367	991	573	1,876	(152)	3,275	7,104	63.6%	
30-Jun-36	33,500	34,561	54,471	19,909	1,016	595	1,930	(167)	3,393	7,308	63.4%	
30-Jun-37	34,255	35,342	55,795	20,453	1,042	618	1,986	(184)	3,508	7,520	63.3%	
30-Jun-38	35,011	36,122	57,119	20,997	1,069	642	2,044	(202)	3,622	7,741	63.2%	
30-Jun-39	35,770	36,906	58,445	21,539	1,098	666	2,105	(223)	3,732	7,971	63.1%	
30-Jun-40	36,541	37,702	59,779	22,076	1,128	691	2,168	(245)	3,839	8,211	63.1%	
30-Jun-41	37,331	38,517	61,125	22,608	1,160	717	2,234	(270)	3,945	8,461	63.0%	
30-Jun-42	38,144	39,356	62,489	23,133	1,193	743	2,303	(296)	4,048	8,720	63.0%	
30-Jun-43	38,988	40,226	63,874	23,648	1,228	769	2,373	(325)	4,150	8,988	63.0%	
30-Jun-44	39,868	41,134	65,286	24,152	1,264	796	2,447	(356)	4,250	9,267	63.0%	
30-Jun-45	40,792	42,086	66,730	24,644	1,302	824	2,523	(390)	4,349	9,554	63.1%	
30-Jun-46	41,765	43,089	68,209	25,120	1,341	852	2,602	(427)	4,446	9,852	63.2%	
30-Jun-47	42,796	44,151	69,731	25,580	1,382	881	2,683	(467)	4,542	10,161	63.3%	
30-Jun-48	43,891	45,280	71,301	26,021	1,424	910	2,767	(509)	4,637	10,479	63.5%	
30-Jun-49	45,058	46,482	72,925	26,443	1,468	940	2,854	(555)	4,734	10,808	63.7%	
30-Jun-50	46,304	47,764	74,607	26,843	1,514	971	2,943	(604)	4,832	11,147	64.0%	
30-Jun-51	47,633	49,134	76,352	27,218	1,561	1,002	3,035	(657)	4,932	11,495	64.4%	
30-Jun-52	49,051	50,594	78,162	27,568	1,610	1,035	3,130	(713)	5,035	11,854	64.7%	
30-Jun-53	50,563	52,152	80,041	27,890	1,660	1,068	3,227	(774)	5,140	12,223	65.2%	
30-Jun-54	52,175	53,812	81,993	28,181	1,711	1,101	3,328	(838)	5,250	12,602	65.6%	
30-Jun-55	53,891	55,579	84,020	28,441	1,764	1,137	3,431	(908)	5,363	12,992	66.2%	



**Hawaii Employees' Retirement System**  
**Stress Test Exhibit 2B - Actual Returns are 5% (2% Less than Assumed)**  
**Scenario B - Contribution Rates Kept at Current Statutory Rates**  
(Dollar Amounts in \$ Millions)

Valuation Date	Market Value of Assets	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded		Normal Cost	Projected Employee Contributions	Projected Employer Contributions	Net Amortization	Benefit Payments	Covered Payroll	Funded Ratio
				Actuarial Accrued Liability								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
30-Jun-25	\$ 24,608	\$ 24,963	\$ 39,560	\$ 14,597	\$ 787	\$ 377	\$ 1,395	\$ 2	\$ 2,094	\$ 5,400	63.1%	
30-Jun-26	25,487	26,080	40,955	14,875	801	394	1,427	(14)	2,218	5,528	63.7%	
30-Jun-27	26,332	27,089	42,333	15,244	819	412	1,465	(27)	2,336	5,681	64.0%	
30-Jun-28	27,155	27,988	43,704	15,716	838	430	1,505	(35)	2,454	5,838	64.0%	
30-Jun-29	27,957	28,828	45,068	16,240	858	449	1,546	(39)	2,570	6,002	64.0%	
30-Jun-30	28,742	29,644	46,428	16,783	879	468	1,589	(44)	2,686	6,172	63.9%	
30-Jun-31	29,508	30,438	47,782	17,344	900	488	1,633	(49)	2,804	6,347	63.7%	
30-Jun-32	30,258	31,213	49,131	17,917	922	508	1,678	(54)	2,922	6,527	63.5%	
30-Jun-33	30,990	31,970	50,473	18,503	944	529	1,725	(60)	3,040	6,713	63.3%	
30-Jun-34	31,706	32,710	51,810	19,100	967	550	1,775	(68)	3,157	6,905	63.1%	
30-Jun-35	32,410	33,438	53,142	19,704	991	573	1,826	(76)	3,275	7,104	62.9%	
30-Jun-36	33,103	34,154	54,471	20,316	1,016	595	1,879	(85)	3,393	7,308	62.7%	
30-Jun-37	33,786	34,860	55,795	20,935	1,042	618	1,933	(96)	3,508	7,520	62.5%	
30-Jun-38	34,464	35,560	57,119	21,558	1,069	642	1,990	(107)	3,622	7,741	62.3%	
30-Jun-39	35,140	36,259	58,445	22,186	1,098	666	2,049	(120)	3,732	7,971	62.0%	
30-Jun-40	35,822	36,964	59,779	22,815	1,128	691	2,111	(134)	3,839	8,211	61.8%	
30-Jun-41	36,517	37,681	61,125	23,445	1,160	717	2,175	(150)	3,945	8,461	61.6%	
30-Jun-42	37,229	38,415	62,489	24,074	1,193	743	2,241	(167)	4,048	8,720	61.5%	
30-Jun-43	37,964	39,173	63,874	24,701	1,228	769	2,310	(186)	4,150	8,988	61.3%	
30-Jun-44	38,729	39,962	65,286	25,324	1,264	796	2,382	(207)	4,250	9,267	61.2%	
30-Jun-45	39,529	40,787	66,730	25,943	1,302	824	2,456	(230)	4,349	9,554	61.1%	
30-Jun-46	40,370	41,654	68,209	26,556	1,341	852	2,532	(255)	4,446	9,852	61.1%	
30-Jun-47	41,260	42,571	69,731	27,160	1,382	881	2,612	(282)	4,542	10,161	61.1%	
30-Jun-48	42,206	43,545	71,301	27,756	1,424	910	2,694	(311)	4,637	10,479	61.1%	
30-Jun-49	43,213	44,583	72,925	28,342	1,468	940	2,778	(343)	4,734	10,808	61.1%	
30-Jun-50	44,288	45,691	74,607	28,916	1,514	971	2,865	(378)	4,832	11,147	61.2%	
30-Jun-51	45,437	46,873	76,352	29,478	1,561	1,002	2,955	(415)	4,932	11,495	61.4%	
30-Jun-52	46,662	48,135	78,162	30,026	1,610	1,035	3,047	(455)	5,035	11,854	61.6%	
30-Jun-53	47,970	49,482	80,041	30,559	1,660	1,068	3,142	(499)	5,140	12,223	61.8%	
30-Jun-54	49,364	50,919	81,993	31,075	1,711	1,101	3,239	(544)	5,250	12,602	62.1%	
30-Jun-55	50,849	52,448	84,020	31,573	1,764	1,137	3,339	(595)	5,363	12,992	62.4%	





# Hawaii Employees' Retirement System

## Stress Test Exhibit 3A - Negative 20% Return Followed by 20-Year Period with 5% Returns

Scenario A - Contribution Rates Adjusted if Necessary to Keep Future Valuations' Funding Periods at Maximum Funding Period or Less  
(Dollar Amounts in \$ Millions)

Valuation Date	Market Value of Assets	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded		Normal Cost	Projected Employee Contributions	Projected Employer Contributions	Net Amortization	Benefit Payments	Covered Payroll	Funded Ratio
				Actuarial Accrued Liability								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
30-Jun-25	\$ 24,608	\$ 24,963	\$ 39,560	\$ 14,597	\$ 787	\$ 377	\$ 1,395	\$ 2	\$ 2,094	\$ 5,400	63.1%	
30-Jun-26	19,378	24,553	40,955	16,402	801	394	1,433	86	2,218	5,528	60.0%	
30-Jun-27	19,923	23,884	42,333	18,449	819	412	1,603	55	2,336	5,681	56.4%	
30-Jun-28	20,567	23,100	43,704	20,604	838	430	1,830	(29)	2,454	5,838	52.9%	
30-Jun-29	21,373	22,336	45,068	22,732	858	449	2,066	(123)	2,570	6,002	49.6%	
30-Jun-30	22,361	23,193	46,428	23,234	879	468	2,123	(144)	2,686	6,172	50.0%	
30-Jun-31	23,356	24,128	47,782	23,654	900	488	2,181	(174)	2,804	6,347	50.5%	
30-Jun-32	24,359	25,125	49,131	24,006	922	508	2,239	(209)	2,922	6,527	51.1%	
30-Jun-33	25,372	26,162	50,473	24,312	944	529	2,303	(251)	3,040	6,713	51.8%	
30-Jun-34	26,399	27,219	51,810	24,591	967	550	2,369	(298)	3,157	6,905	52.5%	
30-Jun-35	27,446	28,298	53,142	24,844	991	573	2,437	(349)	3,275	7,104	53.3%	
30-Jun-36	28,518	29,403	54,471	25,067	1,016	595	2,507	(403)	3,393	7,308	54.0%	
30-Jun-37	29,616	30,536	55,795	25,259	1,042	618	2,580	(462)	3,508	7,520	54.7%	
30-Jun-38	30,748	31,704	57,119	25,414	1,069	642	2,656	(526)	3,622	7,741	55.5%	
30-Jun-39	31,922	32,915	58,445	25,530	1,098	666	2,735	(595)	3,732	7,971	56.3%	
30-Jun-40	33,146	34,177	59,779	25,602	1,128	691	2,817	(670)	3,839	8,211	57.2%	
30-Jun-41	34,431	35,501	61,125	25,624	1,160	717	2,903	(750)	3,945	8,461	58.1%	
30-Jun-42	35,785	36,896	62,489	25,593	1,193	743	2,992	(837)	4,048	8,720	59.0%	
30-Jun-43	37,216	38,372	63,874	25,502	1,228	769	3,084	(930)	4,150	8,988	60.1%	
30-Jun-44	38,736	39,938	65,286	25,348	1,264	796	3,179	(1,030)	4,250	9,267	61.2%	
30-Jun-45	40,354	41,604	66,730	25,125	1,302	824	3,278	(1,137)	4,349	9,554	62.3%	
30-Jun-46	42,079	43,381	68,209	24,828	1,341	852	3,380	(1,253)	4,446	9,852	63.6%	
30-Jun-47	44,763	45,491	69,731	24,240	1,382	881	3,486	(1,391)	4,542	10,161	65.2%	
30-Jun-48	47,673	47,979	71,301	23,322	1,424	910	3,595	(1,554)	4,637	10,479	67.3%	
30-Jun-49	50,829	50,893	72,925	22,032	1,468	940	3,708	(1,747)	4,734	10,808	69.8%	
30-Jun-50	54,254	54,280	74,607	20,327	1,514	971	3,824	(1,971)	4,832	11,147	72.8%	
30-Jun-51	57,968	57,977	76,352	18,375	1,561	1,002	3,944	(2,215)	4,932	11,495	75.9%	
30-Jun-52	61,992	61,995	78,162	16,167	1,610	1,035	4,067	(2,480)	5,035	11,854	79.3%	
30-Jun-53	66,352	66,353	80,041	13,689	1,660	1,068	4,193	(2,767)	5,140	12,223	82.9%	
30-Jun-54	71,071	71,071	81,993	10,922	1,711	1,101	4,323	(3,077)	5,250	12,602	86.7%	
30-Jun-55	76,175	76,175	84,020	7,846	1,764	1,137	4,457	(3,412)	5,363	12,992	90.7%	



**Hawaii Employees' Retirement System**  
**Stress Test Exhibit 3B - Negative 20% Return Followed by 20-Year Period with 5% Returns**  
**Scenario B - Contribution Rates Kept at Current Statutory Rates**  
(Dollar Amounts in \$ Millions)

Valuation Date	Market Value of Assets	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded		Normal Cost	Projected Employee Contributions	Projected Employer Contributions	Net Amortization	Benefit Payments	Covered Payroll	Funded Ratio
				Actuarial Accrued Liability								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
30-Jun-25	\$ 24,608	\$ 24,963	\$ 39,560	\$ 14,597	\$ 787	\$ 377	\$ 1,395	\$ 2	\$ 2,094	\$ 5,400	63.1%	
30-Jun-26	19,378	24,553	40,955	16,402	801	394	1,427	93	2,218	5,528	60.0%	
30-Jun-27	19,917	23,878	42,333	18,455	819	412	1,465	197	2,336	5,681	56.4%	
30-Jun-28	20,419	22,951	43,704	20,753	838	430	1,505	318	2,454	5,838	52.5%	
30-Jun-29	20,885	21,842	45,068	23,226	858	449	1,546	450	2,570	6,002	48.5%	
30-Jun-30	21,316	22,133	46,428	24,295	879	468	1,589	482	2,686	6,172	47.7%	
30-Jun-31	21,711	22,454	47,782	25,329	900	488	1,633	509	2,804	6,347	47.0%	
30-Jun-32	22,071	22,789	49,131	26,342	922	508	1,678	536	2,922	6,527	46.4%	
30-Jun-33	22,394	23,115	50,473	27,358	944	529	1,725	559	3,040	6,713	45.8%	
30-Jun-34	22,680	23,410	51,810	28,400	967	550	1,775	583	3,157	6,905	45.2%	
30-Jun-35	22,933	23,671	53,142	29,472	991	573	1,826	607	3,275	7,104	44.5%	
30-Jun-36	23,152	23,898	54,471	30,572	1,016	595	1,879	633	3,393	7,308	43.9%	
30-Jun-37	23,337	24,091	55,795	31,704	1,042	618	1,933	658	3,508	7,520	43.2%	
30-Jun-38	23,493	24,253	57,119	32,866	1,069	642	1,990	685	3,622	7,741	42.5%	
30-Jun-39	23,621	24,387	58,445	34,058	1,098	666	2,049	711	3,732	7,971	41.7%	
30-Jun-40	23,727	24,497	59,779	35,281	1,128	691	2,111	739	3,839	8,211	41.0%	
30-Jun-41	23,817	24,591	61,125	36,534	1,160	717	2,175	767	3,945	8,461	40.2%	
30-Jun-42	23,893	24,671	62,489	37,818	1,193	743	2,241	795	4,048	8,720	39.5%	
30-Jun-43	23,962	24,742	63,874	39,132	1,228	769	2,310	824	4,150	8,988	38.7%	
30-Jun-44	24,026	24,809	65,286	40,477	1,264	796	2,382	854	4,250	9,267	38.0%	
30-Jun-45	24,091	24,876	66,730	41,853	1,302	824	2,456	884	4,349	9,554	37.3%	
30-Jun-46	24,161	24,948	68,209	43,262	1,341	852	2,532	914	4,446	9,852	36.6%	
30-Jun-47	24,713	25,148	69,731	44,583	1,382	881	2,612	937	4,542	10,161	36.1%	
30-Jun-48	25,314	25,496	71,301	45,805	1,424	910	2,694	952	4,637	10,479	35.8%	
30-Jun-49	25,972	26,011	72,925	46,914	1,468	940	2,778	957	4,734	10,808	35.7%	
30-Jun-50	26,695	26,711	74,607	47,896	1,514	971	2,865	951	4,832	11,147	35.8%	
30-Jun-51	27,487	27,492	76,352	48,860	1,561	1,002	2,955	942	4,932	11,495	36.0%	
30-Jun-52	28,354	28,356	78,162	49,806	1,610	1,035	3,047	930	5,035	11,854	36.3%	
30-Jun-53	29,303	29,304	80,041	50,737	1,660	1,068	3,142	914	5,140	12,223	36.6%	
30-Jun-54	30,341	30,341	81,993	51,652	1,711	1,101	3,239	896	5,250	12,602	37.0%	
30-Jun-55	31,471	31,472	84,020	52,549	1,764	1,137	3,339	873	5,363	12,992	37.5%	



## Hawaii Employees' Retirement System

### Stress Test Exhibit 4 - Comparison of Cost Items at Current Investment Return Assumption (7.00%) and 10-Year Average of 30-Year Treasuries (3.02%)

#### All Other Employees

	<u>Valuation Assumptions</u>		<u>10-Year Average of 30-Year Treasuries</u>	
	Hired Prior to <u>July 1, 2012</u>	Hired After <u>June 30, 2012</u>	Hired Prior to <u>July 1, 2012</u>	Hired After <u>June 30, 2012</u>
Membership Tier				
Actuarial Accrued Liability	\$29,103	\$2,412	\$48,432	\$5,588
Total Normal Cost %	12.85%	12.23%	39.26%	32.03%
Employer Normal Cost %	8.28%	4.16%	34.69%	23.96%

#### Police and Fire Employees

	<u>Valuation Assumptions</u>		<u>10-Year Average of 30-Year Treasuries</u>	
	Hired Prior to <u>July 1, 2012</u>	Hired After <u>June 30, 2012</u>	Hired Prior to <u>July 1, 2012</u>	Hired After <u>June 30, 2012</u>
Membership Tier				
Actuarial Accrued Liability	\$7,707	\$338	\$13,226	\$819
Total Normal Cost %	29.52%	22.99%	84.61%	64.60%
Employer Normal Cost %	17.32%	8.79%	72.41%	50.40%

Dollar Amounts are in \$ Millions

