Annual Actuarial Valuation
for
The Long-Term Disability Insurance Plan

As of December 31, 2015

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April 18, 2016

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April 18, 2016

Ms. Deb Roemer
Director of the Benefit Services Bureau
Division of Retirement Services
Wisconsin Department of Employee Trust Funds
Madison, WI 53707

RE: Actuarial Valuation of Long-Term Disability Insurance Plan as of December 31, 2015

Dear Deb:

At your request, we have performed an actuarial valuation of the Long-Term Disability Insurance (LTDI) Plan as of December 31, 2015. Our findings are set forth in this report.

The State of Wisconsin Department of Employee Trust Funds (ETF) has determined that the LTDI Plan is not subject to the provisions of GASB 43 or 45, 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 does not require the calculation of a liability for active lives. This approach is consistent with prior valuation work performed on the plan. Ultimately it is the responsibility of ETF and its auditors to determine the applicable accounting standards for the plan.

This report is prepared solely for the internal business use of 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 professional service advisors 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 claims data from Aetna and ETF. 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. The annual benefit increase rate for the LTDI plan was also specified by ETF. We have performed no independent assessment of the reasonableness of these assumptions. ETF is solely responsible for establishing these assumptions 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; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); 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, 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.

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.

Sincerely,

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

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

Section I: Introduction and Executive Summary

This report contains the 12/31/2015 valuation for the Long-Term Disability Insurance (LTDI) Plan administered by the Wisconsin Department of Employee Trust Funds (ETF).

Summary of Actuarial Liabilities

The actuarial liabilities for the LTDI Plan as of 12/31/2015 are summarized below:

Table 1.1 Actuarial Liabilities for the LTDI Plan as of 12/31/2015			
Liability Component	Basic Benefit	Retirement Contribution	Total Liability Amount
Open Claims	$243,146,155	$41,834,922	$284,981,077
IBNR Claims	$22,250,817	$3,828,402	$26,079,219
Loss Adjustment Expense	$12,276,626	$0	$12,276,626
Total	$277,673,598	$45,663,324	$323,336,922

The values above include a calculation of the liability for retirement contributions. These contributions are a supplemental benefit provided by the LTDI plan. The supplemental benefit is 7% of final average salary, contributed by WRS into the participant's retirement account.

A further discussion of these actuarial liabilities, including a description of methods and assumptions, a comparison to prior year values, and an assessment of the adequacy of the liabilities, is included in the body of this report.

Summary of Funding Analysis

We performed a funding analysis on this plan, involving only the basic benefit and not the supplemental retirement contribution benefit (since the LTDI fund does not include contributions or disbursements related to the supplemental benefit). As shown in the following table, the LTDI plan was in a deficit as of 12/31/2015:

Table 1.2 LTDI Fund Balances: Basic Benefit Only			
	12/31/2013	12/31/2014	12/31/2015
Beginning Balance	$232,381,871	$215,938,543	$231,066,095
Closing Adjustments	($4,854,393)	($6,148,059)	($6,972,445)
Adjusted Beginning Balance	$227,527,478	$209,790,484	$224,093,650
Plus: Premium Contributions	$0	$42,301,135	$43,296,424
Plus: Investment Earnings	$22,919,771	$18,377,826	$14,368,484
Less: Insurance Claims	$32,067,487	$37,052,195	$40,110,299
Less: Administrative Expenses	$2,441,219	$2,351,154	$2,480,455
Ending Balance	$215,938,543	$231,066,095	$239,167,803
Actuarial Liability	$233,508,752	$253,576,498	$277,673,599
Surplus / (Deficit)	($17,570,209)	($22,510,403)	($38,505,795)

According to our financial projections, which are consistent with the plan's valuation assumptions, the plan's deficit is expected to be eliminated by 12/31/2019 assuming the current contribution rate of 0.52% is reduced to 0.35% effective January 2017 and beyond. We have developed another scenario under which the deficit can be eliminated by the end of 2017, according to our financial projections. Under this alternate scenario, the current contribution rate of 0.52% would be reduced to 0.42% for 2017, and then reduced to 0.32% for 2018 and beyond. We believe that either scenario would be a reasonable approach to achieving ETF's funding objectives of eliminating the deficit for this plan.

Section II: Actuarial Valuation

The actuarial liability for the LTDI Plan discussed in this report contains three components:

- Open Claims: The expected present value of future benefits payable to members disabled prior to the valuation date whose claims had been reported to ETF on or before that date

- Incurred but not Reported (IBNR) Claims: The expected present value of future benefits payable to members disabled prior to the valuation date, but whose claims had not yet been reported to ETF as of that date

- Loss Adjustment Expenses: The expected present value of future expenses related to the ongoing management and payment of disability claims

We have also included a calculation of the liability for retirement contributions. These contributions are a supplemental benefit provided by the LTDI plan. The supplemental benefit is 7% of final average salary, contributed by WRS into the participant's retirement account.

The following tables compare the 12/31/2015 and 12/31/2014 liabilities for the LTDI plan:

Table 2.1a
Actuarial Liabilities for the LTDI Plan as of 12/31/2015

Liability Component	Basic Benefit	Retirement Contribution	Total Liability Amount
Open Claims	$243,146,155	$41,834,922	$284,981,077
IBNR Claims	$22,250,817	$3,828,402	$26,079,219
Loss Adjustment Expense	$12,276,626	$0	$12,276,626
Total	$277,673,598	$45,663,324	$323,336,922

Table 2.1b
Actuarial Liabilities for the LTDI Plan as of 12/31/2014

Liability Component	Basic Benefit	Retirement Contribution	Total Liability Amount
Open Claims	$219,515,743	$35,182,325	$254,698,068
IBNR Claims	$22,813,723	$3,656,411	$26,470,134
Loss Adjustment Expense	$11,247,032	$0	$11,247,032
Total	$253,576,498	$38,838,736	$292,415,234

Appendix C of this letter provides the detailed valuation assumptions used to compute the 12/31/2015 liabilities for the LTDI plan. A discussion of the liability components is provided below.

Open Claims

The liability for open claims increased by approximately 11% since last year. The increase was driven by several factors including a 3% increase in the number of open claims, from 2,207 as of 12/31/2014 to 2,282 as of 12/31/2015, as well as a 3% increase in the average monthly benefit amount, from $1,336 to $1,380. The liability is expected to increase over time as an increasing proportion of members are covered under the LTDI plan rather than the Section 40.63 disability annuity benefit (i.e., the disability benefit within the WRS retirement plan).

In addition to the differences in demographics and claim inventory, we have implemented new assumptions for performing this year's actuarial valuation of the LTDI program. The new assumptions were developed in order to reflect recent historical experience trends, and to produce liability estimates that will more precisely reflect expected future benefit payments and retirement contributions. The new valuation assumptions include the following items:

- We have updated the claim termination assumptions, which are used to project future recoveries and deaths among disabled members, and to estimate future benefit payments and retirement contributions. The updated claim termination assumptions were derived from historical LTDI claims experience from 2011 – 2015 and are provided in Appendix C.

- We have updated the annual salary increase assumption for computing the liabilities corresponding to future retirement contributions. Last year, we calculated these liabilities assuming salaries would remain level. This year, we have implemented a 2.1% salary increase assumption which is consistent with the annual benefit increase assumption that is used to compute liabilities for basic benefits.

In order to assess the adequacy of the liability for open claims, we performed a retrospective runoff test to determine whether the liabilities at prior valuation dates for the basic benefits, calculated using the current valuation assumptions, would have been sufficient to cover the emerging costs of LTDI claims. The study used LTDI claims experience from 1/1/2012 through 12/31/2015. The results, shown below, represent four mutually distinct 12-month studies that were combined.

Table 2.2 Runout Study for LTDI Plan: Basic Benefits	
Claim Duration	Margin
1 – 12 months	0.5%
13 – 24 months	2.5%
25 – 36 months	1.1%
37 – 48 months	0.4%
49 – 60 months	1.4%
61 + months	0.8%
Total	***1.1%***

In the preceding table, a positive margin indicates the liability was adequate to cover the runout of open disability claims during the study period, while a negative margin indicates a deficiency. The cost of the claim runout is computed as the present value of paid claims during the study period, plus the present value of the liability for these claims at the end of the study period. For this type of plan, we typically target a positive overall margin of 1% to 5%, with reasonably consistent patterns by claim duration. The preceding table indicates that the LTDI plan meets that objective. Since volatility is common from year to year, we will continue to monitor the valuation assumptions closely.

IBNR Claims

The liability for IBNR claims reflects the expected portion of the total cost of claims incurred in a given year that is attributable to those claims that had not been reported as of the end of the year. If, on average, claims are reported 6 months after the date of disability, then the IBNR liability would likely be approximately 50% of the expected total cost of new claims for the year. We therefore computed the IBNR liability by estimating the total cost of incurred claims for 2015 (based on recent trends) and by using historical claim data to determine the proportion of claims that were typically unreported at each year end.

The liability for IBNR claims decreased by approximately 2.5% from 12/31/2014 to 12/31/2015. This was because the estimated annual incurred claims, which is calculated using historical claims experience, decreased from $41.5 million last year to $40.5 million this year. We continue to assume that the proportion of unreported annual claims is 55% in our IBNR liability calculations, which was derived from an analysis of historical LTDI reporting lags.

Our IBNR calculation for the LTDI plan is summarized below:

Table 2.3 Development of IBNR Liability for the LTDI Plan: Basic Benefits	
Estimated Incurred Claims	$40,456,032
Estimated Proportion of Unreported Claims	55.0%
IBNR Liability as of 12/31/2015	$22,250,817

The IBNR liability for supplemental retirement contribution benefits was developed using the same ratio of IBNR to open claim liabilities as for basic benefits.

Loss Adjustment Expense

The liability for loss adjustment expenses was computed by comparing the annual fees payable to Aetna, which are estimated to be $3,405,740 in 2016, to the expected annual incurred claims amount (including only basic benefits from the LTDI plan) for all three plans combined. The loss adjustment expense liability was then calculated as 4.5% of the open claim liability and 6.0% of the IBNR liability. The factor is lower for open claims than for IBNR claims because the expenses related to initial claim investigation have already been incurred and do not need to be included in the liability.

Our loss adjustment expense calculation for the LTDI plan is summarized below:

Table 2.4
Development of Loss Adjustment Expense Liability for the LTDI Plan

Component	Liability	Expense Factor	Loss Adjustment Expenses
Open Claims	$243,146,155	4.5%	$10,941,577
IBNR	$22,250,817	6.0%	$1,335,049
Total	$265,396,972	4.6%	$12,276,626

No separate loss adjustment expense liability is held for supplemental retirement contribution benefits because no additional expenses are incurred beyond what is needed to adjudicate the basic benefits.

Section III: Discussion of LTDI Funding Levels

We performed a funding analysis on the LTDI plan, involving only the basic benefit and not the supplemental retirement contribution benefit (since the LTDI fund does not include contributions or disbursements related to the supplemental benefit). The following table shows the fund balances as of the three most recent fiscal year-ends (the 2013 values were taken from prior valuation reports).

Table 3.1
LTDI Fund Balances: Basic Benefits Only

	12/31/2013	12/31/2014	12/31/2015
Beginning Balance	$232,381,871	$215,938,543	$231,066,095
Closing Adjustments	($4,854,393)	($6,148,059)	($6,972,445)
Adjusted Beginning Balance	$227,527,478	$209,790,484	$224,093,650
Plus: Premium Contributions	$0	$42,301,135	$43,296,424
Plus: Investment Earnings	$22,919,771	$18,377,826	$14,368,484
Less: Insurance Claims	$32,067,487	$37,052,195	$40,110,299
Less: Administrative Expenses	$2,441,219	$2,351,154	$2,480,455
Ending Balance	$215,938,543	$231,066,095	$239,167,803
Actuarial Liability	$233,508,752	$253,576,498	$277,673,599
Surplus / (Deficit)	($17,570,209)	($22,510,403)	($38,505,795)

In order to evaluate the contribution levels necessary to eliminate the deficit, we prepared a financial projection for the LTDI plan. The projection reflects actual results for 2015 and projected values in 2016 and beyond. The key elements of this projection included the following:

- Beginning Balance: The projected beginning balance for each year is equal to the prior year's ending balance.

- Covered Payroll: The current covered payroll was provided to us by ETF. Future covered payroll is assumed to increase 3.20% per year, which is consistent with the assumptions used by ETF for retirement fund projections.

- Premium Contributions: Premiums are modeled as a percentage of covered payroll. The rate for 2015 is 0.32% and the rate for 2016 is 0.52%.

- Investment Income: Investment income is projected using the valuation assumption of 7.2%.

- Insurance Claims: Annual paid insurance claims are the sum of projected payments on existing claims as of 12/31/2015, and of payments on expected future claims incurred after 12/31/2015. Future incurred claims are based on historical experience of 0.30% of covered payroll in 2015, adjusted for expected aging in subsequent years.

- Administrative Expenses: Administrative expenses are modeled as a constant percentage of paid insurance claims, based on actual values in 2015.

- Ending Balance: The ending balance equals the starting balance, plus premiums, plus investment earnings, less claims, and less expenses.

- Actuarial Liability: The actuarial liability is modeled in a similar fashion to the insurance claims. It represents the sum of the liability on claims that existed as of 12/31/2015, and of the liability for claims incurred after 12/31/2015.

- Surplus or Deficit: The projected surplus or deficit equals the ending balance less the actuarial liability.

At its May, 2015 meeting, the Group Insurance Board approved contribution rates of 0.52% in 2016 and 0.35% in 2017 and beyond. Under this approach, the plan's deficit is expected to be eliminated by 12/31/2019. We have developed another scenario under which the deficit can be eliminated by the end of 2017, according to our financial projections. Under this alternate scenario, the current contribution rate of 0.52% would be reduced to 0.42% for 2017, and then reduced to 0.32% for 2018 and beyond. We believe that either scenario would be a reasonable approach to achieving ETF's funding objectives of eliminating the deficit for this plan.

The detailed output from our baseline scenario (i.e., the current contribution rate of 0.52% is reduced to 0.35% effective January 2017 and beyond) and Scenario 1 (i.e., the current contribution rate of 0.52% would be reduced to 0.42% for 2017, and then reduced to 0.32% for 2018 and beyond) is provided on the following pages. Please note that these projections depend on a variety of actuarial assumptions about future experience, including but not limited to investment earnings, payroll growth, and disability claim experience. 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.

LTDI Fund Balance Analysis as of December 31, 2015

Baseline: Current contribution rate of 0.52% reduced to 0.35% effective January 2017 and beyond

Calendar Year	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
BOY Fund Balance	$224,093,650	$239,167,803	$286,174,795	$310,645,869	$334,906,614	$359,019,146	$382,980,645
Premium Contributions	$43,296,424	$72,673,596	$50,480,198	$52,095,564	$53,762,622	$55,483,026	$57,258,483
Investment Income	$14,368,484	$17,220,082	$20,604,585	$22,366,503	$24,113,276	$25,849,378	$27,574,606
Total Revenues	$57,664,908	$89,893,677	$71,084,783	$74,462,066	$77,875,898	$81,332,404	$84,833,089
Insurance Claims	$40,110,299	$40,388,996	$43,898,959	$47,277,632	$50,632,226	$54,029,664	$57,806,843
Carrier Administrative Expenses	$2,074,816	$2,089,233	$2,270,795	$2,445,566	$2,619,092	$2,794,834	$2,990,219
Administrative Expenses	$405,639	$408,457	$443,954	$478,123	$512,048	$546,407	$584,606
Total Operating Expenses	$42,590,754	$42,886,686	$46,613,709	$50,201,321	$53,763,366	$57,370,904	$61,381,668
Net Change in Fund Balance	$15,074,154	$47,006,991	$24,471,074	$24,260,745	$24,112,532	$23,961,500	$23,451,421
EOY Fund Balance	$239,167,803	$286,174,795	$310,645,869	$334,906,614	$359,019,146	$382,980,645	$406,432,067
Incurred Claim Liability	$277,673,599	$298,150,029	$318,057,038	$337,584,198	$356,774,848	$375,757,855	$394,224,576
Surplus / (Deficit)	($38,505,795)	($11,975,234)	($7,411,169)	($2,677,584)	$2,244,298	$7,222,791	$12,207,491

LTDI Fund Balance Analysis as of December 31, 2015

Scenario 1: Current contribution rate of 0.52% reduced to 0.42% effective January 2017 and reduced to 0.32% effective January 2018 and beyond

Calendar Year	2015	2016	2017	2018	2019	2020	2021
BOY Fund Balance	$224,093,650	$239,167,803	$286,174,795	$320,741,908	$341,264,234	$361,226,290	$380,591,016
Premium Contributions	$43,296,424	$72,673,596	$60,576,237	$47,630,230	$49,154,397	$50,727,338	$52,350,613
Investment Income	$14,368,484	$17,220,082	$20,604,585	$23,093,417	$24,571,025	$26,008,293	$27,402,553
Total Revenues	$57,664,908	$89,893,677	$81,180,822	$70,723,647	$73,725,422	$76,735,631	$79,753,166
Insurance Claims	$40,110,299	$40,388,996	$43,898,959	$47,277,632	$50,632,226	$54,029,664	$57,806,843
Carrier Administrative Expenses	$2,074,816	$2,089,233	$2,270,795	$2,445,566	$2,619,092	$2,794,834	$2,990,219
Administrative Expenses	$405,639	$408,457	$443,954	$478,123	$512,048	$546,407	$584,606
Total Operating Expenses	$42,590,754	$42,886,686	$46,613,709	$50,201,321	$53,763,366	$57,370,904	$61,381,668
Net Change in Fund Balance	$15,074,154	$47,006,991	$34,567,114	$20,522,326	$19,962,056	$19,364,726	$18,371,498
EOY Fund Balance	$239,167,803	$286,174,795	$320,741,908	$341,264,234	$361,226,290	$380,591,016	$398,962,514
Incurred Claim Liability	$277,673,599	$298,150,029	$318,057,038	$337,584,198	$356,774,848	$375,757,855	$394,224,576
Surplus / (Deficit)	($38,505,795)	($11,975,234)	$2,684,871	$3,680,036	$4,451,442	$4,833,161	$4,737,938

Appendix A: Plan Description

The LTDI Plan provides long-term disability benefits as summarized below. This is a high-level plan summary intended to provide a context for understanding the valuation analysis. It is not a comprehensive plan description:

- Maximum Benefit Period: The following table shows the maximum duration of benefits:

Age on Benefit Effective Date	Maximum Benefit Period
Before Age 61	End of the month in which you reach age 65
Age 61 or 62	End of the month in which you reach age 66
Age 63 or 64	End of the month in which you reach age 67
Age 65 or 66	End of the month in which you reach age 68
Age 67	End of the month in which you reach age 69
Age 68	End of the month in which you reach age 70
Age 69 and Older	12 months after LTDI benefit effective date

- Benefit Amount: The amount of the benefit is 40% or 50% of the participant's average salary based on his or her three highest years of earnings. The benefit is 50% of the participant's average salary if he or she is not eligible for Social Security benefits. Otherwise, the benefit is 40% of the average salary.

- Supplemental Retirement Contribution Benefit: An additional 7% of final average salary is contributed to the participant's WRS retirement account.

- Benefit Increases: The basic benefit amount is adjusted every year by the same Core Fund dividend percentage as monthly retirement annuities.

- Benefit Offsets: The LTDI plan benefit is offset by WRS retirement benefits. It is not offset for Social Security benefits or other sources.

- Definition of Disability: A participant is disabled if he or she is unable to engage in any substantial gainful activity by reason of a medically determinable impairment, whether physical or mental, which can reasonably be expected to result in death or to be permanent or of long-continued and indefinite duration.

Appendix B: Data for Valuation

Number of Active LTDI Claims by Year of Disability As of December 31, 2015			
Year of Disability	Male	Female	Total
2001 and earlier	28	65	93
2002	11	28	39
2003	15	31	46
2004	18	38	56
2005	24	72	96
2006	27	85	112
2007	41	82	123
2008	43	92	135
2009	52	102	154
2010	65	119	184
2011	72	158	230
2012	100	196	296
2013	107	199	306
2014	110	186	296
2015	55	61	116
Total	768	1,514	2,282

Total Net Monthly Benefit by Year of Disability As of December 31, 2015			
Year of Disability	Male	Female	Total
2001 and earlier	$32,575	$67,333	$99,909
2002	$12,014	$29,152	$41,166
2003	$18,331	$33,333	$51,664
2004	$19,610	$39,240	$58,849
2005	$30,063	$76,743	$106,806
2006	$34,609	$103,072	$137,681
2007	$61,291	$100,674	$161,964
2008	$59,821	$112,279	$172,100
2009	$82,795	$137,886	$220,681
2010	$91,748	$169,808	$261,555
2011	$113,541	$218,955	$332,496
2012	$161,951	$280,888	$442,839
2013	$167,729	$293,561	$461,291
2014	$162,812	$265,829	$428,641
2015	$83,184	$87,230	$170,414
Total	$1,132,074	$2,015,983	$3,148,057

Number of Active LTDI Claims by Age at Disability as of December 31, 2015			
Age at Disability	Male	Female	Total
< 20	0	0	0
20-24	2	1	3
25-29	9	17	26
30-34	20	61	81
35-39	45	135	180
40-44	93	213	306
45-49	132	273	405
50-54	203	385	588
55-59	184	319	503
60-64	75	107	182
65+	5	3	8
Total	768	1,514	2,282

Total Net Monthly Benefit by Age at Disability as of December 31, 2015			
Age at Disability	Male	Female	Total
< 20	$0	$0	$0
20-24	$1,829	$867	$2,697
25-29	$12,143	$20,746	$32,889
30-34	$23,411	$76,566	$99,977
35-39	$63,000	$171,920	$234,920
40-44	$147,996	$283,624	$431,621
45-49	$201,199	$361,534	$562,733
50-54	$305,511	$532,265	$837,777
55-59	$279,917	$441,191	$721,108
60-64	$92,781	$126,031	$218,812
65+	$4,286	$1,238	$5,524
Total	$1,132,074	$2,015,983	$3,148,057

Appendix C: Actuarial Methods and Assumptions

- Valuation Date: 12/31/2015
- Discount Rate: 7.20%, specified by ETF
- Annual Benefit Increases: 2.10%, specified by ETF and equal to the core annuity adjustment assumption for the WRS retirement plan.
- Claim Termination Rates: Claim termination rate assumptions were derived from the 1987 Commissioner's Group Disability Table (CGDT). The CGDT rates were multiplied by a factor of 0.25 for the first 24 months of disability, and by a factor of 0.50 for all subsequent months.
- Incurred But Not Reported Claims: 55% of the estimated incurred claims for the current year, as determined from analyses of historical LTDI claims experience.
- Loss Adjustment Expenses: 4.5% of the liability for open claims plus 6.0% of the liability for IBNR claims.

Appendix D: Reliance Items

In performing the valuation, we relied, without audit, on certain data and information provided by ETF and Aetna. To the extent any of the data or other items was 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 provided by Aetna
- Asset balances, premium contributions, plan expenses, covered payroll, and other financial information provided by ETF
- Plan descriptions provided by ETF
- Discussions with ETF and Aetna personnel