# Actuarial Valuation of
# The Local Income Continuation Insurance Plan

## As of December 31, 2017

## For the State of Wisconsin
## Department of Employee Trust Funds

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April 10, 2018

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**Appendices:**

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April 10, 2018

Jim Guidry
Director
Benefit Services Bureau
Wisconsin Department of Employee Trust Funds
Madison, WI 53707

**RE: Actuarial Valuation of Local Income Continuation Insurance Plan as of 12/31/2017**

Dear Jim:

Thank you for asking Milliman to perform an actuarial valuation of the Local Income Continuation Insurance Plan (ICI) as of December 31, 2017. The results from our analyses are provided in this report, along with documentation of the valuation methods and assumptions.

The State of Wisconsin Department of Employee Trust Funds (ETF) has determined that the Local ICI Plan 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 does not require the calculation of a liability for active lives. This approach is consistent with prior valuation work performed on the plans. Ultimately it is the responsibility of ETF and its auditors to determine the applicable accounting standards for the plans.

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:

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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. 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 financial projections in Section III of this report assume that the Local ICI plan will be modified effective 1/1/2021, although this motion has not yet been approved by the State of Wisconsin legislature. Failure to approve this motion could result in financial experience that is significantly different than the financial projections from our analysis.

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

This report contains results from the 12/31/2017 actuarial valuation of the Local Income Continuation Insurance (ICI) Plan administered by the Wisconsin Department of Employee Trust Funds (ETF). The actuarial liabilities for the Local ICI Plan as of 12/31/2017 are summarized below:

Table 1.1
Actuarial Liabilities for the Local ICI Plan as of 12/31/2017

| Liability Component | Standard Benefit | Supplemental Benefit | $75 Add-on | Total Liability Amount |
|---|---|---|---|---|
| Open Claims | $5,006,546 | $133,273 | $24,956 | $5,164,774 |
| IBNR Claims | $190,588 | $5,073 | $950 | $196,611 |
| Loss Adjustment Expense | $288,701 | $7,685 | $1,439 | $297,825 |
| Total | $5,485,835 | $146,031 | $27,345 | $5,659,211 |

The values above include estimated liabilities for monthly ICI benefit payments (Standard Benefits and Supplemental Benefits) and for additional benefits of $75 per month to disabled employees whose disability lasts longer than 12 months, to help these employees with medical fees ($75 Add-on).

We have analyzed the funding status of the Local ICI plan as of 12/31/2017. As shown in the following table, the Local ICI plan had a significant surplus as of 12/31/2017:

Table 1.2
Local ICI Fund Balances

| | 12/31/2015 | 12/31/2016 | 12/31/2017 |
|---|---|---|---|
| Beginning Balance | $35,272,960 | $36,300,190 | $37,527,592 |
| Closing Adjustments | ($128,421) | $8,045 | ($106,828) |
| Adjusted Beginning Balance | $35,144,539 | $36,308,236 | $37,420,764 |
| Plus: Premium Contributions | $0 | $0 | $0 |
| Plus: Investment Earnings | $2,218,609 | $2,725,838 | $3,019,818 |
| Less: Insurance Claims | $954,741 | $1,339,006 | $1,333,948 |
| Less: Administrative Expenses | $108,217 | $167,477 | $154,927 |
| Ending Balance | $36,300,190 | $37,527,591 | $38,951,707 |
| Actuarial Liability | $4,681,797 | $5,449,820 | $5,659,211 |
| Surplus / (Deficit) | $31,618,393 | $32,077,771 | $33,292,495 |

Our projection of future funding levels indicates that the Local ICI plan is expected to generate a significant level of surplus for the foreseeable future, with expected investment earnings on the existing fund exceeding the cost of expected new claims and expenses each year. It is therefore reasonable to continue waiving the premium contribution on this plan for the near term.

## Section II: Actuarial Valuation

The actuarial liability for the Local ICI Plan contains three components:

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

- Liability for Incurred but not Reported (IBNR) Claims: The present value of expected 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

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

The following table compares the 12/31/2016 and 12/31/2017 liabilities for the Local ICI plan:

Table 2.1
Current Year and Prior Year Liabilities for the Local ICI Plan

| Component | 12/31/2016 | 12/31/2017 |
|---|---|---|
| Open Claims | $4,973,858 | $5,164,774 |
| IBNR Claims | $189,159 | $196,611 |
| Loss Adjustment Expense | $286,803 | $297,825 |
| Total | $5,449,820 | $5,659,211 |

A discussion of each of the liability components is provided below, and Appendix C of this report provides additional details of the valuation assumptions used to compute the 12/31/2017 liabilities for the Local ICI plan.

**Open Claims**

The estimated liability for open claims increased by approximately 4% since last year, from $5.0 million as of 12/31/2016 to $5.2 million as of 12/31/2017. The increase was driven, in part, by differences in the demographic mix of disabled employees who were on claim last year versus this year. The number of open claims increased by 1% from 80 as of 12/31/2016 to 81 as of 12/31/2017, and the average monthly benefit amount decreased by approximately 4% from $1,593 as of 12/31/2016 to $1,524.

We used the same valuation methods and assumptions for computing ICI liabilities as last year. In particular, the claim termination rate assumptions, interest rate assumptions, and overpayment assumptions are unchanged.

To evaluate the adequacy of the liability for open claims, we performed a retrospective runoff test using State ICI claim experience from the period 12/31/2014 through 12/31/2017, because historical Local ICI experience has been volatile due to the small volume of open claims. We believe that the State ICI runoff analysis provides a reasonable basis for testing Local ICI valuation assumptions, because the Local and State ICI plans are similar. In performing these tests, we calculated the liabilities at prior valuation dates using current valuation assumptions, and determined whether the liabilities provided sufficient funding for emerging claim costs. The emerging costs were 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. The results of the studies are shown below and represent three mutually distinct 12-month studies that were combined:

Table 2.2
Runout Study for the ICI Plans
Study Period: 12/31/2014 – 12/31/2017

| Claim Duration | Average Annual Margin |
|---|---|
| 1 – 12 months | 6.3% |
| 13 – 24 months | -1.8% |
| 25 – 36 months | 1.6% |
| 37 – 48 months | 12.1% |
| 49 – 60 months | -1.2% |
| 61 + months | 1.5% |
| Total | 2.6% |

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. 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 State ICI plan meets that overall objective, despite some variation by claim duration, and we have assumed that Local ICI experience will be similar. We will continue to monitor the valuation assumptions closely.

The Local ICI Plan provides an additional benefit of $75 per month to disabled employees whose disability lasts longer than 12 months, to help these employees with medical fees. The $75 monthly benefit is already included in the reported benefit amounts of employees disabled for 12 months or more as of the valuation date. Therefore, the additional liability for these claims was included as part of the open claim liability calculation. For employees that were disabled for fewer than 12 months as of the valuation date, the additional liability was determined using the same methods used in the open claim liability calculations. The additional liability for these claims was estimated to be $24,956 as of December 31, 2017.

The following table provides a split between liabilities corresponding to standard benefits (which cover up to $64,000 of annual earnings), supplemental benefits (which cover annual earnings from $64,000 to $120,000), and the $75 Add-on benefit. It also shows an allocation of the IBNR and loss adjustment expense liabilities to each of these three benefit components.

| Table 2.3<br>Actuarial Liabilities for the Local ICI Plan as of 12/31/2017 | | | | |
|---|---|---|---|---|
| Liability Component | Standard Benefit | Supplemental Benefit | $75 Add-on | Total Liability Amount |
| Open Claims | $5,006,546 | $133,273 | $24,956 | $5,164,774 |
| IBNR Claims | $190,588 | $5,073 | $950 | $196,611 |
| Loss Adjustment Expense | $288,701 | $7,685 | $1,439 | $297,825 |
| Total | $5,485,835 | $146,031 | $27,345 | $5,659,211 |

## 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. For example, 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 computed the IBNR liability for the Local ICI plan by estimating the total cost of incurred claims for 2017 and determining the proportion of claims that are typically unreported at each year end. This analysis was performed using historical ICI claim experience.

The liability for IBNR claims increased by approximately 4% from 12/31/2016 to 12/31/2017. This was because the estimated annual incurred claims, which were calculated using historical Local ICI claim experience, increased from $1.26 million last year to $1.31 million this year. We have assumed that the proportion of unreported annual claims is 15% in our IBNR liability calculations, which was derived from an analysis of historical State and Local ICI reporting lags.

Our IBNR calculation for the Local ICI plan is summarized below:

| Table 2.4<br>Development of IBNR Liability for the Local ICI Plan | |
|---|---|
| Estimated Incurred Claims | $1,310,740 |
| Estimated Proportion of Unreported Claims | 15.0% |
| IBNR Liability as of 12/31/2017 | $196,611 |

## Loss Adjustment Expense

The loss adjustment expense liability was calculated as 7% of the IBNR liability and 5.5% of the open claim liability. These assumptions are based on the annual fees that ETF has paid Aetna over the past several years for administering ICI claims, which were approximately equal to 6% of estimated annual incurred claims. 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. The loss adjustment expense calculations for the Local ICI plan are summarized in the table below:

| Table 2.5<br>Development of Loss Adjustment Expense Liability for the Local ICI Plan | | | |
|---|---|---|---|
| Component | Liability | Expense Factor | Loss Adjustment Expenses |
| Open Claims | $5,164,774 | 5.5% | $284,063 |
| IBNR | $196,611 | 7.0% | $13,763 |
| Total | $5,361,385 | 5.6% | $297,825 |

## Section III: Discussion of Local ICI Funding Levels

The actuarial valuation of the Local ICI plan included an analysis of current and future funding levels. The following table shows the fund balances as of the three most recent fiscal year-ends:

Table 3.1
Local ICI Fund Balances

| | 12/31/2015 | 12/31/2016 | 12/31/2017 |
|---|---|---|---|
| Beginning Balance | $35,272,960 | $36,300,190 | $37,527,592 |
| Closing Adjustments | ($128,421) | $8,045 | ($106,828) |
| Adjusted Beginning Balance | $35,144,539 | $36,308,236 | $37,420,764 |
| Plus: Premium Contributions | $0 | $0 | $0 |
| Plus: Investment Earnings | $2,218,609 | $2,725,838 | $3,019,818 |
| Less: Insurance Claims | $954,741 | $1,339,006 | $1,333,948 |
| Less: Administrative Expenses | $108,217 | $167,477 | $154,927 |
| Ending Balance | $36,300,190 | $37,527,591 | $38,951,707 |
| Actuarial Liability | $4,681,797 | $5,449,820 | $5,659,211 |
| Surplus / (Deficit) | $31,618,393 | $32,077,771 | $33,292,495 |

The Local ICI plan has run a large surplus for many years, and premium contributions have been waived since 2012. In order to evaluate the potential long-term performance of this fund, we prepared a financial projection. The projection reflects actual results for 2017 and projected values in 2018 and beyond. Our baseline projection assumes plan changes will become effective in 2021, including a reduction in the benefit percent from 75% to 70% of earnings, and a reduction in the benefit period from retirement age to 18 months. We also developed projections corresponding to the scenario that assumes no plan changes in the future.

The key elements of this projection include the following:

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

- Payroll: Since Local ICI payroll was not available, we estimated current payroll based on data for the State ICI plan and historical annual incurred claims experience. 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 payroll, but are assumed to be waived in the future given the plan's significant surplus.

- Investment Income: Investment income is projected using the valuation assumption of 7.2%, specified by ETF.

- Insurance Claims: Annual paid insurance claims are the sum of projected payments on existing claims as of 12/31/2017, and of payments on expected future claims incurred after

12/31/2017. Future incurred claims are based on assumed claims experience of 0.66% of payroll in 2017, adjusted for expected aging in subsequent years. In the baseline scenario which assumes plan changes effective 2021, future incurred claims are assumed to be a lower percentage of payroll due to the expected plan design changes.

- Administrative Expenses: Administrative expenses are modeled as a constant percentage of paid insurance claims, based on actual values in 2017.

- 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 decreasing liability on claims that existed as of 12/31/2017, and of the increasing liability for claims incurred after 12/31/2017.

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

Our Baseline projection, which is shown on the following page, indicates that the Local ICI plan is expected to generate a significant level of surplus for the foreseeable future, with expected investment earnings on the existing fund exceeding the cost of expected new claims and expenses each year. It is therefore reasonable to continue waiving the premium contribution on this plan for the near term.

In Scenario 1 below the baseline projection, we have not assumed the redesign plan changes will become effective in 2021. The results from this scenario also indicate that the Local ICI plan is expected to generate a significant level of surplus for the foreseeable future. Note that in Scenario 1 we have assumed that Local ICI premiums would be waived for the near term, similar to the baseline scenario.

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.

## Baseline Scenario: Redesigned ICI program effective in 2021 and beyond

**Local ICI Program - Funding Analysis as of December 31, 2017**

Premium contributions waived indefinitely beginning 2012

| Calendar Year | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|
| BOY Fund Balance | $37,420,764 | $38,951,706 | $40,231,055 | $41,566,220 | $42,961,218 | $44,322,035 | $45,634,647 | $47,143,510 | $48,870,010 | $50,800,108 |
| | | | | | | | | | | |
| Premium Contributions | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Investment Income | $3,019,818 | $2,804,523 | $2,896,636 | $2,992,768 | $3,093,208 | $3,191,187 | $3,285,695 | $3,394,333 | $3,518,641 | $3,657,608 |
| Total Revenues | $3,019,818 | $2,804,523 | $2,896,636 | $2,992,768 | $3,093,208 | $3,191,187 | $3,285,695 | $3,394,333 | $3,518,641 | $3,657,608 |
| | | | | | | | | | | |
| Insurance Claims | $1,333,948 | $1,366,469 | $1,398,990 | $1,431,511 | $1,552,124 | $1,683,097 | $1,591,940 | $1,494,284 | $1,423,244 | $1,381,337 |
| Carrier Administrative Expenses | $68,900 | $70,580 | $72,260 | $73,940 | $80,169 | $86,934 | $82,226 | $77,182 | $73,513 | $71,348 |
| Administrative Expense | $86,027 | $88,124 | $90,222 | $92,319 | $100,097 | $108,544 | $102,665 | $96,367 | $91,786 | $89,083 |
| Total Operating Expenses | $1,488,876 | $1,525,174 | $1,561,472 | $1,597,770 | $1,732,391 | $1,878,575 | $1,776,831 | $1,667,833 | $1,588,543 | $1,541,768 |
| | | | | | | | | | | |
| Net Change in Fund Balance | $1,530,942 | $1,279,349 | $1,335,164 | $1,394,998 | $1,360,817 | $1,312,612 | $1,508,863 | $1,726,500 | $1,930,098 | $2,115,840 |
| EOY Fund Balance | $38,951,706 | $40,231,055 | $41,566,220 | $42,961,218 | $44,322,035 | $45,634,647 | $47,143,510 | $48,870,010 | $50,800,108 | $52,915,948 |
| Incurred Claim Liability | $5,659,211 | $6,387,965 | $7,037,744 | $7,616,517 | $7,160,339 | $6,424,756 | $5,795,254 | $5,269,454 | $4,818,476 | $4,418,066 |
| Surplus / (Deficit) | $33,292,495 | $33,843,091 | $34,528,476 | $35,344,701 | $37,161,695 | $39,209,891 | $41,348,256 | $43,600,556 | $45,981,632 | $48,497,881 |

# Scenario 1: No redesigned ICI program

**Local ICI Program - Funding Analysis as of December 31, 2017**

Premium contributions waived indefinitely beginning 2012

| Calendar Year | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|
| BOY Fund Balance | $37,420,764 | $38,951,706 | $40,231,055 | $41,566,220 | $42,961,218 | $44,328,092 | $45,671,547 | $47,021,400 | $48,358,560 | $49,684,653 |
| Premium Contributions | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Investment Income | $3,019,818 | $2,804,523 | $2,896,636 | $2,992,768 | $3,093,208 | $3,191,623 | $3,288,351 | $3,385,541 | $3,481,816 | $3,577,295 |
| Total Revenues | $3,019,818 | $2,804,523 | $2,896,636 | $2,992,768 | $3,093,208 | $3,191,623 | $3,288,351 | $3,385,541 | $3,481,816 | $3,577,295 |
| Insurance Claims | $1,333,948 | $1,366,469 | $1,398,990 | $1,431,511 | $1,546,697 | $1,655,854 | $1,736,785 | $1,835,233 | $1,931,407 | $2,039,906 |
| Carrier Administrative Expenses | $68,900 | $70,580 | $72,260 | $73,940 | $79,889 | $85,527 | $89,707 | $94,792 | $99,760 | $105,364 |
| Administrative Expense | $86,027 | $88,124 | $90,222 | $92,319 | $99,747 | $106,787 | $112,006 | $118,355 | $124,557 | $131,555 |
| Total Operating Expenses | $1,488,876 | $1,525,174 | $1,561,472 | $1,597,770 | $1,726,333 | $1,848,168 | $1,938,499 | $2,048,380 | $2,155,724 | $2,276,825 |
| Net Change in Fund Balance | $1,530,942 | $1,279,349 | $1,335,164 | $1,394,998 | $1,366,874 | $1,343,455 | $1,349,853 | $1,337,160 | $1,326,092 | $1,300,470 |
| EOY Fund Balance | $38,951,706 | $40,231,055 | $41,566,220 | $42,961,218 | $44,328,092 | $45,671,547 | $47,021,400 | $48,358,560 | $49,684,653 | $50,985,123 |
| Incurred Claim Liability | $5,659,211 | $6,387,965 | $7,037,744 | $7,616,517 | $8,163,688 | $8,692,421 | $9,236,782 | $9,784,220 | $10,341,105 | $10,899,804 |
| Surplus / (Deficit) | $33,292,495 | $33,843,091 | $34,528,476 | $35,344,701 | $36,164,404 | $36,979,126 | $37,784,618 | $38,574,340 | $39,343,547 | $40,085,319 |

## Appendix A: Plan Description

The Local ICI Plan provides short and long term disability benefits as summarized below:

- Elimination Period: Participating employees select an elimination period up to 180 days. Benefits are reduced for any vacation, sick leave, holiday or compensation pay received after the elimination period.

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

| Age at Disablement | Maximum Benefit Period |
|---|---|
| Before age 62 | To Age 65 |
| 62 | 3.50 years |
| 63 | 3.00 years |
| 64 | 2.50 years |
| 65 | 2.00 years |
| 66 | 1.75 years |
| 67 | 1.50 years |
| 68 | 1.25 years |
| 69 | To Age 70 |

- Benefit Amount: The Standard benefit provides up to 75% of a participant's average monthly earnings, capped at $4,000 per month. Supplemental Coverage is available to employees whose annual salary exceeds $64,000, and provides an additional benefit up to $3,500 per month. For disabilities lasting longer than 12 months, a supplement of $75 per month is added to the normal benefit amount.

- Benefit Increases: None

- Benefit Offsets: The ICI plan benefit is offset by income received from other sources including, but not limited to: Social Security (regular or disability), unemployment compensation, worker's compensation (except permanent disability awards), WRS benefits (retirement, disability retirement, Long-Term Disability Insurance, or separation), work earnings, and Duty Disability benefits.

- Definition of Disability: During the first 12 months of disability, the participant is disabled if unable to perform his or her job and under the care of a physician. After the first 12 months of disability, the participant is disabled if unable to engage in any substantial gainful activity for which he or she is reasonably qualified.

- Premium Contributions: Premiums for Standard Coverage are paid by the employer and the employee. Premiums for Supplemental Coverage are paid entirely by the employee.

## Appendix B: Data for Valuation

The following tables show the distribution of open claims as of 12/31/2017 by year of disability and gender, and by age at disability and gender.

| Number of Open Local ICI Claims as of 12/31/2017 By Year of Disability and Gender | | | |
|---|---|---|---|
| Disability Year | Male | Female | Total |
| 2001 and earlier | 1 | 2 | 3 |
| 2002 | 1 | 1 | 2 |
| 2003 | 2 | - | 2 |
| 2004 | 1 | 2 | 3 |
| 2005 | 2 | 3 | 5 |
| 2006 | 1 | 1 | 2 |
| 2007 | - | - | - |
| 2008 | - | - | - |
| 2009 | 3 | 2 | 5 |
| 2010 | 5 | - | 5 |
| 2011 | 2 | - | 2 |
| 2012 | 2 | - | 2 |
| 2013 | 1 | 1 | 2 |
| 2014 | 2 | 4 | 6 |
| 2015 | 8 | 9 | 17 |
| 2016 | 6 | 1 | 7 |
| 2017 | 7 | 11 | 18 |
| Total | 44 | 37 | 81 |

| Number of Open Local ICI Claims as of 12/31/2017 By Age at Disability and Gender | | | |
|---|---|---|---|
| Age at Disability | Male | Female | Total |
| < 20 | - | - | - |
| 20-24 | - | - | - |
| 25-29 | 1 | 1 | 2 |
| 30-34 | 4 | 6 | 10 |
| 35-39 | 6 | 1 | 7 |
| 40-44 | 6 | 5 | 11 |
| 45-49 | 9 | 7 | 16 |
| 50-54 | 6 | 8 | 14 |
| 55-59 | 10 | 6 | 16 |
| 60-64 | 2 | 2 | 4 |
| 65+ | - | 1 | 1 |
| Total | 44 | 37 | 81 |

The following tables show the distribution of net monthly benefit amounts as of 12/31/2017 by year of disability and gender, and by age at disability and gender.

| Local ICI Net Monthly Benefit Amounts as of 12/31/2017 By Year of Disability and Gender | | | |
|---|---|---|---|
| Disability Year | Male | Female | Total |
| 2001 and earlier | 366 | 1,604 | 1,970 |
| 2002 | 1,122 | 1,018 | 2,140 |
| 2003 | 3,375 | - | 3,375 |
| 2004 | 556 | 1,703 | 2,259 |
| 2005 | 1,723 | 1,421 | 3,144 |
| 2006 | 857 | 192 | 1,049 |
| 2007 | - | - | - |
| 2008 | - | - | - |
| 2009 | 368 | 1,453 | 1,821 |
| 2010 | 8,342 | - | 8,342 |
| 2011 | 3,436 | - | 3,436 |
| 2012 | 376 | - | 376 |
| 2013 | 268 | 1,275 | 1,543 |
| 2014 | 1,177 | 5,919 | 7,097 |
| 2015 | 12,961 | 10,039 | 23,000 |
| 2016 | 13,219 | 2,763 | 15,981 |
| 2017 | 20,907 | 27,011 | 47,918 |
| Total | 69,052 | 54,398 | 123,450 |

| Local ICI Net Monthly Benefit Amounts as of 12/31/2017 By Age at Disability and Gender | | | |
|---|---|---|---|
| Age at Disability | Male | Female | Total |
| < 20 | - | - | - |
| 20-24 | - | - | - |
| 25-29 | 3,740 | 4,875 | 8,615 |
| 30-34 | 12,000 | 6,161 | 18,161 |
| 35-39 | 12,069 | 2,253 | 14,322 |
| 40-44 | 10,262 | 3,531 | 13,793 |
| 45-49 | 8,666 | 12,840 | 21,506 |
| 50-54 | 3,996 | 12,917 | 16,912 |
| 55-59 | 15,205 | 5,863 | 21,068 |
| 60-64 | 3,113 | 3,147 | 6,260 |
| 65+ | - | 2,813 | 2,813 |
| Total | 69,052 | 54,398 | 123,450 |

## Appendix C: Actuarial Methods and Assumptions

- Valuation Date: 12/31/2017

- Discount Rate: 7.20%, specified by ETF

- Claim Termination Rates: Claim termination rate assumptions were derived from 1987 CGDT rates using the following adjustment factors:

| Disability Duration | Termination Rate Adjustment Factor |
|---|---|
| 1 – 24 months | 2.50 |
| 25 – 36 months | 2.40 |
| 37 – 48 months | 2.20 |
| 49 – 60 months | 2.00 |
| 61 – 72 months | 1.80 |
| 73 – 84 months | 1.60 |
| 85 – 96 months | 1.40 |
| 97 – 108 months | 1.20 |
| 109 + months | 1.00 |

- Future Offset Approval Rates: Estimated Social Security offset assumptions are shown below. No future offsets are assumed on claimants disabled more than five years.

  Probability of being approved for Social Security benefits (if not already approved):

| Claim Duration | Probability |
|---|---|
| 1 – 12 months | 69% |
| 13 – 24 months | 45% |
| 25 – 36 months | 17% |
| 37 – 48 months | 8% |
| 49 – 60 months | 5% |
| 61 + months | 0% |

  Future Social Security offset amount as percentage of gross benefit amount: 44%.

- Incurred But Not Reported Claims: 15% of the estimated incurred claims for the current year, as determined from analyses of historical ICI claims experience.

- Loss Adjustment Expenses: 5.5% of the liability for open claims plus 7.0% of the liability for IBNR claims

- Overpayment Credit: 75% of the overpayment balance reported by ETF as of 12/31/2017

## 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