MILLIMAN REPORT

Actuarial Valuation of The Duty Disability Insurance Program

As of December 31, 2022

May 24, 2023

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May 15, 2023

Ms. Cindy Klimke, CPA
Chief Trust Finance Officer
State of Wisconsin
Department of Employee Trust Funds
4822 Madison Yards Way
Madison, Wisconsin 53705-9100

RE: Actuarial Valuation of Duty Disability Program as of December 31, 2022

Dear Cindy:

This report contains the results of an actuarial valuation of the Duty Disability insurance program as of December 31, 2022. The results include estimated liabilities as of December 31, 2022, and financial projections of Duty Disability fund balances under different scenarios. This report also provides documentation of the valuation methods and assumptions we used for performing the analysis.

The State of Wisconsin Department of Employee Trust Funds (ETF) and its auditors have determined that the Duty Disability insurance program is not subject to the provisions of GASB 74, which govern the financial reporting of Other Post-Employment Benefits (OPEBs), and which require the use of pension accounting methods, including the calculation of a liability for active lives. We have therefore performed this valuation according to the requirements of GASB 10 ("Accounting and Reporting for Risk Financing and Related Insurance Issues"), which do not require the calculation of a liability for active lives. This approach is consistent with last year's valuation of the Duty Disability insurance program. Ultimately it is the responsibility of ETF and its auditors to determine the applicable accounting standards for the plans.

The valuation results discussed in this report include estimated liabilities for Duty Disability claims that were open as of December 31, 2022, and for claims incurred but not reported (IBNR) as of December 31, 2022. These liabilities represent the present value of expected future benefit payments and expected costs for adjudicating claims. Because GASB 10 does not require the calculation of a liability for active lives, we have not included an estimate of future claim liabilities for active members.

This report is prepared solely for the internal business use of ETF under the terms of Contract Amendment 18 between Milliman and ETF. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a release, subject to the following exceptions:

a) ETF may provide a copy of Milliman's work, in its entirety, to ETF's auditors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit ETF.

b) ETF may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

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

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by ETF, including historical claim data, reserve statements, and active member data. While Milliman has not audited this data, we have reviewed it for reasonableness and it is, in our opinion, sufficient and reliable for the purposes of our calculations. If any of this information as summarized in this report is inaccurate or incomplete, the results shown could be materially affected and this report may need to be revised.

The discount rate used for this valuation was prescribed by ETF and is specified in this report. We have performed no independent assessment of the reasonableness of this assumption. ETF is solely responsible for establishing the assumption and communicating any changes to Milliman for the purpose of this valuation.

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

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. ETF has the final decision regarding the appropriateness of the assumptions and actuarial cost methods.

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

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices.

I, Paul L. Correia, FSA, MAAA, am a consulting actuary for Milliman, Inc. I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

I, Daniel D. Skwire, FSA, MAAA, am a consulting actuary for Milliman, Inc. I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sincerely,

Paul L. Correia, FSA, MAAA
Principal and Consulting Actuary
Milliman, Inc.

Daniel D. Skwire, FSA, MAAA
Principal and Consulting Actuary
Milliman, Inc.

Section I: Introduction and Executive Summary

The estimated liabilities for the Duty Disability insurance program as of December 31, 2022 are summarized in Table 1.1 below:

Table 1.1 Estimated Liabilities for the Duty Disability Program As of December 31, 2022	
Liability Component	Estimated Liability
Open Claims	$481,530,420
Future Survivors	$34,830,670
IBNR Claims	$29,686,049
Loss Adjustment Expenses	$10,968,617
Overpayment Recovery	$(251,942)
Total	**$556,763,814**

The liability for open claims includes estimated liabilities for 958 disabled members and 55 survivors (i.e., surviving family members including spouses, domestic partners, and dependent children) who were receiving benefits on December 31, 2022. The liability for future survivors represents the present value of expected future benefit payments to survivors of currently disabled members. The liability for IBNR claims represents the present value of expected future benefit payments to members and survivors whose claims were incurred but were unreported as of December 31, 2022, as well as any claims that were reported as of December 31, 2022 but had not yet been approved for payment. The liability for loss adjustment expenses is the present value of expected costs arising from the ongoing management and payment of Duty Disability claims. The Overpayment Recovery represents the present value of overpayment balances expected to be recovered. The estimated liabilities and valuation methods are discussed in detail in Section II of this report.

We analyzed the funding status of the Duty Disability program as of December 31, 2022 based on a starting smoothed fund balance equal to $745 million at the beginning of the year. The fund balance as of December 31, 2022 was equal to 135.4% of estimated liabilities as of December 31, 2022, as shown in Table 1.2 below. This 135.4% fund ratio was slightly higher than the target fund range of 125% to 135% approved by the Board in 2019 and reviewed by the Board in 2022 resulting in no changes to the target range.

Table 1.2: Duty Disability Funding Analysis	
Balance Sheet Item	2022
Beginning of Year Balance	$744,537,327
Plus: Investment Income (Smoothed)	$45,637,204
Plus: Premium Contributions	$1,983,711
Less: Insurance Claims	$37,234,267
Less: Administrative Expenses	$864,045
End of Year Balance	$754,059,930
Estimated Liability as of December 31, 2022	$556,763,814
Surplus ($)	$197,296,116
Fund Balance (% of Estimated Liability)	135%

We have projected future financial experience and expected fund levels from 2023 through 2031 based on the current contribution rates. According to this projection, the funding ratio is expected to increase slightly during the projection period. The financial projections are provided in Section III of this report.

Section II: Actuarial Valuation

The estimated liabilities for the Duty Disability program as of December 31, 2022 consist of the following components:

- Open Claims: The liability for open claims represents the present value of expected future benefit payments to disabled members and survivors approved for Duty Disability benefits as of December 31, 2022. There were 958 disabled members and 55 survivors reported as of December 31, 2022.
- Future Survivors: Monthly death benefits are payable to surviving spouses/domestic partners and children if the disabled member dies as a result of the same injury or disease for which Duty Disability benefits were payable. The liability for future survivors represents the present value of expected future benefit payments to survivors of currently disabled members.
- Incurred But Not Reported (IBNR) Claims: The liability for IBNR claims represents the present value of expected future benefit payments to members and survivors whose claims were incurred but had not been reported as of December 31, 2022, as well as claims that had been reported as of December 31, 2022 but had not yet been approved for payment.
- Loss Adjustment Expenses: The liability for loss adjustment expenses represents the present value of expected future expenses related to the ongoing management and payment of Duty Disability claims.
- Overpayment Recovery: The overpayment recovery credit represents the present value of amounts receivable from claimants due to overpayments.

A comparison of the estimated liabilities for the Duty Disability program between December 31, 2021 and December 31, 2022 is provided below in Table 2.1.

Table 2.1: Comparison of Estimated Liabilities December 31, 2021 vs. December 31, 2022		
Liability Component	December 31, 2021	December 31, 2022
Open Claims	$459,788,617	$481,530,420
Future Survivors	$26,056,203	$34,830,670
IBNR Claims	$27,607,638	$29,686,049
Loss Adjustment Expense	$10,307,749	$10,968,617
Overpayment Recovery	N/A	$(251,942)
Total	**$523,760,207**	**$556,763,814**

Open Claims

The estimated liability for open claims increased by approximately 4.7% from $460 million as of December 31, 2021 to $482 million as of December 31, 2022. The number of open claims decreased from 1,021 open claims on December 31, 2021 to 1,013 open claims on December 31, 2022, and the average monthly benefit amount increased by 1.4% from $2,914 as of December 31, 2021 to $2,954 as of December 31, 2022. The increase in the estimated liability from December 31, 2021 to December 31, 2022 was driven primarily by the Duty Disability benefit increases that were applied in January of 2023 – i.e., 8.9% based on the national wage index and 7.4% based on the core annuity index.

As described in our experience study report, there were differences between the assumptions and methods used to calculate the liabilities as of December 31st, 2021 and December 31st, 2022. For example, an overpayment recovery credit was included in the liability this year based on an analysis of overpayment balances and recoveries performed as part of our experience studies. The experience study report analyzed the differences in claim liabilities as of December 31st, 2021 under the prior and current methods, and showed a 1.5% decrease in the open claim liability overall.

Future Survivors

The Duty Disability program provides death benefits to surviving spouses, domestic partners, and children of disabled members who die as a result of the same injury or disease for which Duty Disability benefits were payable. We calculated a liability for future survivors by computing the present value of expected future benefits payable to survivors of currently disabled members. We have assumed that all disabled members are married or living with domestic partners, and that males are three years older than their spouse/domestic partner and females are three years younger than their spouse/domestic partner. We also assumed that 25% of disabled members will die from the same condition that triggered Duty Disability benefits, and therefore that 25% of spouses or domestic partners will be eligible to receive benefits upon the death of the disabled member. This assumption was developed during our experience studies and is lower than last year's assumption of 33% of spouses or domestic partners. In addition, we assumed that each disabled employee younger than age 55 would have 1.6 children at the time of death.

The estimated liability for future survivors increased by approximately 34% from $26.1 million as of December 31, 2021 to $34.8 million as of December 31, 2022. This change is due primarily to changes in mortality rates as well as the addition of an estimated liability for child benefits which was not explicitly estimated in prior years, as discussed in the experience study report.

IBNR Claims

The liability for IBNR claims represents the expected portion of program costs attributable to claims incurred but not reported as of the December 31, 2022 valuation date, and any claims in pending status that were not reported in the claim data. We computed the liability for IBNR claims by estimating an average annual incurred claim cost based on historical claim experience, and by estimating the proportion of incurred claims that were unreported as of December 31, 2022.

The following table shows Duty Disability incurred claims and annual payroll from 2015 through 2022, and the final column shows the ratio of incurred claims to annual payroll. This year, we used a different method for estimating incurred claims based on the disabled member's Qualifying Date in the Duty Disability database, rather than the Injury Date. Since we use average incurred claims over a five-year experience period for estimating annual incurred claims, this change did not have a material impact on the estimated liability for IBNR claims.

Table 2.2: Duty Disability Incurred Claims and Payroll
Experience Period: 2015 through 2022

Calendar Year	Incurred Claims	Annual Payroll	Inc. Claims % of Payroll
2015	$11,250,071	$1,358,934,175	0.83%
2016	$11,959,797	$1,389,907,027	0.86%
2017	$11,180,706	$1,421,147,406	0.79%
2018	$9,039,503	$1,461,189,324	0.62%
2019	$7,039,459	$1,516,325,749	0.46%
2020	$3,150,754	$1,632,443,485	0.19%
2021	$4,826,891	$1,630,737,716	0.30%
2022	$203,376	$1,732,299,232	0.01%

We assumed that incurred claims experience from 2015 through 2019 is complete—i.e., we assumed that all claims incurred prior to 2019 had been reported as of December 31, 2022. Based on Duty Disability incurred claims experience from 2015 through 2019, we have assumed average incurred claims equal to 0.71% of payroll in any given year. We then calculated the cost for IBNR claims incurred in 2020 through 2022 as the difference between estimated annual incurred claims (based on 0.71% of payroll) and known incurred claims in those years, as shown below.

Table 2.3: Estimated Cost for IBNR Claims As of December 31, 2022			
Calendar Year	Known Incurred Claims	Estimated Incurred Claims	Estimated IBNR Cost
2020	$3,150,754	$11,526,915	$8,376,160
2021	$4,826,891	$11,514,870	$6,687,979
2022	$203,376	$12,232,010	$12,028,635

The estimated cost is $12.0 million for IBNR claims incurred in 2022, $6.7 million for IBNR claims incurred in 2021, and $8.4 million for IBNR claims incurred in 2020. The estimated liability for IBNR claims is the present value of these three components as of December 31, 2022—i.e., $29,686,049.

Loss Adjustment Expenses

The liability for loss adjustment expenses represents the present value of expected future expenses related to the ongoing management and payment of Duty Disability claims. We used the same assumptions as last year for calculating the liability for loss adjustment expenses. These assumptions were developed from an analysis of Duty Disability administrative expenses from 2015 through 2019. In calculating the liabilities, we assumed that future expenses related to the ongoing management and payment of Duty Disability claims will be equal to 1.9% of benefit payments for open claims and 3.9% of benefit payments for IBNR claims. The assumption is higher for IBNR claims to reflect the additional costs related to adjudicating new claims. The estimated liability for loss adjustment expenses is $10,968,617 as of December 31, 2022.

Section III: Discussion of Duty Disability Funding Levels

This section contains an analysis of current and future funding levels. The following table shows the Duty Disability fund balances and financial activity in 2022:

Table 3.1
Duty Disability Funding Analysis

Balance Sheet Item	2022
Beginning of Year Fund Balance	$744,537,327
Plus: Smoothed Investment Income	$45,637,204
Plus: Premium Contributions	$1,983,711
Less: Insurance Claims	$37,234,267
Less: Administrative Expenses	$864,045
End of Year Fund Balance	$754,059,930
Estimated Liability as of December 31, 2022	$556,763,814
Surplus ($)	$197,296,116
Fund Ratio (% of Estimated Liability)	135.4%

The fund balance as of December 31, 2022 ($754.1 million) is equal to 135.4% of the estimated liability as of December 31, 2022. The Board approved a fund target range of 125% to 135% of the estimated liability for the Duty Disability program in 2019, and reviewed this policy in 2022 resulting in no change to the target range.

We have developed financial projections to estimate the long-term performance of the Duty Disability fund. The projections reflect actual results for 2022 and projected values in 2023 and beyond. The key elements of these projections include the following:

- **Beginning Balance**: The projected beginning balance for each year is equal to the prior year's ending balance.
- **Payroll**: 2023 payroll was provided to us by ETF. Future payroll is assumed to increase by 3.0% per year, consistent with the assumption used by ETF for retirement fund projections. We also assume a 1.7% increase in payroll in 2024 due to 2023 Wisconsin Act 4 allowing county jailers to reclassify as protective occupation participants. This assumption is based on data provided by ETF corresponding to jailers impacted by the new law.
- **Premium Contributions**: Premiums are modeled as a percentage of payroll. Although actual contribution rates vary by employer, we calculated an overall contribution rate of 0.060% for 2023 based on the projected 2023 premium contributions.
- **Investment Income**: Investment income is equal to 6.8% of starting fund balances throughout the projection period, specified by ETF.
- **Insurance Claims**: Annual paid insurance claims are the sum of projected payments on existing claims as of December 31, 2022, and payments on expected future claims incurred after December 31, 2022.
- **Administrative Expenses**: Administrative expenses are modeled as a constant percentage of paid insurance claims, based on actual values in 2022.
- **Ending Balance**: The ending balance equals the starting balance, plus premiums, plus investment earnings, less claims, and less expenses.
- **Estimated Liability**: The incurred claim liability is modeled in a similar fashion to the insurance claims. It represents the sum of the decreasing liability on claims that existed as of December 31, 2022 and of the increasing liability for claims incurred after December 31, 2022.
- **Surplus or Deficit**: The projected surplus or deficit equals the ending balance less the actuarial liability.

Financial projections were developed for the following scenarios:

- The **Baseline** scenario assumes that the current contribution rates are held level in all years.

- In **Scenario 1** we assume that the current contribution rates are held level in all years, and that there is an investment loss in 2023 large enough to bring the fund ratio to the lower end of the target range (i.e., 125%).

- **Scenario 2** is the same as the baseline scenario except that we assume a 6.9% increase in covered payroll starting in 2024 due to 2023 Wisconsin Act 4 instead of the 1.7% assumption in the baseline scenario. The 6.9% assumption is also based on data provided by ETF corresponding to protective members impacted by the new law. This data included a low and high estimate of jailers who would remain protective, and we used the low estimate for the baseline assumption and the high estimate for Scenario 2.

- **Scenario 3** is the same as the baseline scenario except that premiums are waived in 2024 and then resume in 2025 and beyond.

The financial projections for these scenarios are provided on the following pages. In the Baseline Scenario, the fund balance is expected to grow to $812 million by the end of 2031 (137% of the estimated liability on December 31, 2031). The modest growth in the fund ratio during the projection period is driven by the investment income projected in future years, based on a rate of 6.8% per year.

Scenario 1 demonstrates the sensitivity of the fund balances to adverse investment income in 2023. In this scenario we assumed a 0.96% loss for 2023 which results in the projected fund ratio reducing to 125% by December 31, 2023 – i.e., the lowest ratio in the 125% to 135% target range for the program. The projected fund ratio continues to be below the target range and the projected fund balance reduces to $713 million by December 31st, 2031 (120% of the estimated liability).

Scenario 2 shows the sensitivity of the fund balances to enrollment changes in 2024 triggered by Wisconsin Act 4 of 2023. In this scenario the fund balance decreases to $810 million by December 31st, 2031 (135% of the estimated liability).

Scenario 3 shows the sensitivity of the fund balances to premium contributions by assuming the premium contributions in 2024 are waived and resume in 2025 and beyond. In this scenario the fund balance increases to $810 million by December 31st, 2031 (136% of the estimated liability).

The financial projections depend on a variety of actuarial assumptions about future experience, including but not limited to investment income, payroll growth, future mortality rates, and disability claim incidence rates. For example, the projections are sensitive to the 6.8% investment income assumption. It is nearly certain that actual experience will vary from these assumptions, meaning that the plan's actual surplus or deficit will be higher or lower than the illustrated values.

Baseline Scenario
Investment Income: 6.8%
Premium Contributions: Current contribution rates

Calendar Year	Actual	Projected								
	2022	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
BOY Fund Balance	$744,537,327	$754,059,930	$765,673,202	$775,494,685	$783,385,116	$789,214,191	$794,662,989	$799,675,899	$804,301,348	$808,436,275
Premium Contributions	$1,983,711	$1,067,991	$1,118,983	$1,152,552	$1,187,129	$1,222,743	$1,259,425	$1,297,208	$1,336,124	$1,376,208
Miscellaneous Income	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Investment Income	$45,637,204	$51,276,075	$52,065,778	$52,733,639	$53,270,188	$53,666,565	$54,037,083	$54,377,961	$54,692,492	$54,973,667
Total Revenues	$47,620,915	$52,344,066	$53,184,761	$53,886,191	$54,457,317	$54,889,308	$55,296,508	$55,675,169	$56,028,616	$56,349,874
Insurance Claims	$37,234,267	$39,807,047	$42,379,826	$44,952,606	$47,525,385	$48,319,231	$49,143,199	$49,891,945	$50,716,774	$51,510,123
Administrative Expense	$864,045	$923,748	$983,451	$1,043,154	$1,102,857	$1,121,279	$1,140,399	$1,157,775	$1,176,915	$1,195,325
Total Operating Expenses	$38,098,312	$40,730,795	$43,363,277	$45,995,760	$48,628,242	$49,440,509	$50,283,598	$51,049,720	$51,893,690	$52,705,448
Net Change in Fund Balance	$9,522,603	$11,613,272	$9,821,483	$7,890,431	$5,829,075	$5,448,799	$5,012,910	$4,625,449	$4,134,926	$3,644,426
EOY Fund Balance	$754,059,930	$765,673,202	$775,494,685	$783,385,116	$789,214,191	$794,662,989	$799,675,899	$804,301,348	$808,436,275	$812,080,701
Estimated Liability	$556,763,814	$565,747,267	$572,962,990	$578,170,663	$581,397,211	$584,450,942	$587,281,865	$589,985,294	$592,503,091	$594,860,501
Surplus / (Deficit)	$197,296,116	$199,925,934.3	$202,531,695	$205,214,453	$207,816,980	$210,212,047	$212,394,034	$214,316,054	$215,933,184	$217,220,200
Fund % of Incurred Claim Liability	135.4%	135.3%	135.3%	135.5%	135.7%	136.0%	136.2%	136.3%	136.4%	136.5%

** The estimated liability shown above includes the liability for open claims and claims incurred but not reported as of December 31, 2022, as well as the liability for new claims incurred by active members and survivors in 2023 and beyond.*

Scenario 1:
Investment Income: -0.96% in 2023 and 6.8% in future years
Premium Contributions: Current contribution rates

Calendar Year	Actual	Projected								
	2022	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
BOY Fund Balance	$744,537,327	$754,059,930	$707,186,961	$713,031,380	$716,674,306	$717,967,046	$718,571,038	$718,409,696	$717,509,043	$715,742,092
Premium Contributions	$1,983,711	$1,067,991	$1,118,983	$1,152,552	$1,187,129	$1,222,743	$1,259,425	$1,297,208	$1,336,124	$1,376,208
Miscellaneous Income	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Investment Income	$45,637,204	-$7,210,166	$48,088,713	$48,486,134	$48,733,853	$48,821,759	$48,862,831	$48,851,859	$48,790,615	$48,670,462
Total Revenues	$47,620,915	-$6,142,175	$49,207,696	$49,638,686	$49,920,982	$50,044,502	$50,122,256	$50,149,067	$50,126,739	$50,046,670
Insurance Claims	$37,234,267	$39,807,047	$42,379,826	$44,952,606	$47,525,385	$48,319,231	$49,143,199	$49,891,945	$50,716,774	$51,510,123
Administrative Expense	$864,045	$923,748	$983,451	$1,043,154	$1,102,857	$1,121,279	$1,140,399	$1,157,775	$1,176,915	$1,195,325
Total Operating Expenses	$38,098,312	$40,730,795	$43,363,277	$45,995,760	$48,628,242	$49,440,509	$50,283,598	$51,049,720	$51,893,690	$52,705,448
Net Change in Fund Balance	$9,522,603	-$46,872,969	$5,844,419	$3,642,926	$1,292,739	$603,993	-$161,343	-$900,653	-$1,766,951	-$2,658,778
EOY Fund Balance	$754,059,930	$707,186,961	$713,031,380	$716,674,306	$717,967,046	$718,571,038	$718,409,696	$717,509,043	$715,742,092	$713,083,314
Estimated Liability	$556,763,814	$565,747,267	$572,962,990	$578,170,663	$581,397,211	$584,450,942	$587,281,865	$589,985,294	$592,503,091	$594,860,501
Surplus / (Deficit)	$197,296,116	$141,439,693.4	$140,068,389	$138,503,643	$136,569,835	$134,120,096	$131,127,831	$127,523,748	$123,239,002	$118,222,813
Fund % of Incurred Claim Liability	135.4%	125.0%	124.4%	124.0%	123.5%	122.9%	122.3%	121.6%	120.8%	119.9%

** The estimated liability shown above includes the liability for open claims and claims incurred but not reported as of December 31, 2022, as well as the liability for new claims incurred by active members and survivors in 2023 and beyond.*

Scenario 2:
Investment Income: 6.8%
Premium Contributions: Current contribution rates
Assume 6.9% increase in covered payroll and incurred claims beginning in 2024 due to Wisconsin Act 4 of 2023

Calendar Year	Actual	Projected								
	2022	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
BOY Fund Balance	$744,537,327	$754,059,930	$765,638,151	$775,444,005	$783,284,400	$789,026,741	$794,325,146	$799,116,848	$803,443,739	$807,196,813
Premium Contributions	$1,983,711	$1,067,991	$1,175,839	$1,211,114	$1,247,448	$1,284,871	$1,323,417	$1,363,120	$1,404,013	$1,446,134
Miscellaneous Income	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Investment Income	$45,637,204	$51,276,075	$52,063,394	$52,730,192	$53,263,339	$53,653,818	$54,014,110	$54,339,946	$54,634,174	$54,889,383
Total Revenues	$47,620,915	$52,344,066	$53,239,233	$53,941,307	$54,510,787	$54,938,690	$55,337,527	$55,703,065	$56,038,188	$56,335,517
Insurance Claims	$37,234,267	$39,841,303	$42,448,338	$45,055,374	$47,662,409	$48,514,475	$49,399,479	$50,210,996	$51,099,321	$51,957,470
Administrative Expense	$864,045	$924,543	$985,041	$1,045,539	$1,106,037	$1,125,809	$1,146,347	$1,165,178	$1,185,792	$1,205,706
Total Operating Expenses	$38,098,312	$40,765,845	$43,433,379	$46,100,912	$48,768,446	$49,640,284	$50,545,826	$51,376,175	$52,285,113	$53,163,177
Net Change in Fund Balance	$9,522,603	$11,578,221	$9,805,854	$7,840,394	$5,742,341	$5,298,405	$4,791,702	$4,326,891	$3,753,074	$3,172,340
EOY Fund Balance	$754,059,930	$765,638,151	$775,444,005	$783,284,400	$789,026,741	$794,325,146	$799,116,848	$803,443,739	$807,196,813	$810,369,153
Estimated Liability	$556,763,814	$565,712,323	$573,565,760	$579,442,628	$583,371,133	$587,136,780	$590,688,115	$594,118,505	$597,370,131	$600,468,544
Surplus / (Deficit)	$197,296,116	$199,925,827.8	$201,878,245	$203,841,771	$205,655,608	$207,188,367	$208,428,732	$209,325,234	$209,826,682	$209,900,610
Fund % of Incurred Claim Liability	135.4%	135.3%	135.2%	135.2%	135.3%	135.3%	135.3%	135.2%	135.1%	135.0%

** The estimated liability shown above includes the liability for open claims and claims incurred but not reported as of December 31, 2022, as well as the liability for new claims incurred by active members and survivors in 2023 and beyond.*

Scenario 3:
Investment Income: 6.8%
Premium Contributions: Waived in 2024 and resuming in 2025 and beyond based on 2023 contribution rates

Calendar Year	Actual	Projected								
	2022	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
BOY Fund Balance	$744,537,327	$754,059,930	$765,673,202	$774,375,702	$782,190,043	$787,937,852	$793,299,860	$798,220,077	$802,746,530	$806,775,728
Premium Contributions	$1,983,711	$1,067,991	$0	$1,152,552	$1,187,129	$1,222,743	$1,259,425	$1,297,208	$1,336,124	$1,376,208
Miscellaneous Income	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Investment Income	$45,637,204	$51,276,075	$52,065,778	$52,657,548	$53,188,923	$53,579,774	$53,944,390	$54,278,965	$54,586,764	$54,860,750
Total Revenues	$47,620,915	$52,344,066	$52,065,778	$53,810,100	$54,376,052	$54,802,517	$55,203,815	$55,576,173	$55,922,888	$56,236,957
Insurance Claims	$37,234,267	$39,807,047	$42,379,826	$44,952,606	$47,525,385	$48,319,231	$49,143,199	$49,891,945	$50,716,774	$51,510,123
Administrative Expense	$864,045	$923,748	$983,451	$1,043,154	$1,102,857	$1,121,279	$1,140,399	$1,157,775	$1,176,915	$1,195,325
Total Operating Expenses	$38,098,312	$40,730,795	$43,363,277	$45,995,760	$48,628,242	$49,440,509	$50,283,598	$51,049,720	$51,893,690	$52,705,448
Net Change in Fund Balance	$9,522,603	$11,613,272	$8,702,501	$7,814,340	$5,747,809	$5,362,008	$4,920,217	$4,526,453	$4,029,198	$3,531,509
EOY Fund Balance	$754,059,930	$765,673,202	$774,375,702	$782,190,043	$787,937,852	$793,299,860	$798,220,077	$802,746,530	$806,775,728	$810,307,237
Estimated Liability	$556,763,814	$565,747,267	$572,962,990	$578,170,663	$581,397,211	$584,450,942	$587,281,865	$589,985,294	$592,503,091	$594,860,501
Surplus / (Deficit)	$197,296,116	$199,925,934.3	$201,412,712	$204,019,379	$206,540,641	$208,848,918	$210,938,212	$212,761,236	$214,272,638	$215,446,736
Fund % of Incurred Claim Liability	135.4%	135.3%	135.2%	135.3%	135.5%	135.7%	135.9%	136.1%	136.2%	136.2%

** The estimated liability shown above includes the liability for open claims and claims incurred but not reported as of December 31, 2022, as well as the liability for new claims incurred by active members and survivors in 2023 and beyond.*

Appendix A: Plan Description

A summary of the Duty Disability plan provisions is provided below:

Benefit Eligibility: Members must satisfy all the following:

- Injured while performing duties or contracted disease due to occupation
- Disability is work-related
- Disability is expected to be permanent

Also, the disability must result in one of the following:

- Reduction in pay or position
- Assignment to light duty
- Retirement
- Impairs promotional opportunities

Member Benefits: 80% of salary (75% for local employees who are not eligible for a Social Security disability award and not eligible for a WRS disability benefit or LTDI). For local members who have been terminated but not approved for WRS disability or LTDI only, the percentage is reduced by 0.5% for each month of WRS creditable service over 25 years. For local members who have not been terminated or have been approved for WRS disability or LTDI, the percentage is reduced by 0.5% per month for every month over 30 years. For all members, the offsets are as follows (with mandatory commencement ages in parenthesis if applicable):

- Any Social Security benefit based upon the participant's work record (age 62; if not already receiving SSDI)
- Unemployment compensation
- Worker's Compensation
- Any WRS retirement, separation, or disability benefit based upon member's earnings and service
- All earnings from the employer where the disability occurred
- A percent of other earnings as follows:
  - 1/3 of earnings less than 40% of salary
  - 1/2 of earnings between 40% and 80% of salary
  - 2/3 of earnings over 80% of salary
- A 5% reduction for non-state members who have not filed a Worker's Compensation claim for permanent disability

Benefit Increases: Individuals receive an annual increase of either 1 or 2 below:

1. Social Security salary index for the following individuals:
   - Under age 60, or
   - Older than 60 and receiving a regular disability retirement or regular LTDI, or
   - Receiving a duty disability death benefit based on 1998 law.

2. Prior year's WRS core annuity dividend for the following individuals:
   - Over age 60 and receiving special disability retirement or special LTDI, or
   - Over age 60 not receiving any regular disability retirement or LTDI

Survivor Benefits: State employees and pre-5/3/88 applications for local employees:

- Disabled member dies from the same condition that triggered the onset of Duty Disability benefit in order for a survivor benefit to be payable
- 1/3 of the participant's monthly salary at time of death to surviving spouse (or domestic partner – State employees only), plus
- $15/month to the guardian of each unmarried child under the age of 18
- Not to exceed 65% of the participant's monthly salary at time of death
- No annual adjustments

Post-5/3/88 applications for local employees:

- Disabled member dies from the same condition that triggered the onset of Duty Disability benefit in order for a survivor benefit to be payable
- 1/2 of the participant's monthly salary at time of death to surviving spouse or domestic partner, less other income sources that are based on the participant's earnings record, plus
- 1/10 of the participant's monthly salary at time of death to each unmarried child under the age of 18
- Not to exceed 70% of the participant's monthly salary at time of death less offsets for other income
- Subject to annual adjustments based on salary indexing

Cancer Presumptive Law (state and local):

- Disabled member dies from the same condition that triggered the onset of Duty Disability benefit in order for a survivor benefit to be payable
- 70% of the participant's monthly salary at time of death to surviving spouse or domestic partner, less other income sources that are based on the participant's earnings record
- 1/10 of the participant's monthly salary at time of death to the guardian of each unmarried child under the age of 18, as long as there is no surviving spouse or domestic partner
- There is no maximum on dependent benefits
- Subject to annual adjustments based on salary indexing

Survivor benefits are offset by Chapter 102 Worker's Compensation death benefits

Appendix B: Valuation Assumptions

Valuation Date: December 31, 2022

Discount Rate: 6.80%, representing the long-term investment return for the Duty Disability fund

Claim Termination Rates: Rates are based on the mortality rates from the 2018 - 2020 Experience Study performed by the actuary for the Wisconsin Retirement System, adjusted for recent trends in Duty Disability claim experience and liability runoff studies. The rates vary by attained age and gender. Annual sample rates are provided below for disabled members and survivors. The claim termination rates include adjustments of 0.50 for disabled members and 0.30 for survivors applied to the base mortality rates from the 2018 - 2020 Experience Study.

Duty Disability Annual Claim Termination Rates

Disabled Members			Survivors		
Age	Male	Female	Age	Male	Female
25	0.097%	0.061%	25	0.006%	0.004%
30	0.145%	0.105%	30	0.010%	0.007%
35	0.197%	0.164%	35	0.015%	0.009%
40	0.247%	0.220%	40	0.018%	0.012%
45	0.317%	0.291%	45	0.024%	0.016%
50	0.460%	0.426%	50	0.037%	0.026%
55	0.647%	0.574%	55	0.074%	0.069%
60	0.847%	0.688%	60	0.127%	0.106%
65	1.047%	0.756%	65	0.205%	0.150%
70	1.321%	0.947%	70	0.341%	0.241%
75	1.860%	1.441%	75	0.628%	0.462%
80	2.913%	2.408%	80	1.201%	0.923%
85	4.792%	4.108%	85	2.305%	1.804%
90	7.957%	6.684%	90	4.290%	3.407%
95	12.385%	10.453%	95	7.220%	6.058%
100	17.807%	15.922%	100	10.684%	9.553%

Estimated Offsets: We estimated the following offsets to Duty Disability benefits:

Estimated Offset	Assumption
WRS Benefits:	Assume 97% of individuals over age 50 without separation or 40.63 benefits receive a retirement offset, if they had not already received one as of the valuation date. Retirement benefits are estimated as 35% of gross benefit amount. Separation benefits are estimated for individuals under age 50 without 40.63 benefits, based on the probabilities developed in our experience study report. Separation benefits are estimated as 5% of gross benefit amounts.

Social Security:	For those under attained age 62 SSDI is estimated based on the probabilities developed in our experience study report. SSDI benefits are estimated as 42% of the gross benefit amount. After age 62, Social Security Disability/Retirement is assumed to be awarded to 96% of individuals provided they had not already reached that age as of the valuation date. Benefits after age 62 are assumed to be 22% of the gross benefit amount.

Benefit Increases: We assumed annual benefit increases of either 3.20% or 2.10%, based on the following criteria:

1. Assumed 3.20% annual increases for the following individuals:
   - Under age 60, or
   - Older than 60 and receiving a regular disability retirement or regular LTDI, or
   - Receiving a duty disability death benefit based on 1998 law.

2. Assumed 2.10% for the following individuals:
   - Over age 60 and receiving special disability retirement or special LTDI, or
   - Over age 60 not receiving any regular disability retirement or LTDI

Death Benefits: Assumed that 25% of survivors (i.e., spouses/domestic partners) will be eligible to receive monthly benefits upon the death of the disabled member. These benefits are payable to survivors of disabled members who die as a result of the same injury or disease that triggered the Duty Disability benefit.

Assumed that members under age 55 as of the valuation date have 1.6375 eligible dependent children, and that members age 55 and older had no eligible children. Each child was assumed to have up to 10 years of benefits payable with an annual mortality rate of 21.73 per 100,000.

Appendix C: Contribution Rates

The Plan is funded entirely by Employer contributions, which vary by experience as detailed in the following table. The contribution rate is adjusted by an Actuarial Adjustment Rate (AAR), updated each year such that expected employer contributions equal a targeted amount based on actuarial projections.

2023 Contribution Rate Schedule

Employers pay the lower of the contribution rate associated with their claims as a percentage of payroll or their number of claims.

Tier	Contribution Rate as a % of Covered Payroll	Claims as a % of Covered Payroll	Number of Claims
1	0.02%	<=1.5%	1
2	0.04%	> 1.5% but ≤ 3.0%	2
3	0.09%	> 3.0% but ≤ 4.5%	3
4	0.15%	> 4.5% but ≤ 6.0%	4
5	0.24%	> 6.0% but ≤ 7.5%	5
6	0.35%	> 7.5% but ≤ 9.0%	6
7	0.48%	> 9.0% but ≤ 10.5%	7
8	0.57%	Claims > 10.5%	8 or more

Appendix D: Reliance Items

In performing the valuation of the Duty Disability program as of December 31, 2022, we relied, without audit, on certain data and information provided by ETF. To the extent any of the data or other items were incomplete or inaccurate, the results of our work may be materially affected.

The principal items on which we relied included the following:

- Lists of active disability claims and related information
- Fund balances, premium contributions, plan expenses, payroll, and other financial information provided by ETF
- Plan descriptions provided by ETF
- Discussions with ETF

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