Hawaii Employer-Union Health Benefits Trust Fund Retiree Health Care Plan

Aggregate Actuarial Valuation Report as of July 1, 2017

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January 15, 2018

Mr. Derek Mizuno
EUTF Administrator
Hawaii Employer-Union Health Benefits Trust Fund
201 Merchant St.; Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Mizuno:

Submitted in this report are the results of an actuarial valuation for the Hawaii Employer-Union Health Benefits Trust Fund (EUTF) of the liabilities associated with the employer financed retiree health benefits provided through the EUTF. The date of the valuation was July 1, 2017. The annual required contribution has been calculated for the fiscal year beginning July 1, 2018.

The actuarial calculations were prepared to determine the annual required employer contributions to satisfy the requirements of ACT 268, SLH 2013 ("ACT 268"). Determinations of the liability associated with the benefits described in this report for purposes other than satisfying the funding requirements of ACT 268 may produce significantly different results. This report may be provided to parties other than the EUTF only in its entirety and only with the permission of the EUTF.

The valuation was based upon information, furnished by the EUTF and the Employees' Retirement System of the State of Hawaii (ERS), concerning retiree health benefits, members' census and financial data. Data was checked for internal consistency but was not otherwise audited. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

The signing actuaries are independent of the plan sponsor. To the best of our knowledge, this report is complete and accurate and was made in accordance with generally recognized actuarial methods. Joseph Newton and Mehdi Riazi are members of the American Academy of Actuaries and meet the Qualification Standards of the Academy of Actuaries to render the actuarial opinion herein.

Respectfully submitted,

Joseph P. Newton, FSA, FCA, EA	Lewis Ward	Mehdi Riazi, FSA, EA
Pension Market Leader	Consultant	Consultant

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SECTION A

EXECUTIVE SUMMARY

The following table summarizes the key results of the July 1, 2017 Other Post-Employment Benefits (OPEB) valuation for the EUTF.

Executive Summary		
	July 1, 2017	**July 1, 2015**
Membership		
Number of		
-Retirees	47,127	45,234
-Deferred Inactives	9,672	6,639
-Active Employees	65,670	66,869
Covered Payroll*	$ 4,278,034,000	$ 4,161,386,000
Actuarial Summary		
Discount Rate	7.0%	7.0%
Payroll Growth Rate	3.5%	3.5%
Present Value of Benefits	$ 16,527,947,000	$ 15,041,417,000
Actuarial Accrued Liability	$ 13,923,637,000	$ 12,615,528,000
Market Value of Assets	$ 1,777,674,000	$ 843,520,000
Unfunded Actuarial Accrued Liability	$ 12,145,963,000	$ 11,772,008,000
Funded Ratio	12.8%	6.7%
ARC as % of Payroll	24.1%	23.2%
Fiscal Year Ending	June 30, 2019	June 30, 2017
ACT 268 Minimum Contribution Summary		
Fiscal Year Ending	June 30, 2019	June 30, 2017
Annual Required Contribution (ARC)	$ 1,067,529,000	$ 1,001,042,000
Projected pay-as-you-go benefits	N/A	$ (489,749,000)
OPEB Trust Contribution to Fully Fund ARC	N/A	$ 511,293,000
ACT 268 Phase-In	100%	60%
Minimum OPEB Trust Contribution	**$ 1,067,529,000**	**$ 306,777,000**
Fiscal Year Ending		June 30, 2018
Annual Required Contribution (ARC)		$ 1,036,080,000
Projected pay-as-you-go benefits		$ (541,366,000)
OPEB Trust Contribution to Fully Fund ARC		$ 494,714,000
ACT 268 Phase-In		80%
Minimum OPEB Trust Contribution		**$ 395,772,000**

*The Covered Payroll for the June 30, 2017 valuation is equal to the projected payroll for FYE June 30, 2018.

This report provides the minimum OPEB trust contributions required to satisfy the funding requirements of ACT 268 by the participating employers. The Annual Required Contributions (ARC) developed in this report are for the fiscal years ending June 30, 2019. Subsequently, the contribution determined by each valuation will be applicable for the fiscal year which begins one year after the valuation date. The one year lag between the valuation date and the applicable fiscal year will allow appropriate time for budgeting and management of the appropriations.

Prior to July 1, 2017, the EUTF OPEB plan completed actuarial valuation reports biennially. Act 093, SLH 2017, requires the EUTF OPEB plan to complete actuarial valuation reports annually, beginning July 1, 2017.

Section C provides a 30-year projection of liability and contribution information which should be useful to management for the operation of the OPEB program.

Agent Multiple-Employer Plans

The EUTF OPEB plan operates as an **agent multiple-employer plan**. For agent multiple employer plans, separate asset accounts are maintained for each employer so that the employer's contributions provide benefits only for the employees of that employer. A separate actuarial valuation is performed for each individual employer's plan to determine the employer's periodic contribution rate and other information for the individual plan.

In a cost-sharing arrangement, such as the Employees' Retirement System of the State of Hawaii (ERS), the plan's assets can be used to pay the benefits for the retirees of any participating employer. By contrast, the assets of the participating government employers in an *agent multiple-employer plan* are pooled for investment purposes but separate accounts are maintained for each individual employer. As such, each employer's assets at EUTF can only be used to pay benefits for that employer's retirees. Each employer's unfunded actuarial accrued liability and annual required contribution for retiree health benefits will be determined based solely on that employer's membership and assets.

ACT 268

ACT 304, SLH 2012 (ACT 304), created a separate trust fund (The OPEB Trust), as of June 30, 2013, specifically for pre-funding the participating employers OPEB benefits. Previous pre-funding contributions and related net investment earnings were transferred to each employer's respective OPEB Trust account. As required by ACT 304, contributions to the OPEB Trust shall be irrevocable and the assets of the fund shall be dedicated exclusively to providing health and other benefits to retirees and their eligible dependents. The assets in the OPEB Trust shall not be subject to appropriation for any other purpose and shall not be subject to claims by creditors of the employers or the board or plan administrator.

ACT 268 established an "annual required contribution" (ARC) equal to (a) the normal cost, plus (b) an amortization payment to fund the unfunded actuarial accrued liability over a period of no more than thirty years. Moreover, employers are required to contribute 100% of the ARC starting in fiscal year ending June 30, 2019. ACT 268 established mechanisms for funding the ARC if the employer fails to do so. Full funding of the ARC was phased-in according to the following schedule:

Fiscal Year	ARC Phase-in
2014-2015	20%
2015-2016	40%
2016-2017	60%
2017-2018	80%
2018-2019	100%

ACT 268 established a funding policy which ensures the ARC will be consistently met. As a result, the liabilities in this valuation have been calculated using a 7.0% assumed long-term investment return on the OPEB Trust's assets. The 7.0% return assumption is based on the OPEB Trust's investment policy and we believe the assumption is consistent with the target asset allocation.

Actuarial Assumptions and Methods

In any long-term Actuarial Valuation (such as for Pensions and OPEB), certain demographic, economic and behavioral assumptions are made concerning the population, the investment return rates and the benefits provided. These Actuarial Assumptions form the basis for the actuarial model which is used to project the future population, the future benefits provided, and the future contributions collected. Then the investment return rate (discount rate) assumption is used to discount those projected net OPEB benefits to a present value. This and other related present values are used to calculate the Annual Required Contribution.

Actuarial Assumptions and Methods (Continued)

This Actuarial Valuation is similar to the Actuarial Valuations performed for the State's pension plans. In fact, the demographic assumptions used in this OPEB Valuation were identical to those used in the June 30, 2015 ERS valuation. Because the assumptions were based upon the most recent actuarial experience study adopted by the Trustees of ERS, they were deemed reasonable for this OPEB Valuation and were employed in this report.

There are some economic and behavioral assumptions which are unique to health benefits. It would be instructive to review the Section of this Report titled, "Actuarial Assumptions and Methods" for a detailed discussion and disclosure of all the relevant Actuarial Assumptions used in this Valuation.

GASB Statement No. 43 provides an acceptable range of flexibility to governmental employers (and their actuaries) in the use of various actuarial cost methods. The Entry Age Normal Cost Method was used in this valuation. This is both an acceptable and reasonable cost method. Furthermore, the Normal Costs and the amortization of any Unfunded Actuarial Accrued Liabilities were calculated using a level percent of pay.

Summary of Changes

The actuarial accrued liability increased from $12.62 billion to $13.92 billion. The increase was less than expected, mainly because of favorable health plan claims experience compared to the prior trend assumption. New demographic and health care assumptions increased the ARC and associated liabilities. The most significant assumption change was to reflect longer life expectancy. However, the favorable claims experience produced savings which offset the impact of the new assumptions. All assumption and method changes since the prior report are discussed in Section G.

The market value of assets increased from $0.84 billion to $1.78 billion, primarily due to employer contributions. The funded ratio of the plan, increased from 6.7% to 12.8%. The unfunded actuarial accrued liability increased from $11.77 billion to $12.15 billion. The increase to the unfunded actuarial accrued liability was less than expected, mainly due to favorable claims experience and contributions to the plan which exceeded the minimums required by ACT 268.

SECTION B

VALUATION RESULTS

Results by Employer

($ Thousands)	State of Hawaii	City & County of Honolulu	HART*	County of Hawaii	County of Maui	County of Kauai	Kauai - Department of Water	Board of Water Supply - Honolulu	Hawaii Department of Water Supply	Total
Discount Rate	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Payroll Growth Rate	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Present Value of Benefits	$ 12,098,658	$ 2,634,091	$ 8,303	$ 629,836	$ 635,858	$ 296,096	$ 19,832	$ 166,925	$ 38,348	$ 16,527,947
Actuarial Accrued Liability	$ 10,194,187	$ 2,241,999	$ 6,203	$ 517,775	$ 522,749	$ 245,407	$ 16,417	$ 146,390	$ 32,510	$ 13,923,637
Market Value of Assets	$ 879,517	$ 372,671	$ 641	$ 126,321	$ 205,190	$ 98,373	$ 8,049	$ 71,668	$ 15,244	$ 1,777,674
Unfunded Actuarial Accrued Liability	$ 9,314,670	$ 1,869,328	$ 5,562	$ 391,454	$ 317,559	$ 147,034	$ 8,368	$ 74,722	$ 17,266	$ 12,145,963
Funded Ratio	8.6%	16.6%	10.3%	24.4%	39.3%	40.1%	49.0%	49.0%	46.9%	12.8%
ARC for FYE 2019	$ 787,110	$ 177,331	$ 810	$ 39,770	$ 34,967	$ 16,595	$ 1,011	$ 7,945	$ 1,990	$ 1,067,529
ARC as % of Payroll for FYE 2019	24.1%	26.5%	9.3%	23.3%	19.5%	20.2%	17.0%	20.7%	19.9%	24.1%

*Honolulu Authority of Rapid Transportation

Liabilities

The liabilities shown in the following exhibit were calculated as of July 1, 2017.

	Medical/ Prescription Drug/ Dental/Vision/Life	Medicare Part B	Total
Present Value of Benefits (PVB)			
Retirees	$ 5,676,841,000	$ 1,325,540,000	$ 7,002,381,000
Deferred Inactives	796,325,000	301,054,000	1,097,379,000
Actives	6,745,828,000	1,682,359,000	8,428,187,000
Total PVB	$ 13,218,994,000	$ 3,308,953,000	$ 16,527,947,000
Actuarial Accrued Liability (AAL)			
Retirees	$ 5,676,841,000	$ 1,325,540,000	$ 7,002,381,000
Deferred Inactives	796,325,000	301,054,000	1,097,379,000
Actives	4,743,330,000	1,080,547,000	5,823,877,000
Total AAL	$ 11,216,496,000	$ 2,707,141,000	$ 13,923,637,000
Normal Cost	$ 234,450,000	$ 73,915,000	$ 308,365,000

Plan Assets

Statement of Changes in Plan Net Assets				
		Year Ended June 30, 2017		**Year Ended June 30, 2016**
Assets available at beginning of year	$	1,209,844,943	$	843,520,245
Adjustment*		373,397		214,256
		1,210,218,340		843,734,501
Contributions		420,099,249		263,498,294
Transfer from retiree agency fund		7,200,000		75,000,000
Investment Income		33,001,835		21,763,054
Appreciation (depreciation)		110,301,337		7,518,312
Investment fees		(2,806,662)		(1,464,217)
Administrative fees		(340,250)		(205,000)
Increase in net assets		567,455,509		366,110,443
Assets available at end of year	$	1,777,673,850	$	1,209,844,943
Investment Return, net of expenses		9.87%		2.75%

* Change due to difference between asset value used for prior valuation and audited asset value reported the following year.

Investment returns were calculated based on the dollar-weighted methodology with the assumption that contribution payments were made mid-year.

Projected Benefits

The table below provides the EUTF's estimated benefit payments ("pay-as-you-go") for the 15 years following the valuation date.

Projected Benefit Payments			
Year Ending June 30,	Medical/ Prescription Drug/ Dental/Vision/Life	Medicare Part B	Total
2018	$ 407,780,000	$ 79,200,000	$ 486,980,000
2019	433,175,000	93,369,000	526,544,000
2020	468,052,000	101,616,000	569,668,000
2021	509,259,000	110,526,000	619,785,000
2022	554,442,000	119,835,000	674,277,000
2023	599,931,000	129,546,000	729,477,000
2024	646,741,000	139,838,000	786,579,000
2025	696,079,000	150,755,000	846,834,000
2026	746,123,000	162,263,000	908,386,000
2027	797,786,000	174,253,000	972,039,000
2028	850,159,000	186,789,000	1,036,948,000
2029	902,477,000	199,787,000	1,102,264,000
2030	952,105,000	213,630,000	1,165,735,000
2031	1,000,559,000	228,056,000	1,228,615,000
2032	1,049,209,000	242,632,000	1,291,841,000

Determination of the ARC

Entry Age Normal Cost Actuarial Method

	FYE 6/30/2019
Discount Rate Used	7.0%
Normal Cost*	$ 319,523,000
Amortization of UAAL	$ 748,006,000
Total ARC	$ 1,067,529,000
% Payroll	24.1%

*Includes plan administration fees.

The Annual Required Contribution is equal to the Normal Cost, the present value of benefits earned by the current employees in the respective fiscal year, plus an amortization payment to fund the liability attributable to past service.

The table above provides the combined ARC for all participating employers. It is important to keep in mind that each participating employer is responsible for the amount that they contribute towards their own ARC.

Schedule of Funding Progress

Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b) - (a)	Funded Ratio (a)/(b)	Covered Payroll (c)	Unfunded AAL as a % of Covered Payroll (b - a)/(c)
July 1, 2007	$ 0	$ 9,194,300,000	$ 9,194,300,000	0.0%	$ 2,789,000,000	329.7%
July 1, 2009	$ 115,500,000	$ 14,662,100,000	$ 14,546,600,000	0.8%	$ 2,758,000,000	527.4%
July 1, 2011	$ 178,200,000	$ 16,458,800,000	$ 16,280,600,000	1.1%	$ 3,743,000,000	435.0%
July 1, 2013	$ 296,124,000	$ 11,477,633,000	$ 11,181,509,000	2.6%	$ 3,881,223,000	288.1%
July 1, 2015	$ 843,520,000	$ 12,615,528,000	$ 11,772,008,000	6.7%	$ 4,161,386,000	282.9%
July 1, 2017	$ 1,777,674,000	$ 13,923,637,000	$ 12,145,963,000	12.8%	$ 4,278,034,000	283.9%

As a result of ACT 268's funding requirements, the discount rate was changed from 4.00% to 7.00% in the July 1, 2013 valuation for the State of Hawaii. The discount rate remained at 7.00% for the other participating employers.

New demographic and healthcare assumptions were adopted in the July 1, 2017 valuation. The most significant assumption change was to reflect longer life expectancy.

Actuarial Methods and Assumptions

Inflation rate	2.50%
Investment rate of return	7.00%
Actuarial Cost method	Entry Age Normal
Amortization method*	Level percent, closed
Payroll Growth	3.50%
Asset Method	Market
Mortality	System-specific mortality tables utilizing scale BB to project generational mortality improvement
Participation Rates	
	98% healthcare participation assumption for retirees that receive 100% of the Base Monthly Contribution (BMC). Healthcare participation rates of 25%, 65%, and 90% for retirees that receive 0%, 50%, or 75% of the base monthly contribution, respectively. 100% for Life Insurance and 98% for Medicare Part B
Healthcare cost trend rate	
PPO**	Initial rates of 6.60%, 6.60% and 9.00%; declining to a rate of 4.86% after 14 years
HMO**	Initial rate of 9.00%; declining to a rate of 4.86% after 14 years
Part B & Base Monthly Contribution (BMC)	Initial rates of 2.00% and 5.00%; declining to a rate of 4.70% after 14 years
Dental	3.50%
Vision	2.50%
Life Insurance	0.00%

* Closed bases are established at each valuation for new unfunded liabilities.
** Includes prescription drug assumptions.

Trend Sensitivity

Actuarial valuations are based on the cost of benefits to be paid in the future. The payments considered will range from one month in the future to decades from the valuation date. When the benefits being valued are health benefits, a key factor is the future cost of the health benefits being promised. The future benefits are projected using the current cost of the health care benefits and assumed future health care cost increases. The final cost of providing retiree health care benefits will depend upon how the charges for health care services actually increase in the future.

In order to demonstrate how the cost of these benefits can vary depending upon future health care cost increases, we have performed additional valuations based upon alternative health care cost increase assumptions. The following table shows the impact of a 1.0% increase or decrease in the assumed healthcare trend rates.

	-1% Trend	Baseline	+1% Trend
Present Value of Benefits (PVB)	$ 14,011,158,000	$ 16,527,947,000	$ 19,794,524,000
Funded Status			
Actuarial Accrued Liability	$ 12,032,229,000	$ 13,923,637,000	$ 16,310,494,000
Assets	1,777,674,000	1,777,674,000	1,777,674,000
Unfunded AAL	10,254,555,000	12,145,963,000	14,532,820,000
ARC for FYE19	$ 880,036,000	$ 1,067,529,000	$ 1,297,440,000

SECTION C

PROJECTIONS

Summary of Funding Projections

The projection in this section provides estimated future liabilities, assets, contributions and benefit payments based on the data used for the July 1, 2017 valuation and the actuarial assumptions/methods described in Section G of this report. The projections provide insight into how the employers' contributions and the financial condition of the plan are assumed to change over time. Key items from the projections are:

- Prefunding the OPEB liability will require a significant commitment. However, the long-term savings will also be significant. Once the plan is well funded, the percentage of the benefits paid for by investment earnings is typically over 50%.
- The Annual Required Contribution (ARC) is developed using a level percentage of payroll amortization. Said another way, the ARC is assumed to grow at the same rate as payroll, 3.50%.
- The ARC is expected to remain level, as a percentage of payroll, until the initial amortization bases are paid off.
- The projection assumes the employers will phase into the full ARC by paying the minimum amount required by ACT 268.
- The employers' annual costs, on a combined basis, for financing the retiree health benefit become less than what they would have been under a pay-as-you-go approach starting in FYE2045.
- Upcoming changes to the accounting rules will require employers to recognize a balance sheet liability similar to the Unfunded Actuarial Accrued Liability (UAAL). Currently, the balance sheet liability is equal to the Net OPEB Obligation.
- The projections include liabilities for future employees. However, the total number of active employees is assumed to remain level.
- The projection provides estimated future results for the combined status of the plan. It is important to keep in mind that each participating employer is responsible for the amount that they contribute towards their own ARC.

Please bear in mind that, depending on plan experience, actual results could deviate significantly from the actuarial projections. The key assumptions in the projections are:

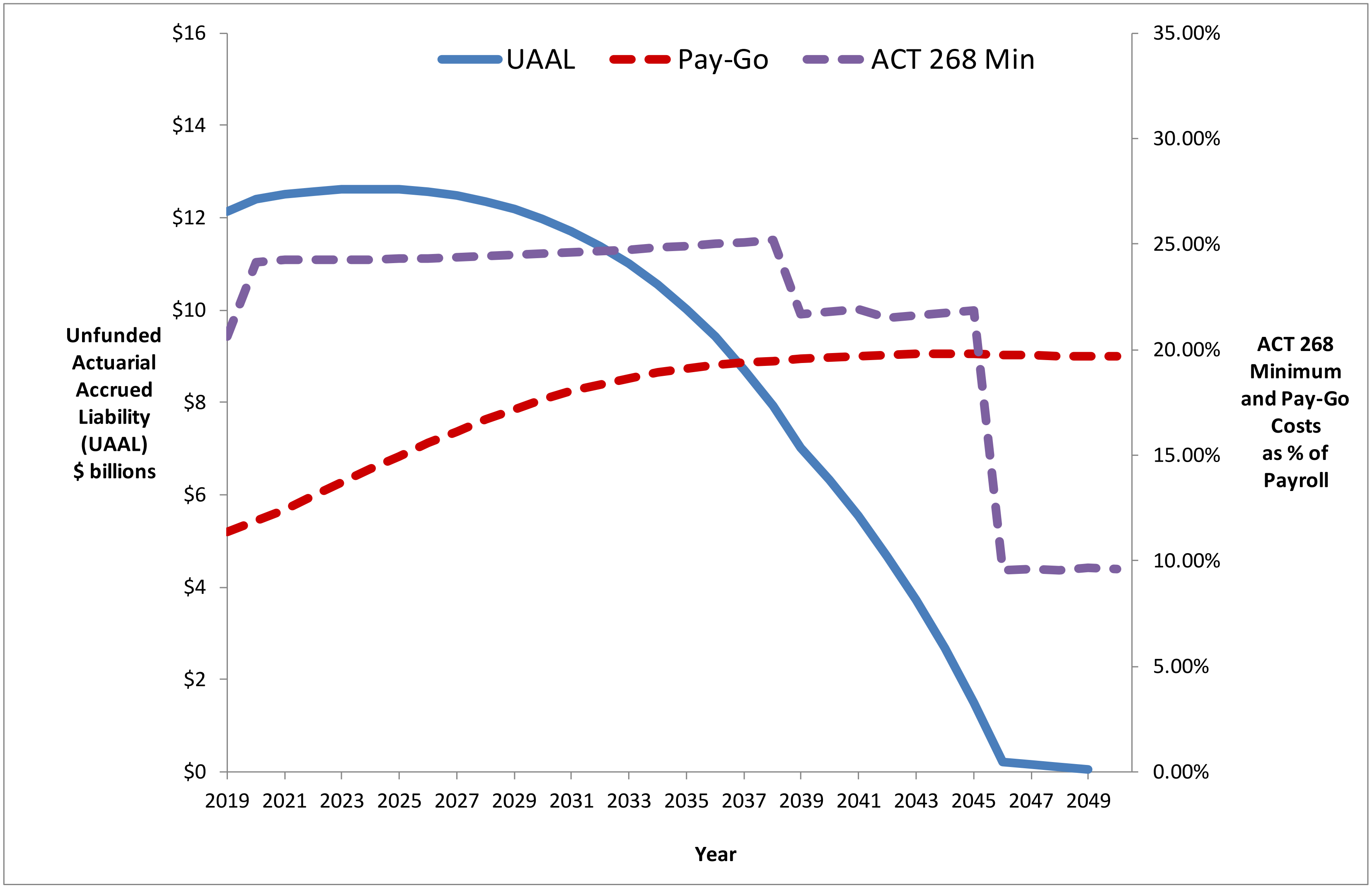
1. the assumed 7.00% rate of investment return
2. future health care inflation
3. that the benefits and cost sharing provisions will remain the same as they currently are

Minimum Contribution Required by ACT 268

Fiscal Year Ending	Payroll	Actuarial Accrued Liability (AAL)	Beginning of Year Assets	Unfunded AAL (UAAL)	Funded Ratio	Annual Required Contribution	Actual Contribution	Contribution as % of Payroll	Benefit Payment Total	Benefits as % of Payroll	Additional Cost of Prefunding
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
2018	$ 4,278,034,000	$ 13,923,637,000	$ 1,777,674,000	$ 12,145,963,000	12.8%	$ 1,036,080,000	$ 882,752,000	20.6%	$ 486,980,000	11.4%	$ 395,772,000
2019	4,427,765,000	14,713,531,000	2,311,137,000	12,402,394,000	15.7%	1,067,529,000	1,067,529,000	24.1%	526,544,000	11.9%	540,985,000
2020	4,582,737,000	15,528,957,000	3,032,140,000	12,496,817,000	19.5%	1,110,497,000	1,110,497,000	24.2%	569,668,000	12.4%	540,829,000
2021	4,743,132,000	16,365,507,000	3,803,438,000	12,562,069,000	23.2%	1,149,423,000	1,149,423,000	24.2%	619,785,000	13.1%	529,638,000
2022	4,909,142,000	17,220,688,000	4,617,137,000	12,603,551,000	26.8%	1,190,340,000	1,190,340,000	24.2%	674,277,000	13.7%	516,063,000
2023	5,080,962,000	18,092,351,000	5,473,738,000	12,618,613,000	30.3%	1,233,128,000	1,233,128,000	24.3%	729,477,000	14.4%	503,651,000
2024	5,258,795,000	18,981,826,000	6,377,446,000	12,604,380,000	33.6%	1,277,869,000	1,277,869,000	24.3%	786,579,000	15.0%	491,290,000
2025	5,442,853,000	19,889,346,000	7,331,614,000	12,557,732,000	36.9%	1,324,594,000	1,324,594,000	24.3%	846,834,000	15.6%	477,760,000
2026	5,633,352,000	20,813,868,000	8,338,561,000	12,475,307,000	40.1%	1,373,348,000	1,373,348,000	24.4%	908,386,000	16.1%	464,962,000
2027	5,830,522,000	21,756,203,000	9,402,743,000	12,353,460,000	43.2%	1,424,236,000	1,424,236,000	24.4%	972,039,000	16.7%	452,197,000
2028	6,034,589,000	22,716,450,000	10,528,193,000	12,188,257,000	46.3%	1,477,286,000	1,477,286,000	24.5%	1,036,948,000	17.2%	440,338,000
2029	6,245,799,000	23,695,584,000	11,720,144,000	11,975,440,000	49.5%	1,532,706,000	1,532,706,000	24.5%	1,102,264,000	17.6%	430,442,000
2030	6,464,404,000	24,695,697,000	12,985,272,000	11,710,425,000	52.6%	1,590,553,000	1,590,553,000	24.6%	1,165,735,000	18.0%	424,818,000
2031	6,690,656,000	25,721,365,000	14,333,125,000	11,388,240,000	55.7%	1,650,870,000	1,650,870,000	24.7%	1,228,615,000	18.4%	422,255,000
2032	6,924,831,000	26,776,186,000	15,772,660,000	11,003,526,000	58.9%	1,713,818,000	1,713,818,000	24.7%	1,291,841,000	18.7%	421,977,000
2033	7,167,198,000	27,863,175,000	17,312,654,000	10,550,521,000	62.1%	1,779,598,000	1,779,598,000	24.8%	1,355,625,000	18.9%	423,973,000
2034	7,418,051,000	28,985,487,000	18,962,493,000	10,022,994,000	65.4%	1,848,254,000	1,848,254,000	24.9%	1,418,265,000	19.1%	429,989,000
2035	7,677,682,000	30,148,248,000	20,734,021,000	9,414,227,000	68.8%	1,919,834,000	1,919,834,000	25.0%	1,479,745,000	19.3%	440,089,000
2036	7,946,402,000	31,356,964,000	22,639,982,000	8,716,982,000	72.2%	1,994,491,000	1,994,491,000	25.1%	1,539,817,000	19.4%	454,674,000
2037	8,224,524,000	32,617,884,000	24,694,421,000	7,923,463,000	75.7%	2,072,334,000	2,072,334,000	25.2%	1,601,837,000	19.5%	470,497,000
2038	8,512,384,000	33,934,279,000	26,909,016,000	7,025,263,000	79.3%	1,846,252,000	1,846,252,000	21.7%	1,666,151,000	19.6%	180,101,000
2039	8,810,318,000	35,309,284,000	28,978,219,000	6,331,065,000	82.1%	1,919,869,000	1,919,869,000	21.8%	1,731,287,000	19.7%	188,582,000
2040	9,118,679,000	36,747,776,000	31,201,015,000	5,546,761,000	84.9%	1,996,538,000	1,996,538,000	21.9%	1,797,229,000	19.7%	199,309,000
2041	9,437,832,000	38,255,075,000	33,590,476,000	4,664,599,000	87.8%	2,030,348,000	2,030,348,000	21.5%	1,864,427,000	19.8%	165,921,000
2042	9,768,156,000	39,836,442,000	36,112,636,000	3,723,806,000	90.7%	2,111,836,000	2,111,836,000	21.6%	1,931,705,000	19.8%	180,131,000
2043	10,110,042,000	41,498,822,000	38,826,018,000	2,672,804,000	93.6%	2,196,280,000	2,196,280,000	21.7%	1,999,450,000	19.8%	196,830,000
2044	10,463,892,000	43,249,222,000	41,746,580,000	1,502,642,000	96.5%	2,284,407,000	2,284,407,000	21.8%	2,069,224,000	19.8%	215,183,000
2045	10,830,129,000	45,093,603,000	44,890,536,000	203,067,000	99.5%	1,030,987,000	1,030,987,000	9.5%	2,140,527,000	19.8%	(1,109,540,000)
2046	11,209,184,000	47,038,951,000	46,884,234,000	154,717,000	99.7%	1,079,271,000	1,079,271,000	9.6%	2,212,876,000	19.7%	(1,133,605,000)
2047	11,601,505,000	49,093,362,000	48,992,565,000	100,797,000	99.8%	1,107,875,000	1,107,875,000	9.5%	2,286,951,000	19.7%	(1,179,076,000)
2048	12,007,558,000	51,264,925,000	51,201,412,000	63,513,000	99.9%	1,159,803,000	1,159,803,000	9.7%	2,364,087,000	19.7%	(1,204,284,000)
2049	12,427,822,000	53,560,833,000	53,538,768,000	22,065,000	100.0%	1,191,126,000	1,191,126,000	9.6%	2,444,540,000	19.7%	(1,253,414,000)

The projection assumes a constant workforce.

Minimum Contribution Required by ACT 268
Trust contribution is less than benefits paid starting in fiscal year ending June 30, 2045



SECTION D

DEVELOPMENT OF BASELINE COSTS

Development of Baseline Costs

The underlying retiree claims costs were estimated using the plan premiums effective January 1, 2018, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees (82% PPO and 18% HMO). The fully-insured retiree plans are separate from the active plans and are underwritten using the claims experience of the retired members only. The contracts for the retiree plans do not allow for any cross subsidization of premiums or rates. The prescription drug benefit for the PPO plan is self-insured. Based on conversations with EUTF's health care consultant (Segal), we did not believe it was necessary to independently verify the premiums for the PPO prescription drug benefit. The estimated age-adjusted claims shown below include administration fees and are net of prescription drug rebates.

Age-graded and sex-distinct premiums are utilized by this valuation. These costs are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific costs more accurately reflect the health care utilization and cost at that age.

Baseline Costs for Retirees and Spouses (Medical and Prescription Drug) (Expected Monthly Per Capita Costs for 2018)				
	HMSA		Kaiser	
Age	Male	Female	Male	Female
50	$402.47	$495.81	$470.48	$579.58
55	529.61	578.25	619.09	675.96
60	684.02	673.52	799.59	787.32
65	345.86	326.22	419.21	395.40
70	376.77	364.58	456.67	441.90
75	404.66	394.85	490.48	478.60
80	424.81	417.38	514.90	505.90

Dental and vision benefits are not included in the age-adjusted benefits shown above. The underlying claims for the dental and vision benefits were not age-rated. Premiums for all medical, prescription drug, dental, and vision plans are shown in Section E.

SECTION E

SUMMARY OF BENEFIT PROVISIONS

Summary of the Substantive Plan Provisions

Plan Participants

Plan participants are retired members of the employees' retirement system; the county pension system; or the police, firefighters, or bandsmen pension system of the State or county.

Base Monthly Contribution Amount

January 1, 2018 - Base Monthly Contribution			
	Self	Two-Party	Family
Non-Medicare	$940.70	$1,896.14	$2,775.20
Medicare	670.12	1,343.12	1,956.24

The Base Monthly Contribution (BMC) determines the maximum amount provided by the employer to cover premiums for medical, prescription drug, dental and vision care. The BMC is adjusted annually based on the change in the Medicare Part B premium. The employer's costs for providing the Medicare Part B premium reimbursement and the life insurance benefit are in addition to the contribution related to the BMC.

Deferred Retirement

Employees who terminate employment are eligible for retiree health care benefits upon commencing a retirement or pension allowance.

Disability Retirement

Employees who terminate due to disability are eligible for retiree health care benefits upon commencing a retirement or pension allowance.

Non-Duty Death in Service Retirement

If an active employee dies while in service and is eligible to retire at the time of death, the ERS will retire the employee and the surviving spouse, domestic or civil union partner and eligible dependents are eligible for retiree health care benefits. If the member was not eligible for retirement at the time of death, the surviving spouse, domestic or civil union partner and eligible dependents are eligible for COBRA benefits only.

Duty Death in Service Retirement

The surviving spouse, domestic or civil union partner and eligible dependents of an employee who is killed in the performance of the employee's duty are eligible for retiree health care benefits. Regardless of the employee's date of hire or years of service, the employer will pay up to the BMC for a spouse, domestic or civil union partner and eligible dependents of an employee who is killed in the performance of duty. Coverage ends when the surviving spouse or domestic or civil union partner remarries or enters into another domestic or civil union partnership or when the surviving child reaches age 19 or 24 if the child is a full-time student.

Surviving Spouses of Retired Employees

The employer's contribution percentage for a surviving spouse, domestic or civil union partner and eligible dependent of a retiree who was hired prior to July 1, 2001 will remain the same as the deceased retiree. For a surviving spouse, domestic or civil union partner and eligible dependent of a retiree who was hired after June 30, 2001, the employer's contribution percentage will be half of the deceased retirees' employer contribution percentage.

Life Insurance

Retiree life insurance benefit is $2,235 as of July 1, 2017, and is provided at no cost to the retiree.

Medicare Part B Reimbursement

Retirees and spouse/domestic and civil union partners are required to enroll in Medicare Part B coverage when they become eligible and enroll in a medical and/or prescription drug plan. The employer reimburses the Part B premium for both retiree and spouse/domestic or civil union partner at 100%. Surviving spouses/domestic or civil union partners, regardless of hire date, continue to receive the Part B reimbursement. The 2018 Medicare Part B premiums vary for current retirees due to the hold harmless provisions. The 2018 Part B premium is $134.00 per month for retirees enrolling in Part B for the first time or not enrolled in Social Security. EUTF will reimburse the entire Part B premium for retirees who pay income adjusted Part B premiums if they submit proof.

Employer's Contribution

The Employer's percentage of the BMC for the year determines the maximum employer contribution payable. Any difference between the maximum employer contribution and the total premium for plans selected (medical, prescription drug, dental and vision) will be paid by the retiree.

Hire Date	Year of Service	% of BMC*
Before 7/1/1996	< 10	50%
	10+	100%
Post 7/1/1996	< 10	0%
	10-14	50%
	15-24	75%
	25+	100%

* Employees hired after 6/30/2001 only receive the % of the "Self" BMC.

EUTF Monthly Retiree Rates
Effective January 1, 2018 through December 31, 2018

Benefit Plan	Type of Enrollment	Total Contribution Required
MEDICAL AND PRESCRIPTION DRUG PLANS - MEDICARE		
HMSA 90/10 PPO Medical Plan	Self	$234.22
	Two-Party	$456.38
	Family	$676.56
SilverScript Prescription Drug Plan	Self	$164.80
	Two-Party	$320.90
	Family	$475.80
Kaiser Senior Advantage Medical and Prescription Drug Plan	Self	$483.16
	Two-Party	$942.16
	Family	$1,396.24
MEDICAL AND PRESCRIPTION DRUG PLANS - NON-MEDICARE		
HMSA 90/10 PPO Medical Plan	Self	$520.18
	Two-Party	$1,013.62
	Family	$1,502.68
CVS Caremark Prescription Drug Plan	Self	$181.50
	Two-Party	$353.50
	Family	524.12
Kaiser HMO Comprehensive Medical and Prescription Drug Plan	Self	$797.76
	Two-Party	$1,611.44
	Family	$2,377.30
DENTAL PLAN		
HDS Dental	Self	$39.48
	Two-Party	$77.04
	Family	$94.38
VISION PLAN		
VSP Vision	Self	$4.96
	Two-Party	$9.94
	Family	$13.34
LIFE INSURANCE		
USAble Life Insurance (Retiree only)	Self	$4.12

HSTA VB Monthly Retiree Rates
Effective January 1, 2018 through December 31, 2018

Benefit Plan	Type of Enrollment	Total Contribution Required
MEDICAL AND PRESCRIPTION DRUG PLANS - MEDICARE		
HMSA 90/10 PPO Medical and Chiropractic, SilverScript Prescription Drug, and VSP Vision Plans	Self	$398.10
	Two-Party	$776.00
	Family	$1,147.60
Kaiser Senior Advantage Medical, Chiropractic and Prescription Drug, and VSP Vision Plans	Self	$496.00
	Two-Party	$967.38
	Family	$1,432.32
MEDICAL AND PRESCRIPTION DRUG PLANS - NON-MEDICARE		
HMSA 90/10 PPO Medical and Chiropractic, CVS Caremark Prescription Drug, and VSP Vision Plans	Self	$631.20
	Two-Party	$1,230.04
	Family	$1,820.74
Kaiser HMO Comprehensive Medical, Chiropractic and Prescription Drug, and VSP Vision Plans	Self	$787.56
	Two-Party	$1,591.20
	Family	$2,346.10
DENTAL PLAN		
HDS Dental	Self	$47.52
	Two-Party	$92.52
	Family	$113.44
VISION PLAN		
VSP Vision	Self	$4.96
	Two-Party	$9.94
	Family	$13.34
LIFE INSURANCE		
USAble Life Insurance (Retiree only)	Self	$4.12

Medical Plan Benefits - EUTF
Non-Medicare Retirees

Plan Benefits	HMSA 90/10 PPO		Kaiser HMO
General			
Calendar Year Deductible Single/Family	$100 per person Maximum $300 per family		None/None
Calendar Year Out-of-pocket limit Single/Family	$2,500 per person Maximum $7,500 per family		$2,000 per person Maximum $6,000 per family
Lifetime Benefit Maximum	None		None
	In-Network	**Out-of-Network**	
Physician Services			
Primary Care Office Visit	10%*	30%	$15
Specialist Office Visit	10%*	30%	$15
Annual Wellness Exams (Covered under Medicare for Dependents with Medicare)	No Charge	No Charge	No Charge
Annual Physical Exams	No Charge*	30%*	No Charge
Mammography	20%*	30%*	No Charge (If Preventative)
Second opinion – surgery	10%*	30%	$15
Emergency Room (ER care)	10%*	10%*	$50 in area / 20% out
Ambulance	20%	30%	20%
Inpatient Hospital Services			
Hospital Room & Board	10%*	30%	No Charge
Ancillary Services	10%*	30%	No Charge
Physician services	10%*	30%	No Charge
Surgery	10%* (Cutting)	30%	No Charge
Anesthesia	10%*	30%	No Charge
Mental Health Care	10%*	30%	No Charge
Outpatient Services			
Chemotherapy	20%	30%	$15
Radiation Therapy	20%*	30%	$15
Surgery	10%* (Cutting)	30%	$15
Allergy Testing	20%	30%	$15
Other Diag. Lab, X-ray & Psych Testing	20%*	30%	$15
Anesthesia	10%*	30%	$15
Mental Health Care	10%*	30%	$15
Other Services			
Durable Medical Equipment	20%	30%	20%
Home Health care	No Charge*; 150 visits per year	30%; 150 visits per year	No Charge
Hospice Care	No Charge*	Not Covered	No Charge
Nursing facility - skilled care	10%*, 120 days per year	30%, 120 days per year	No Charge, 100 days per benefit period
Physical & Occupational Therapy	20%	30%	$15

* Deductible does not apply

Medical Plan Benefits – HSTA VB
Non-Medicare Retirees

Plan Benefits	HMSA 90/10 PPO		Kaiser HMO
General			
Calendar Year Deductible Single/Family	$100 per person Maximum $300 per family		None/None
Calendar Year Out-of-pocket limit Single/Family	$2,000 per person Maximum $6,000 per family		$2,000 per person Maximum $6,000 per family
Lifetime Benefit Maximum	$2,000,000		None
	In-Network	**Out-of-Network**	
Physician Services			
Primary Care Office Visit	10%*	30%	$15
Specialist Office Visit	10%*	30%	$15
Annual Wellness Visit (Covered under Medicare for dependents with Medicare)	No Charge	No Charge	No Charge
Annual Physical Exams	No Charge* Limits Apply	No Charge* Limits Apply	No Charge
Mammography	10%*	30%*	No Charge (If Preventative)
Second opinion – Surgery	10%*	30%	$15
Emergency Room (ER care)	10%*	10%*	$50 in area / 20% out
Ambulance	10%*	30%	20%
Inpatient Services			
Hospital Room & Board	10%*	30%	No Charge
Ancillary Services	10%*	30%	No Charge
Physician services	10%*	30%	No Charge
Surgery	10%*	30%	No Charge
Anesthesia	10%*	30%	No Charge
Mental Health Care	10%*	30%	No Charge
Outpatient Services			
Chemotherapy	10%*	30%	$15
Radiation Therapy	10%*	30%	$15
Surgery	10%*	30%	$15
Allergy Testing	10%*	30%	$15
Other Diag. Lab, X-ray & Psych Testing	10%*	30%	$15
Anesthesia	10%*	30%	$15
Mental Health Care	10%*	30%	$15
Other Services			
Durable Medical Equipment	10%*	30%	20%
Home Health care	No Charge*; 150 visits per year	30%; 150 visits per year	No Charge
Hospice Care	No Charge*	Not Covered	No Charge
Nursing facility - Skilled Care	10%*; 120 days per year	30%; 120 days per year	No Charge, 100 days per benefit period
Physical & Occupational Therapy	10%*	30%	$15
Chiropractic Treatment	$12*, 20 visits per year	Not Covered	$12, 20 visits per year

* Deductible does not apply.

Prescription Drug Plan Benefits – EUTF
Non-Medicare Retirees

Plan Benefits	CVS PPO*						Kaiser HMO	
	CVS In-Network Pharmacy COPAYMENT			Out-of-Network Pharmacy** COPAYMENT			Kaiser Pharmacy COPAYMENT	
Retail								
Maintenance Medication	Must be filled in a 90 day supply after the first 3-30 day initial fills+						Same as Generic and Brand	
Day Supply	30 DAYS	60 DAYS	90 DAYS	30 DAYS	60 DAYS	90 DAYS	30 DAYS	90 DAYS
Generic	$5	$10	$15	$5 + 20%	$10 + 20%	$15 + 20%	$15	$30 Mail Order
Preferred Brand	$15	$30	$45	$15 + 20%	$30 + 20%	$45 + 20%	$15	$30 Mail Order
Non-Preferred Brand	$30	$60	$90	$30 + 20%	$60 + 20%	$90 + 20%	$15	$30 Mail Order
Specialty Drugs & Injectables	20% of eligible charges; Up to $250 maximum per prescription fill; $2,000 out-of-pocket maximum per calendar year; $30 copay oral oncology specialty medications. Specialty drugs are not available through mail-order and only dispensed up to a 30-day supply.						Injectable Drugs: 30 days: $15 not available through mail order. Eligible Specialty Drugs: 30 days: $15	
Diabetic Supplies								
Preferred Insulin	$5	$10	$15	$5 + 20%	$10 + 20%	$15 + 20%	$15	Not available thru mail order
Other Insulin	$15	$30	$45	$15 + 20%	$30 + 20%	$45 + 20%	$15	Not available thru mail order
Preferred Diabetic Supplies	No Copayment			$0 + 20%			$15	$30 Mail Order
Other Diabetic Supplies	$15	$30	$45	$15 + 20%	$30 + 20%	$45 + 20%	$15	$30 Mail Order
Retail 90 & Mail Order								
Day Supply	90 DAYS			*This plan is the prescription drug coverage for the HMSA PPO medical plan option and is administered by CVS Caremark **If you receive services from a non-participating (out-of-network) pharmacy you will pay full price for the prescription and must file a claim for reimbursement. You are responsible for the copayment (including the penalty %) and any difference between the actual charge and the eligible charge. +Notes: Maintenance medication can be filled through mail-order or at any retail network pharmacy.				
Generic	$10							
Preferred Brand	$30							
Non-Preferred Brand	$60							
Preferred Insulin	$10							
Other Insulin	$30							
Preferred Diabetic Supplies	No Copayment							
Other Diabetic Supplies	$30							

Prescription Drug Plan Benefits – HSTA VB
Non-Medicare Retirees

Plan Benefits	CVS PPO*						Kaiser HMO	
	CVS In-Network Retail Pharmacy COPAYMENT			Out-of-Network Retail Pharmacy** COPAYMENT			Kaiser Pharmacy COPAYMENT	
Retail & Mail Order								
Day Supply	30 DAYS	60 DAYS	90 DAYS	30 DAYS	60 DAYS	90 DAYS	30 DAYS	90 DAYS
Generic	$5	$9	$9	$5 + 30%	$9 + 30%	$9 + 30%	$10	$20 Mail Order
All Covered Brand Name	$15	$27	$27	$15 + 30%	$27 + 30%	$27 + 30%	$10	$20 Mail Order
Specialty Drugs & Injectables	Specialty medications are subject to the applicable Generic/Brand copayment. Specialty drugs are not available through mail-order and only dispensed up to a 30-day supply						Injectables: 30 days: $10 Not available through mail-order Eligible Specialty Drugs: 30 days: $10	
Diabetic Supplies								
Insulin	$5	$9	$9	$5 + 30%	$9 + 30%	$9 + 30%	$10	Not available through mail order
Lancets, Strips & Meters	No Copayment						50%	

* This plan is the prescription drug coverage for the HMSA PPO medical plan options and is administered by CVS Caremark.

** If you receive services from a non-participating (out-of-network) pharmacy you will pay full price for the prescription and must file a claim for reimbursement. You are responsible for the copayment (including the penalty %) and any difference between the actual charge and the eligible charge.

Note: Maintenance medication can be filled through mail-order or at any retail network pharmacy.

Medical Plan Benefits – EUTF Medicare Retirees

Plan Benefits	HMSA 90/10 PPO		Kaiser HMO Senior Advantage**
General			
Calendar Year Deductible Single/Family	$100 per person Maximum $300 per family		None/None
Calendar Year Out-of-pocket limit Single/Family	$2,500 per person Maximum $7,500 per family		$2,000 per person Maximum $6,000 per family
Lifetime Benefit Maximum	None		None
Physician Services	**In-Network**	**Out-of-Network**	
Primary Care Office Visit	10%*	30%	$15
Specialist Office Visit	10%*	30%	$15
Annual Wellness Exams (Covered under Medicare for Dependents with Medicare)	No Charge	No Charge	No Charge
Annual Physical Exams	No Charge*	30%*	No Charge
Mammography	20%*	30%*	No Charge
Second opinion – Surgery	10%*	30%	$15
Emergency Room (ER care)	10%*	10%*	$50
Ambulance	20%	30%	20%
Inpatient Services			
Hospital Room & Board	10%*	30%	No Charge
Ancillary Services	10%*	30%	No Charge
Physician services	10%*	30%	No Charge
Surgery	10%* (Cutting)	30%	No Charge
Anesthesia	10%*	30%	No Charge
Mental Health Care	10%*	30%	No Charge
Outpatient Services			
Chemotherapy	20%	30%	$15
Radiation Therapy	20%*	30%	$15
Surgery	10%* (Cutting)	30%	$15
Allergy Testing	20%	30%	$15
Other Diag. Lab, X-ray & Psych Testing	20%*	30%	No Charge
Anesthesia	10%*	30%	$15
Mental Health Care	10%*	30%	$15
Other Services			
Durable Medical Equipment	20%	30%	20%
Home Health care	No Charge*; 150 visits per year	30%; 150 visits per year	No Charge
Hospice Care	No Charge*	Not Covered	No Charge
Nursing facility - skilled care	10%*, 120 days per year	30%, 120 days per year	No Charge, 100 days per benefit period
Physical & Occupational Therapy	20%	30%	$15

* Deductible does not apply.

** If you and/or your dependent are Medicare eligible, you must enroll in the Kaiser Senior Advantage Plan.

Medical Plan Benefits – HSTA VB
Medicare Retirees

Plan Benefits	HMSA 90/10 PPO		Kaiser HMO Senior Advantage**
General			
Calendar Year Deductible Single/Family	$100 per person Maximum $300 per family		None/None
Calendar Year Out-of-pocket limit Single/Family	$2,000 per person Maximum $6,000 per family		$2,000 per person Maximum $6,000 per family
Lifetime Benefit Maximum	$2,000,000		None
	In-Network	**Out-of-Network**	
Physician Services			
Primary Care Office Visit	10%*	30%	$15
Specialist Office Visit	10%*	30%	$15
Annual Wellness Visit (Covered under Medicare for Dependents with Medicare)	No Charge	No Charge	No Charge
Annual Physical Exams	No Charge* Limits Apply	No Charge* Limits Apply	No Charge
Mammography	10%*	30%*	No Charge
Second opinion – surgery	10%*	30%	$15
Emergency Room (ER care)	10%*	10%*	$50
Ambulance	10%*	30%	20%
Inpatient Services			
Hospital Room & Board	10%*	30%	No Charge
Ancillary Services	10%*	30%	No Charge
Physician services	10%*	30%	No Charge
Surgery	10%*	30%	No Charge
Anesthesia	10%*	30%	No Charge
Mental Health Care	10%*	30%	No Charge
Outpatient Services			
Chemotherapy	10%*	30%	$15
Radiation Therapy	10%*	30%	$15
Surgery	10%*	30%	$15
Allergy Testing	10%*	30%	$15
Other Diag. Lab, X-ray & Psych Testing	10%*	30%	No Charge
Anesthesia	10%*	30%	$15
Mental Health Care	10%*	30%	$15
Other Services			
Durable Medical Equipment	10%*	30%	20%
Home Health care	No Charge*; 150 visits per year	30%; 150 visits per year	No Charge
Hospice Care	No Charge*	Not Covered	No Charge, Home Care Only
Nursing facility - skilled care	10%*; 120 days per year	30%; 120 days per year	No Charge, 100 days per benefit period
Physical & Occupational Therapy	10%*	30%	$15
Chiropractic Treatment	$12*; 20 visits per year	Not Covered	$12; 20 visits per year

* Deductible does not apply.

** If you and your dependent are Medicare eligible, you must enroll in the Kaiser Senior Advantage Plan.

Prescription Drug Plan Benefits – EUTF Medicare Retirees

Plan Benefits	PPO Drug Plan SilverScript Medicare Part D			HMO Drug Plan Kaiser Senior Advantage with Prescription Drug Plan		
	In-Network Pharmacy COPAYMENT			Kaiser Pharmacy COPAYMENT		
Retail						
Day Supply	30 DAYS	60 DAYS	90 DAYS	30 DAYS	60 DAYS	90 DAYS
Generic	$5	$10	$10	$15	$30	$45
Preferred Brand	$15	$30	$30	$15	$30	$45
Non-Preferred Brand	$30	$60	$60	$15	$30	$45
Specialty Drugs & Injectables	20% of eligible charges; Up to $250 maximum per prescription fill; $2,000 out-of-pocket maximum per calendar year Specialty drugs are only dispensed up to a 30-day supply			$15	$30	$45
Diabetic Supplies						
Covered Insulin Products	$5	$10	$10	$15	$30	$45
Lancets, Strips and Meters	No Copayment			$15	$30	$45
Mail Order						
Generic	$5	$10	$10	$15	$30	$30
Preferred Brand	$15	$30	$30	$15	$30	$30
Non-Preferred Brand	$30	$60	$60	$15	$30	$30
Specialty Drug	Not available through mail order			$15	$30	$30
Covered Insulin Products	$5	$10	$10	$15	$30	$30

The EUTF's Medicare Part D prescription drug plan is administered by SilverScript, the Medicare Part D administrator for CVS Caremark. This plan is the prescription drug coverage for Medicare retirees enrolled in the HMSA PPO medical plan option and for stand-alone drug coverage. The Kaiser Medicare Part D prescription drug coverage is included under the Kaiser Senior Advantage Medical Program.

Prescription Drug Plan Benefits – HSTA VB Medicare Retirees

Plan Benefits	PPO Drug Plan SilverScript Medicare Part D			HMO Drug Plan Kaiser Senior Advantage with Prescription Drug Plan		
	In-Network Pharmacy COPAYMENT			Kaiser Pharmacy COPAYMENT		
Retail						
Day Supply	30 DAYS	60 DAYS	90 DAYS	30 DAYS	60 DAYS	90 DAYS
Generic & Covered Insulin	$3	$9	$9	$10	$20	$30
All Covered Brand	$9	$27	$27	$10	$20	$30
Specialty Drugs & Injectables	Specialty medications are subject to the applicable Generic/Brand copayment. Specialty drugs are only dispensed up to a 30-day supply			$10	$20	$30
Diabetic Supplies						
Lancets, Strips and Meters	No Copayment			20%		
Mail Order						
Generic	$3	$9	$9	$10	$20	$20
All Covered Brand Name	$9	$27	$27	$10	$20	$20
Specialty Drug	Not available through mail order			$10	$20	$20
Diabetic Supplies	Not available through mail order			20%		

The HSTA VB's Medicare Part D prescription drug plan is administered by SilverScript, the Medicare Part D administrator for CVS Caremark. This plan is the prescription drug coverage for Medicare retirees enrolled in the HMSA PPO medical plan option. The Kaiser Medicare Part D prescription drug coverage is included under the Kaiser Senior Advantage Medical Program.

Dental Plan Benefits (Hawaii Dental Service [HDS]) – EUTF & HSTA VB

BENEFIT	PLAN COVERS
PLAN MAXIMUM per calendar year per member (Jan 1 — Dec 31)	$2,000
DIAGNOSTIC	
Examinations - twice per calendar year	100%
Bitewing X-rays - twice per calendar year through age 14; once per calendar year thereafter	100%
Other X-rays (full mouth X-rays limited to once every 5 years)	100%
PREVENTIVE	
Cleanings — twice per calendar year	100%
• Diabetic Patients — four Cleanings or *Periodontal Maintenance per calendar year	
• Expectant Mothers — three Cleanings or *Periodontal Maintenance per calendar year	
*Periodontal Maintenance benefit level	*60%
• Fluoride (twice per calendar year through age 19)	100%
• Fluoride — high risk — once per calendar year	100%
Space maintainers (through age 17)	100%
Sealants (through age 18) — one treatment application. once per lifetime only to permanent molars with no prior occlusal restorations, regardless of the number of surfaces sealed.	100%
RESTORATIVE	
Amalgam (silver-colored) fillings	60%
Composite (white-colored) fillings — limited to the anterior (front) teeth	60%
Crowns and gold restorations (once every 5 years when teeth cannot be restored with amalgam or composite fillings)	60%
Note: Composite (white) and porcelain (white) restorations on posterior (back) teeth will be processed as the alternate benefit of the metallic equivalent — the patient is responsible for the cost difference up to the amount charged by the dentist.	
ENDODONTICS	60%
Pulpal therapy	
Root canal treatment, retreatment, apexification, apicoectomy	
PERIODONTICS	60%
Periodontal scaling and root planing (once every two years)	
Gingivectomy, flap curettage and osseous surgery (once every three years)	
Periodontal Maintenance — twice per calendar year after qualifying periodontal treatment	
PROSTHODONTICS	60%
Fixed bridges (once every 5 years; ages 16 and older)	
Dentures (complete and partial — once every 5 years; ages 16 and older)	
Implant Services	
ORAL SURGERY	60%
ADJUNCTIVE GENERAL SERVICES	60%
Palliative treatment (for relief of pain but not to cure)	100%

Vision Plan Benefits (Vision Service Plan [VSP]) – EUTF & HSTA VB

Vision Exam & Eye Wear Benefits

Members can have an eye exam and choose between a pair of lenses or contact lenses every calendar year.
Frames are covered every other calendar year.

Service	Frequency	In-Network	Out-of-Network
Exam	Every calendar year	100% after $10 copay	Up to $45.00
Prescription Glasses – Lenses: - Single Vision Lenses - Lines Bifocals - Lines Trifocals - Polycarbonate (children up to age 18) - UV Coating	Every calendar year	100% after $25 copay	Single Lens - up to $45.00 Bifocal Lens – up to $65.00 Trifocal Lens – up to $85.00
Prescription Glasses – Frames:	Every other calendar year	$120 allowance plus 20% off out-of-pocket cost *Costco - $65 allowance	Up to $47.00
Contact Lenses Elective (Instead of Glasses)	Every calendar year	$120 allowance (applies to cost of contacts and fitting & evaluation)	Up to $105.00

Extra Discounts and Savings from VSP Providers

Glasses & Sunglasses

- **Average 35-40% savings on all non-covered lens options (such as tints, progressive lenses, anti-scratch coatings, etc.)**
- **30% off additional glasses & sunglasses, including lens options, from the same VSP doctor on the same day as your exam. Or 20% off any VSP doctor within 12 months of your last exam.***

Retinal Screening

- **Guaranteed pricing on retinal screening as an enhancement to your exam; $39 maximum copay.**

Contact Lenses

- **15% off cost of contact lens exam (fitting & evaluation)**
- **VSP has partnered with leading contact lens manufacturers to provide VSP members exclusive offers. Check out www.vsp.com for details.**

Laser Vision Correction

- **Average 15% off the regular price or 5% off the promotional price from VSP-contracted facilities.**
- **After surgery, use your frame allowance (if eligible) for sunglasses from any VSP doctor.**

* Costco pricing applies; there are no additional discounts. All other affiliate provider locations 20% off additional glasses and 15% off contact lens services within one year.

Summary of Benefit Eligibility
(For Members Hired Prior to 7/1/2012)

	Noncontributory Plan	Contributory Plan	Hybrid Plan
Normal Retirement	Age 62 and 10 years credited service; or age 55 and 30 years credited service	Age 55 and 5 years credited service	Age 62 and 5 years credited service; or age 55 and 30 years credited service
Early Retirement	Age 55 and 20 years credited service	Any age and 25 years credited service	Age 55 with 20 years credited service
Deferred Vesting	10 years credited service	5 years credited service and contributions left in the ERS	5 years credited service and contributions left in the ERS
Ordinary Disability	10 years credited service	10 years credited service	10 years credited service
Service-Connected Disability	Any age or credited service	Any age or credited service	Any age or credited service
Ordinary Death	Active employee at time of death with at least 10 years of credited service	Active employee at time of death with at least 1 year of service	Active employee at time of death with at least 5 years of service
Service-Connected Death	Any age or service	Any age or service	Any age or service

The benefit eligibilities summarized above apply to teachers and most State and County employees. Special provisions applicable to other groups of employees are outlined below:

Police officers, firefighters, investigators of the Department of the Prosecuting Attorney and the Attorney General, narcotic enforcement investigators, and public safety investigators may retire at age 55 with 5 years of credited service or at any age with 25 years of credited service.

Judges, elected officials, and legislative officers may retire at age 55 with at least 5 years of credited service, or at any age with at least 10 years of credited service. Judges hired after June 30, 1999 require 25 years of credited service in order to retire before age 55.

Sewer workers in specified classifications, water safety officers, and emergency medical technicians (EMTs) may retire at any age if they are credited with 25 years of such service with the last 5 or more years in these occupations. (The 25-year feature is phased in through 7/1/2008 for EMTs.)

Sewer workers in specified classifications, water safety officers, and emergency medical technicians (EMTs) that transfer to the Hybrid Plan may retire at age 62 with 5 years of credited service or at any age if they are credited with 25 years of such service with the last 5 or more years in these occupations.

Summary of Benefit Eligibility
(For Members Hired After 6/30/2012)

	Contributory Plan (for Police/Fire)	Contributory Plan (for Judges/Elected Officers)	Hybrid Plan
Normal Retirement	Age 60 and 10 years credited service	Age 60 and 10 years credited service	Age 65 and 10 years credited service; or Age 60 and 30 years credited service Sewer workers, water safety officers, and EMTs may retire with 25 years credited service at age 55.
Early Retirement	Age 55 and 25 years credited service	Age 55 and 25 years credited service any age with 10 years for elected officers	Age 55 with 20 years credited service Sewer workers, water safety officers, and emergency medical technicians (EMTs) may retire with 25 years credited service.
Deferred Vesting	10 years credited service and contributions left in the ERS	10 years credited service and contributions left in the ERS	10 years credited service and contributions left in the ERS
Ordinary Disability	10 years credited service	10 years credited service	10 years credited service
Service-Connected Disability	Any age or credited service	Any age or credited service	Any age or credited service
Ordinary Death	Active employee at time of death with at least 1 years of credited service	Active employee at time of death with at least 1 years of credited service	Active employee at time of death with at least 10 years of service
Service-Connected Death	Any age or service	Any age or service	Any age or service

SECTION F

SUMMARY OF PARTICIPANT DATA

Active Employee Age/Service Distribution

Attained Age	Years of Credited Service												
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	Total
Under 25	332	216	64	35	7	1	-	-	-	-	-	-	655
25-29	845	926	746	525	360	307	1	-	-	-	-	-	3,710
30-34	796	779	712	644	632	2,038	328	-	-	-	-	-	5,929
35-39	485	596	539	556	514	2,156	2,142	285	1	-	-	-	7,274
40-44	396	401	408	433	414	1,722	2,128	1,848	177	2	-	-	7,929
45-49	325	350	381	319	316	1,400	1,814	2,031	1,821	424	2	-	9,183
50-54	248	308	262	293	222	1,218	1,515	1,483	1,558	2,110	273	4	9,494
55-59	194	239	239	268	236	1,117	1,300	1,386	1,259	1,903	1,068	178	9,387
60-64	153	151	141	168	183	875	1,088	1,086	959	1,267	780	636	7,487
65 & Over	62	65	77	79	107	540	738	708	500	642	413	691	4,622
Total	3,836	4,031	3,569	3,320	2,991	11,374	11,054	8,827	6,275	6,348	2,536	1,509	65,670

Inactive Age Distribution

Age	Inactives	Retirees	Total
<35	756	21	777
35-39	927	6	933
40-44	1,103	16	1,119
45-49	1,460	117	1,577
50-54	1,765	402	2,167
55-59	1,666	1,718	3,384
60-64	1,481	5,047	6,528
65-69	396	9,756	10,152
70-74	104	10,076	10,180
75-79	13	6,896	6,909
80-84	1	5,530	5,531
85-89	0	4,358	4,358
90-94	0	2,385	2,385
95+	0	799	799
Total	9,672	47,127	56,799

Deferred inactive counts include Maui Hospital employees who were active as of the census date (March 31, 2017), but who were terminated on June 30, 2017 when the privatization of Maui HHSC occurred.

Hawaii Employee-Union Trust Fund
Distribution by Health Plan and Coverage Type

Actives

	Single	Two-Party	Family	Waived	Total
PPO	18,935	5,995	10,161	N/A	35,091
HMO	8,719	2,473	3,511	N/A	14,703
Others	0	0	12	N/A	12
Waived				15,864	15,864
Total Medical					**65,670**
Dental	26,632	11,651	15,585	11,802	**65,670**
Vision	26,358	10,461	14,181	14,670	**65,670**

Retirees

	Single	Two-Party	Family	Total
PPO	21,574	14,105	1,186	36,865
HMO	4,784	2,632	224	7,640
Others	157	79	4	240
Total Medical				**44,745**
Dental	26,530	17,081	1,379	**44,990**
Vision	26,511	17,278	1,447	**45,236**
Life				**41,679**

SECTION G

ACTUARIAL ASSUMPTIONS AND METHODS

Summary of Actuarial Assumptions and Methods

The actuarial assumptions used in the valuation are shown in this Section. Assumptions that are specific to certain groups (i.e. General Employees, Teachers, Police and Firefighters) are discussed under the first subsection that follows. Assumptions that are common to all types of members and unique to this valuation are then shown on the following pages.

Demographic and Certain Economic Assumptions

This Actuarial Valuation of the OPEB is similar to the Actuarial Valuations performed for ERS. All of the demographic assumptions and most of the economic assumptions used in this OPEB Valuation were identical to those used in the June 30, 2017 retirement system valuations performed by Gabriel, Roeder, Smith and Company. The assumptions which are common to the pension and OPEB valuations are described in Appendix A of this report.

Healthcare and Other Economic Assumptions

General Inflation was assumed to be 2.50% per year.

The rate of investment return was assumed to be 7.00% a year, compounded annually net after investment expenses. The assumed real return is the rate of return in excess of price inflation. Considering other assumptions used in the valuation, the nominal rate translates to a net real return of 4.50% a year.

Health Cost and Premium Increases – *See table below*

Year	***HMSA (PPO)***	***Kaiser (HMO)***	***Dental***	***Vision***	***Part B Premiums****
2019	6.60%	9.00%	3.50%	2.50%	2.00%
2020	6.60%	9.00%	3.50%	2.50%	5.00%
2021	9.00%	8.00%	3.50%	2.50%	5.00%
2022	7.50%	7.50%	3.50%	2.50%	5.00%
2023	7.25%	7.25%	3.50%	2.50%	5.00%
2024	7.00%	7.00%	3.50%	2.50%	5.00%
2025	6.75%	6.75%	3.50%	2.50%	5.00%
2026	6.50%	6.50%	3.50%	2.50%	5.00%
2027	6.25%	6.25%	3.50%	2.50%	5.00%
2028	6.00%	6.00%	3.50%	2.50%	5.00%
2029	5.75%	5.75%	3.50%	2.50%	5.00%
2030	5.50%	5.50%	3.50%	2.50%	5.00%
2031	5.25%	5.25%	3.50%	2.50%	4.90%
2032	5.00%	5.00%	3.50%	2.50%	4.80%
2033+	4.86%	4.86%	3.50%	2.50%	4.70%

The premiums for 2017 and 2018 were known at the time of the valuation. The first trend rate shown above is assumed to occur at 1/1/2019. Future increases are also assumed to occur on 1/1. The HMSA and Kaiser trend rates are blended rates used to project both medical and prescription drug costs.

** The trend rates shown above for the Part B premiums apply to the BMC and the Part B premiums for future retirees. As a result of the "hold harmless" provision in the Part B statutes, retirees who were enrolled in Social Security in 2017 will see varying increases in their Part B premiums in 2018. It was assumed that Part B premiums for the retirees who have been held harmless would converge to the standard Part B premiums in 2019. As a result, it was assumed that the Part B premiums for the participants who were retired as of the valuation date would increase by 22.94% effective 1/1/2018 and by 4.71% effective 1/1/2019.*

The 4.86% ultimate trend assumption for the HMSA and Kaiser plans is comprised of 2.50% long-term price inflation + 2.20% real GDP growth + 0.16% for excise tax.

Healthcare and Other Economic Assumptions (Continued)

Plan Participation

The plan participation rates were assumed to vary based on the employer contribution percentage, as follows:

Employer Contribution	Rates of Participation		
	Medical, Prescription Drug, Dental and Vision	Life Insurance	Medicare Part B
0%	25%	100%	98%
50%	65%	100%	98%
75%	90%	100%	98%
100%	98%	100%	98%

The same assumptions were used for terminated participants with vested pension benefits. However, current active employees who terminate service prior to the age of 35 are not assumed to ever participate in the retiree health plan.

For current retirees, the actual family coverage election is used. For future retirees, the family coverage assumptions are 40% single / 50% two-party / 10% family prior to age 65 and 50% single / 50% two-party after the age of 65. For those that elect two-party or family coverage, it was assumed that coverage would continue to the spouse upon death of the retiree.

Plan Elections

For current retirees, plan elections were based on the plan in which they are currently enrolled. For future retirees, plan participation was assumed to be 82% HMSA / 18% Kaiser.

Administration Fees

The following table provides the assumed 2018 administration fees. For the purpose of the OPEB valuation, it was assumed that the administration fees would be in addition to the premiums shown in Section E.

Monthly Fee	Single Party	Two-Party	Family
Medical and Drug	$3.89	$7.78	$11.67
Dental	0.27	0.54	0.81
Vision	0.05	0.09	0.14
Life	0.02	n/a	n/a

Healthcare and Other Economic Assumptions (Continued)

Aging Factors: In any given year, the cost of medical and prescription drug benefits vary by age. As the ages of retirees in the covered population increase so does the cost of benefits. Morbidity tables are employed to develop Per Capita Costs at every relevant age. The following table represents the percent by which the cost of medical and prescription drug benefits at one age is higher than the cost for the previous age. For example, according to the following table, the cost of benefits for a male age 55 is 5.50% higher than for one age 54. These percentages below are separate from the annual Medical Trend, which operates to increase costs independent of and in addition to the Aging Factors shown below.

Sample	Cost Increases by Age	
Ages	Male	Female
45	4.66%	1.88%
50	5.83%	3.53%
55	5.50%	2.85%
60	5.06%	3.45%
65	3.34%	3.28%
70	1.77%	2.02%
75	1.15%	1.32%
80	0.82%	1.05%
85	-0.27%	0.49%
90	-0.32%	0.03%

Actuarial Methods

The individual entry age actuarial cost method was used in determining liabilities and normal cost. Differences between assumed experience and actual experience ("actuarial gains and/or losses") become part of actuarial accrued liabilities.

Unfunded actuarial accrued liabilities are amortized to produce payments (principal & interest) which are a level percent of payroll. Closed bases will be established at each valuation for new unfunded liabilities. If experience produces a gain during a valuation cycle, the new base will be netted against a loss that has not been fully offset. This process substantially reduces volatility as bases are fully amortized.

Miscellaneous and Technical Assumptions

Actuarial Value of Assets	Market Value
Claims Utilization	To model the impact of aging on the underlying health care costs, the valuation relied on the Society of Actuaries' 2013 Study "Health Care Costs – From Birth to Death". Chart 1 (2010 Aggregate Commercial Costs) was used to model the impact of aging for ages less than 65 and Table 4 (Development of Plan Specific Medicare Age Curve) was used to model the impact of aging for ages 65 and over.
Marriage Assumption	100% of males and females are assumed to be married for purposes of death-in-service benefits. For future retirees, husbands are assumed to be four years older than wives.
Pay Increase Timing	Beginning of (fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing	Except for teachers, decrements of all types are assumed to occur mid-year. For teachers, the normal retirement, early retirement and termination decrements are assumed to occur at the beginning of the year.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Decrement Operation	Disability and mortality decrements are added to the termination decrements during the first 5 years. Disability is added to the retirement decrement during retirement eligibility.
Deferred Age	Terminated employees with vested pension benefits are assumed to commence their benefit at age 62 or their current age if they are older than 62 as of the valuation date.
Incidence of ARC Contributions	The ARC is assumed to be received at the middle of the year.
Administrative Expenses	Administrative expenses are included in the age-rated costs the premiums.
Reliance on Other Actuaries	We have relied on the premiums develop by Segal Consulting for the self-insured PPO prescription drug benefit.

Miscellaneous and Technical Assumptions (continued)

Excise Tax and Health Care Reform	The excise tax is expected to increase the present value of projected medical and Rx benefits by 3.9% for pre-65 retirees by 1.3% for post-65 retirees. There is no anticipated impact on the liability associated with the employer paid Part B premiums, dental, vision or life insurance benefits. In addition, the employer caps will limit the liability for retirees who receive 75% or 50% of the BMC. The overall impact of the excise tax, after considering the percentage of the OPEB liability attributable to each type of benefit, was determined to be 1.6% of the present value of future benefits. The impact of the excise tax was modeled by increasing the ultimate trend assumption for the healthcare costs by 0.16%.

Assumption/Method Changes

1. Mortality and other demographic assumptions have been updated to match those developed in the June 30, 2015 Hawaii Employees' Retirement System Experience Study. Taken together, these changes increased the OPEB liability.
2. The inflation rate assumption was lowered from 3.00% to 2.50%.
3. The trend rates were reset to better reflect the plan's anticipated experience and the new inflation assumption. This change increased the ARC and associated liabilities.
4. The tables used to model the impact of aging on the underlying claims were updated based on the Society of Actuaries' 2013 Study "Health Care Costs – From Birth to Death."
5. The percentage of pre-65 retirees assumed to elect retiree + spouse coverage was increased from 45% to 50%. The percentage of pre-65 retirees assumed to elect family coverage was increased from 5% to 10%.

APPENDIX A

DEMOGRAPHIC AND CERTAIN ECONOMIC ASSUMPTIONS

Demographic and Certain Economic Assumptions

A. Economic Assumptions

1. Payroll growth rate: 3.50% per annum.

2. Salary increase rate: As shown below

	General Employees		Teachers	
Years of Service	Service-related Component	Total Rate Including 2.50% Inflation Component and 1.00% Productivity Component	Service-related Component	Total Rate Including 2.50% Inflation Component and 1.25% Productivity Component
1	3.00%	6.50%	2.00%	5.75%
2	3.00%	6.50%	1.75%	5.50%
3	2.00%	5.50%	1.75%	5.50%
4	1.50%	5.00%	1.50%	5.25%
5	1.50%	5.00%	1.00%	4.75%
6	1.25%	4.75%	1.00%	4.75%
7	1.25%	4.75%	0.75%	4.50%
8	1.00%	4.50%	0.75%	4.50%
9	1.00%	4.50%	0.50%	4.25%
10	1.00%	4.50%	0.50%	4.25%
11	0.75%	4.25%	0.50%	4.25%
12	0.75%	4.25%	0.50%	4.25%
13	0.50%	4.00%	0.25%	4.00%
14	0.50%	4.00%	0.25%	4.00%
15	0.50%	4.00%	0.25%	4.00%
16	0.50%	4.00%	0.25%	4.00%
17	0.50%	4.00%	0.25%	4.00%
18	0.50%	4.00%	0.25%	4.00%
19	0.50%	4.00%	0.25%	4.00%
20	0.25%	3.75%	0.25%	4.00%
21	0.25%	3.75%	0.25%	4.00%
22	0.25%	3.75%	0.25%	4.00%
23	0.25%	3.75%	0.25%	4.00%
24	0.25%	3.75%	0.25%	4.00%
25 or more	0.00%	3.50%	0.00%	3.75%

Police & Firefighters		
Years of Service	Service-related Component	Total Annual Rate of Increase Including 2.50% Inflation Component and 2.5% General Increase Rate
1	2.00%	7.00%
2	2.00%	7.00%
3 or more	0.00%	5.00%

Salary increases are assumed to occur once a year, on July 1. Therefore the pay used for the period between the valuation date and the first anniversary of the valuation date is equal to the reported pay for the prior year, annualized if necessary, and then increased by the salary increase assumption. To adjust the pays received as of March 31st to the June 30th valuation date, the reported pay for each member is increased by 1%.

B. Demographic Assumptions

1. Mortality rates:

Active Members: Multiples of the RP 2014 mortality table for employees with generational projection using the BB projection table from the year 2014 based on the occupation of the member as follows:

	General Employees	Teachers	Police and Fire
Type	Male & Female	Male & Female	Male & Female
Ordinary	75%	55%	58%
% of Ordinary Choosing Annuity	41%	52%	24%
Duty Related	5%	5%	12%

Healthy Retirees: The 2016 Public Retirees of Hawaii mortality table, generational projection using the BB projection table from the year 2016 and with multipliers based on plan and group experience. The following are sample rates of the base table as of 2016 with the corresponding multipliers:

Healthy Annuitant Mortality Rates Before Projection (Multiplier Applied)

	General Employees		Teachers		Police and Fire	
Age	Male	Female	Male	Female	Male	Female
50	0.1626%	0.1140%	0.1463%	0.1012%	0.1951%	0.1140%
55	0.3963%	0.1937%	0.3567%	0.1720%	0.4756%	0.1937%
60	0.6301%	0.2735%	0.5671%	0.2428%	0.7561%	0.2735%
65	0.9489%	0.3532%	0.8540%	0.3136%	1.1387%	0.3532%
70	1.3733%	0.7404%	1.2360%	0.6574%	1.6480%	0.7404%
75	2.1071%	1.3116%	1.8964%	1.1645%	2.5285%	1.3116%
80	3.6268%	2.2573%	3.2641%	2.0041%	4.3522%	2.2573%
85	6.6210%	4.1830%	5.9589%	3.7138%	7.9452%	4.1830%
90	12.1005%	8.2371%	10.8905%	7.3133%	14.5206%	8.2371%
Multiplier	100%	107%	90%	95%	120%	107%
Setback	0	0	0	0	0	0

The following table provides the life expectancy for individuals retiring in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years

	Year of Retirement			
Gender	2020	2025	2030	2035
General Retirees				
Male	23.2	23.7	24.2	24.7
Female	26.4	26.8	27.2	27.5
Teachers				
Male	24.0	24.5	25.0	25.5
Female	27.3	27.7	28.0	28.3
Police and Fire				
Male	21.8	22.3	22.8	23.3
Female	26.4	26.8	27.2	27.5

Disabled retirees: Base Table for healthy retiree's occupation, set forward 5 years, generational projection using the BB projection table from the year 2016. Minimum mortality rate of 3.5% for males and 2.5% for females.

2. Disability rates – The assumed total disability rates at select ages are multiples of the client specific table that follows:

Age	Male & Female
25	0.000%
30	0.001%
35	0.008%
40	0.026%
45	0.064%
50	0.146%
55	0.198%
60	0.217%

Note: The disability rates project the percentage of employees at each age that is assumed to become disabled before retiring. Multiples of the rates above are assumed to be ordinary disability or accidental disability, and varies by employee group as follows:

	General Employees	Teachers	Police and Fire
Type	Male & Female	Male & Female	Male & Female
Ordinary	210%	75%	70%
Accidental	30%	5%	75%

3. Termination Rates - Same male and female rates, based solely on the member's service. Rates reflect terminations for causes other than death, disability or retirement. Employees eligible for retirement are assumed to have no probability of termination. Sample rates are shown below:

	Expected Terminations per 1,000 Lives (Male & Female)		
Years of Service	General Employees	Teachers	Police & Fire
0	185.9	243.6	110.0
1	152.5	200.8	95.0
2	124.6	164.7	37.0
3	101.6	134.4	30.1
4	82.9	109.4	26.1
5	67.9	89.0	23.3
6	56.1	72.5	21.0
7	47.0	59.5	19.2
8	40.1	49.4	17.7
9	35.1	41.7	16.4
10	31.5	36.0	15.2
11	29.1	31.9	14.1
12	27.6	29.0	13.2
13	26.6	27.0	12.3
14	25.9	25.7	11.5
15	25.5	24.8	10.8
16	25.1	24.0	10.1
17	24.5	23.2	9.5
18	23.9	22.4	8.9
19	23.0	21.4	8.3
20	22.0	20.2	7.7
21	20.8	18.7	7.2
22	19.5	17.1	6.8
23	18.3	15.4	6.3
24	17.4	13.6	5.8
25	16.8	12.1	0.0
26	16.8	10.9	0.0
27	16.8	10.4	0.0
28	16.8	10.7	0.0
29	16.8	10.0	0.0
30 and more	0.0	0.0	0.0

4. Retirement rates - Separate male and female rates, based on age. Sample rates are shown below:

Contributory Members

Expected Retirements per 100 Lives

	General Employees				Teachers				Police/Fire
	Unreduced Retirement		Reduced Retirement		Unreduced Retirement		Reduced Retirement		Unreduced Retirement
Age	Male	Female	Male	Female	Male	Female	Male	Female	Male & Female
45	0	0	0	0	0	0	0	0	12.5
46	0	0	0	0	0	0	0	0	12.5
47	0	0	0	0	0	0	0	0	12.5
48	0	0	0	0	0	0	0	0	12.5
49	0	0	0	0	0	0	0	0	12.5
50	0	0	0	0	0	0	1	0	15.0
51	0	0	2	1	0	0	1	1	15.0
52	0	0	2	1	0	0	1	1	15.0
53	0	0	2	1	0	0	2	2	15.0
54	0	0	3	2	0	0	3	3	15.0
55	25	20	3	2	20	18			20.0
56	25	20			15	16			20.0
57	16	13			15	16			20.0
58	16	13			15	16			22.0
59	13	13			15	16			25.0
60	13	15			14	18			30.0
61	13	15			14	18			30.0
62	28	25			14	25			30.0
63	20	20			14	20			30.0
64	20	20			14	15			30.0
65	20	20			20	25			100.0
66	18	20			15	25			
67	18	20			15	20			
68	18	20			15	20			
69	18	20			15	20			
70	20	20			15	20			
71	20	20			15	20			
72	20	20			15	20			
73	20	20			15	20			
74	20	20			15	20			
75	100	100			100	100			

Noncontributory Members

	Expected Retirements per 100 Lives							
	General Employees				Teachers			
	Unreduced Retirement		Reduced Retirement		Unreduced Retirement		Reduced Retirement	
Age	Male	Female	Male	Female	Male	Female	Male	Female
55	20	11	1	1	10	13	1	2
56	18	11	1	1	10	7	1	2
57	13	11	1	1	10	8	1	2
58	10	11	1	1	10	10	2	2
59	10	11	2	2	10	20	3	3
60	10	14	3	3	10	11	5	5
61	11	18	4	4	10	16	7	5
62	20	20			16	25		
63	20	20			12	20		
64	12	20			10	15		
65	14	20			20	25		
66	20	20			15	25		
67	20	20			15	25		
68	20	20			15	25		
69	20	20			15	25		
70	20	20			15	25		
71	20	20			15	25		
72	20	20			15	25		
73	20	20			15	25		
74	20	20			15	25		
75	100	100			100	100		

Note: Retirement rates for the 25 & out group age 50-54 are 10% for male and 11% for female.

Hybrid Members

	Expected Retirements per 100 Lives							
	General Employees				Teachers			
	Unreduced Retirement		Reduced Retirement		Unreduced Retirement		Reduced Retirement	
Age	Male	Female	Male	Female	Male	Female	Male	Female
55	16	18	1	1	20	16	2	2
56	10	13	1	1	13	10	2	2
57	10	13	1	1	13	10	2	2
58	14	13	1	2	13	12	2	2
59	14	13	2	2	13	12	3	3
60	14	13	2	4	14	14	3	5
61	14	15	3	4	14	18	3	10
62	21	20			22	30		
63	18	20			14	20		
64	18	20			14	20		
65	21	20			20	25		
66	18	18			15	25		
67	18	18			15	25		
68	18	18			15	25		
69	18	18			15	25		
70	20	20			15	25		
71	20	20			15	25		
72	20	20			15	25		
73	20	20			15	25		
74	20	20			15	25		
75	100	100			100	100		

Note: Retirement rates for the 25 & out group age 50-54 are 6% for both male and female.

For members hired after June 30, 2012 the retirement rates for members once they reach unreduced retirement eligibility are increased 10% (multiplicative) for each year the member is beyond the age the member would have been eligible under the Hybrid provisions for members hired prior to June 30, 2012.

APPENDIX B

GLOSSARY

Glossary

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent. A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Annual Required Contribution (ARC). The ARC is the normal cost plus the portion of the unfunded actuarial accrued liability to be amortized in the current period. The ARC is an amount that is actuarially determined in accordance with the requirements so that, if paid on an ongoing basis, it would be expected to provide sufficient resources to fund both the normal cost for each year and the amortized unfunded liability.

Medical Trend Rate (Health Inflation). The increase in the plan's cost over time. Trend includes all elements that may influence a plan's cost, assuming that enrollments and the plan benefits do not change. Trend includes such elements as, pure price inflation, changes in utilization, advances in medical technology, and cost shifting.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Other Post-Employment Employee Benefits (OPEB). OPEB are post-employment benefits other than pensions. OPEB generally takes the form of health insurance and dental, vision, prescription drugs or other healthcare benefits.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability."

Valuation Assets. The value of current plan assets recognized for valuation purposes.