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TEACHERS' Retirement System
TRS
KENTUCKY

GASB Statement No. 75 Report for the Teachers' Retirement System of the State of Kentucky

Retiree Medical and Life Insurance Plans

Prepared as of June 30, 2018

FOR FINANCIAL REPORTING AS OF JUNE 30, 2019

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August 14, 2019

Board of Trustees
Teachers' Retirement System of the
State of Kentucky
479 Versailles Road
Frankfort, KY 40601-3800

Members of the Board:

Presented in this report is information to assist the Teachers' Retirement System of the State of Kentucky (System) in meeting the requirements of the Governmental Accounting Standards Board (GASB) Statement No. 75 for the Retiree Medical Plan funded by the Medical Insurance Fund (MIF) and the Life Insurance Plan funded by the Life Insurance Fund (LIF). The information is presented for the one-year period ending June 30, 2018. These calculations have been made on a basis that is consistent with our understanding of the accounting standard.

The annual actuarial valuation performed as of June 30, 2017 was used as the basis for much of the information presented as of June 30, 2018 in this report. The valuation was based upon data furnished by the System concerning active, inactive, and retired members along with pertinent claims data and financial information. This information was reviewed for completeness and internal consistency, but was not audited. The valuation results depend on the integrity of the data. If any of the information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

To the best of our knowledge, the information contained in this report is complete and accurate. These calculations were performed by, and under the supervision of, independent consulting actuaries with experience in performing valuations for public retirement systems. In addition, the valuation was prepared in accordance with generally accepted actuarial principles and practices as well as with Actuarial Standards of Practice prescribed by the Actuarial Standards Board.

Our calculation of the liabilities associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statement No. 75. The calculation of the MIF and LIF liabilities for this report may not be applicable for funding purposes of the MIF and LIF. A calculation of the MIF's and LIF's liabilities for purposes other than satisfying the requirements of GASB No. 75 may produce significantly different results.

This is to certify that the independent consulting actuary is a member of the American Academy of Actuaries and has experience in performing valuations for public retirement systems, that the valuations were prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the medical plans and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of each plan.

Respectfully submitted,

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Principal and Managing Director

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REPORT OF THE ANNUAL GASB STATEMENT NO. 75
TEACHERS' RETIREMENT SYSTEM OF THE STATE OF KENTUCKY
PREPARED AS OF JUNE 30, 2018

SECTION I – SUMMARY OF COLLECTIVE AMOUNTS

($ Thousands)

	MIF	LIF
Valuation Date (VD):	June 30, 2017	June 30, 2017
Prior Measurement Date:	June 30, 2017	June 30, 2017
Measurement Date (MD):	June 30, 2018	June 30, 2018
Reporting Date (RD):	June 30, 2019	June 30, 2019
Single Equivalent Interest Rate (SEIR):		
Single Equivalent Interest Rate at Prior Measurement Date	8.00%	7.50%
Single Equivalent Interest Rate at Measurement Date	8.00%	7.50%
Net OPEB Liability:		
Total OPEB Liability (TOL)	$ 4,659,996	$ 112,660
Fiduciary Net Position (FNP)	1,190,281	84,462
Net OPEB Liability (NOL = TOL – FNP)	$ 3,469,715	$ 28,198
FNP as a percentage of TOL	25.5%	75.0%
Collective OPEB Expense:	$200,943	$4,729
Deferred Outflows of Resources:	$47,699	$7,697
Deferred Inflows of Resources:	$191,846	$605

SECTION II – INTRODUCTION

The Governmental Accounting Standards Board issued Statement No. 75 (GASB 75), *"Accounting and Financial Reporting for Postemployment Benefit Plans other than Pension"* in June 2015. The effective date for reporting under GASB 75 is plan years beginning after June 15, 2017. This report, prepared as of June 30, 2018 (the Measurement Date), presents information to assist the Teachers' Retirement System of the State of Kentucky Medical Insurance Fund (MIF) and Life Insurance Fund (LIF) in providing the required information under GASB 75 to participating employers. Much of the material provided in this report, including the Net OPEB Liability, is based on the results of the GASB 74 report, which was issued November 8, 2018. See that report for more information on the member data, actuarial assumptions and methods used in developing the GASB 74 results.

GASB 75 replaces GASB 45, and represents a significant departure from the requirements of the prior statement. GASB 45 was issued as a "funding friendly" statement that required postemployment benefit plans other than pension plans (OPEB) to report items consistent with the results of the System's actuarial valuations, as long as those valuations met certain parameters. GASB 75 basically separates accounting from funding by creating disclosure and reporting requirements that may or may not be consistent with the basis used for funding the System.

Two major changes in GASB 75 are the requirements to determine the Net OPEB Liability (NOL) and recognize an OPEB Expense (OE) in the financial statements of the participating employer.

GASB 75 requires the inclusion of a Net OPEB Liability (NOL) on the plan sponsor's balance sheet and a determination of an OPEB Expense (OE), which may bear little relationship to the funding requirements. In fact, it is possible in some years for the NOL to be an asset or the OE to be an income item. The NOL is set equal to the Total OPEB Liability (TOL) minus the Fiduciary Net Position (FNP). The benefit provisions recognized in the calculation of the TOL are summarized in Appendix B. For the purposes of reporting under GASB 75, the Plan is a cost-sharing-employer defined benefit OPEB plan.

OE includes amounts for Service Cost (the Normal Cost under Entry Age Normal (EAN) for the year), interest on the TOL, employee contributions, administrative expenses, other cash flows during the year, recognition of increases/decreases in the TOL due to changes in the benefit structure, actual versus expected experience, actuarial assumption changes, and recognition of investment gains/losses. The actual experience and assumption change impacts are recognized over the average expected remaining service life of the System membership as of the beginning of the measurement period, while investment gains/losses are recognized equally over five years. The development of the OE is shown in Section V. The unrecognized portions of each year's experience, assumption changes and investment gains/losses are used to develop Deferred Inflows and Outflows of Resources, which also must be included on the employer's Statement of Net Position.

Among the items needed for the TOL calculation is a discount rate, as defined by GASB, or a Single Equivalent Interest Rate (SEIR). To determine the SEIR, the FNP must be projected into the future for as long as there are anticipated benefits payable under the plan provisions applicable to the membership and beneficiaries of the System on the Measurement Date. Future contributions were projected to be made at the current levels set in statute. If the FNP is not projected to be depleted at any point in the future, the long-term expected rate of return on plan investments expected to be used to finance the benefit payments may be used as the SEIR.

If, however, the FNP is projected to be depleted at a future measurement date, the SEIR is determined as the single rate that will generate a present value of benefit payments equal to the sum of the present value determined by discounting all projected benefit payments through the date of depletion by the long-term expected rate of return, and the present value determined by discounting those benefits after the date of depletion by a 20-year tax-exempt municipal bond (rating AA/Aa or higher) rate. The rate used, if necessary, for this purpose is the Bond Buyer General Obligation 20-year Municipal Bond Index Rate (3.56%).

Our calculations indicated that the FNP is not projected to be depleted, so the Long Term Rate is used in the determination of the SEIR for both the June 30, 2017 and the June 30, 2018 TOLs. The SEIR is 8.00% for the Medical Insurance Fund (MIF) and 7.50% for the Life Insurance Fund (LIF).

The FNP projections are based upon the financial status of the MIF and LIF on the Measurement Date, the indicated set of methods and assumptions, and the requirements of GASB 74 and 75. As such, the FNP projections are not reflective of the cash flows and asset accumulations that would occur on an ongoing plan basis, reflecting the impact of future members. Therefore, the results of this test do not necessarily indicate whether or not the fund will actually run out of money, the financial condition of the System, or the System's ability to make benefit payments in future years.

The sections that follow provide the results of all the required calculations, presented in the order laid out in GASB 75 for note disclosure and Required Supplementary Information (RSI).

SECTION III – FINANCIAL STATEMENT NOTES

The material presented herein will follow the order presented in GASB 75. Paragraph numbers are provided for ease of reference.

Paragraph 92-93.: This paragraph requires information to be disclosed regarding the actuarial assumptions and other inputs used to measure the TOL. The complete set of actuarial assumptions and other inputs utilized in developing the TOL are outlined in Appendix E. The TOL as of June 30, 2018 was determined based on an actuarial valuation prepared as of June 30, 2017, using the following actuarial assumptions and other inputs:

Inflation	3.00%
Real wage growth	0.50%
Wage inflation	3.50%
Salary increases, including wage inflation	3.50% - 7.20%
Long-term Investment Rate of Return, net of OPEB plan investment expense, including inflation	
MIF	8.00%
LIF	7.50%
Municipal Bond Index Rate	3.89%
Year FNP is projected to be depleted	
MIF	n/a
LIF	n/a
Single Equivalent Interest Rate, net of OPEB plan investment expense, including price inflation	
MIF	8.00%
LIF	7.50%
MIF Health Care Cost Trends	
Under Age 65	7.75% for FYE 2018 decreasing to an ultimate rate of 5.00% by FYE 2024
Ages 65 and Older	5.75% for FYE 2018 decreasing to an ultimate rate of 5.00% by FYE 2021
Medicare Part B Premiums	0.00% for FYE 2018 with an ultimate rate of 5.00% by 2030

Mortality rates were based on the RP-2000 Combined Mortality Table projected to 2025 with projection scale BB and set forward two years for males and one year for females is used for the period after service retirement and for dependent beneficiaries. The RP-2000 Disabled Mortality Table set forward two years for males and seven years for females is used for the period after disability retirement.

The remaining actuarial assumptions (e.g., initial per capita costs, health care cost trends, rate of plan participation, rates of plan election, etc.) used in the June 30, 2017 valuation were based on a review of recent plan experience done concurrently with the June 30, 2015 valuation.

93(e) Sensitivity analysis: This paragraph requires disclosure of the sensitivity of the NOL to changes in the health care cost trend rates. The following exhibit presents the NOL of the Plan, calculated using the health care cost trend rates, as well as what the Plan's NOL would be if it were calculated using a health care cost trend rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate. This chart is not shown for the Life Insurance Fund (LIF) since there is no health care trend component of the liabilities. :

Health Care Cost Trend Rate Sensitivity ($ Thousands)			
	1% Decrease	Current	1% Increase
MIF Net OPEB Liability	$ 2,877,113	$ 3,469,715	$ 4,200,835

Paragraph 94:

(a) Discount rate (SEIR): The discount rate used to measure the TOL at June 30, 2018 was 8.00 percent for the MIF and 7.50% for the LIF.

(b) Projected cash flows:

MIF Discount rate (SEIR). The discount rate used to measure the TOL as of the Measurement Date was 8.00%. The projection of cash flows used to determine the discount rate was performed in accordance with GASB 74. The projection's basis was an actuarial valuation performed as of June 30, 2017. In addition to the actuarial methods and assumptions of the June 30, 2017 actuarial valuation, the following actuarial methods and assumptions were used in the projection of cash flows:

- Total payroll for the initial projection year consists of the payroll of the active membership present on the Valuation Date. In subsequent projection years, total payroll was assumed to increase annually at a rate of 3.50%.

- For the retiree health care costs of those beneficiaries under age 65, the KEHP implicit rate subsidies were assumed to be paid in all years by the employer directly to plan members as the benefits come due.

- As administrative expenses were assumed to be paid in all years by the employer as they come due, they were not considered.

- Cash flows occur mid-year.

- Future contributions to the MIF were based upon the contribution rates defined in statute and the projected payroll of active employees. Per KRS 161.540(1)(c).3 and 161.550(5), when the MIF achieves a sufficient prefunded status, as determined by the retirement system's actuary, the following MIF statutory contributions are to be decreased, suspended, or eliminated:
  - Employee contributions
  - School District/University Contributions
  - State Contributions for KEHP premium subsidies payable to retirees who retire after June 30, 2010

To reflect these adjustments, open group projections were used and assumed an equal, pro rata reduction to the current statutory amounts in the years if/when the MIF is projected to achieve a Funded Ratio of 100% or more. Here, the current statutory amounts are adjusted to achieve total contributions equal to the Actuarially Determined Contribution (ADC), as determined by the prior year's valuation and in accordance with the MIF's funding policy (Schedule E). As the specific methodology to be used for the adjustments has yet to be determined, there may be differences between the projected results and future experience. This may also include any changes to retiree contributions for KEHP coverage pursuant to KRS 161.675(4)(b).

- In developing the adjustments to the statutory contributions in future years, the following was assumed:
  - Liabilities and cash flows are net of expected retiree contributions and any implicit subsidies attributable to coverage while participating in KEHP.
  - A 0% active member growth rate was assumed for the purposes of developing estimates for new entrants (membership dates beyond June 30, 2017).

Based on these assumptions, the MIF's FNP was <u>not</u> projected to be depleted.

LIF Discount rate (SEIR). The discount rate used to measure the TOL as of the Measurement Date was 7.50%. The projection of cash flows used to determine the discount rate was performed in accordance with GASB 74. The projection's basis was an actuarial valuation performed as of June 30, 2017. In addition to the actuarial methods and assumptions of the June 30, 2017 actuarial valuation, the following actuarial methods and assumptions were used in the projection of the LIF's cash flows:

- Total payroll for the initial projection year consists of the payroll of the active membership present on the Valuation Date. In subsequent projection years, total payroll was assumed to increase annually at a rate of 3.50%.

- The employer will contribute the Actuarially Determined Contribution (ADC) in accordance with the LIF's funding policy (Schedule E) determined by a valuation performed on a date two years prior to the beginning of the fiscal year in which the ADC applies.

- As administrative expenses were assumed to be paid in all years by the employer as they come due, they were not considered.

- Active employees do not explicitly contribute to the plan.

- Cash flows occur mid-year.

Based on these assumptions, the LIF's FNP was <u>not</u> projected to be depleted.

(c) **Long-term rate of return:** The long-term expected rate of return on OPEB plan investments will be determined based on the allocation of assets by asset class and by the mean and variance of real returns.

(d) **Municipal bond rate:** The discount rate determination will use a municipal bond rate to the extent the trust is projected to run out of money before all benefits are paid. The rate used, if necessary, for this purpose is the monthly average of the Bond Buyers General Obligation 20-year Municipal Bond Index Rate (formerly published monthly by the Board of Governors of the Federal Reserve System).

(e) **Periods of projected benefit payments:** Projected future benefit payments for all current plan members were projected through 2116.

Assumed asset allocation:
The target asset allocation and best estimates of arithmetic real rates of return for each major asset class, as provided by TRS's investment consultant, are summarized in the following table:

MIF		
Asset Class	Target Allocation	30 Year Expected Geometric Real Rate of Return
Global Equity	58.0%	4.6%
Fixed Income	9.0%	1.2%
Real Estate	5.5%	3.8%
Private Equity	6.5%	6.3%
Other Additional Categories	20.0%	3.3%
Cash (LIBOR)	1.0%	0.9%
Total	100.00%	

LIF*		
Asset Class	Target Allocation	30 Year Expected Geometric Real Rate of Return
U.S. Equity	40.0%	4.2%
International Equity	23.0%	5.2%
Fixed Income	18.0%	1.2%
Real Estate	6.0%	3.8%
Private Equity	5.0%	6.3%
Other Additional Categories	6.0%	3.3%
Cash (LIBOR)	2.0%	0.9%
Total	100.0%	

**As the LIF investment policy is to change, the above table reflects the pension allocation and returns that achieve the targeted 7.50% long-term rate of return.*

(f) :This paragraph requires disclosure of the sensitivity of the NOL to changes in the the discount rate. The following exhibit presents the NOL of the Plan, calculated using the the discount rate of 8.00 percent for the MIF and 7.50 percent for the LIF, as well as the System's NOL calculated using a discount rate that is 1-percentage-point lower (7.00 percent for the MIF and 6.50 percent for the LIF) or 1-percentage-point higher (9.00 percent for the MIF and 8.50 percent for the LIF) than the current rate:

Discount Rate Sensitivity ($ Thousands)			
	1% Decrease	Current Discount Rate	1% Increase
MIF Net OPEB Liability	$ 4,068,745	$ 3,469,715	$ 2,970,711
LIF Net OPEB Liability	$ 42,929	$ 28,198	$ 16,114

Paragraph 96(a): This paragraph requires the disclosure of the employer's proportionate share of the Collective NOL and if an employer has as special funding situation, the portion of the non-employer contributing entities proportionate share of the collective NOL that is associated with the employer. These amounts are shown in Schedule B.

Paragraph 96(b): This paragraph requires disclosure of the employer's proportion of the collective NOL and the change in the proportion since the prior measurement date. These amounts are shown in Schedule A.

Paragraph 96(c): June 30, 2017 is the actuarial valuation date upon which the TOL is based. The result is rolled forward using standard actuarial techniques to the measurement date. The roll forward calculation adds the normal cost (also called the service cost) for the period July 1, 2017 through June 30, 2018, subtracts the actual benefit payments for the same period and then applies the expected investment rate of return for the period. If applicable, actuarial gains and losses arising from benefit changes, the differences between estimates and actual experience, and changes in assumptions or other inputs are reconciled to the TOL as of the Measurement Date. The procedure was used to determine the TOL as of June 30, 2018, as shown in the following table:

TOL Roll-Forward – MIF ($ in Thousands)	Expected	Actual
(a) TOL as of June 30, 2017*	$ 4,524,172	$ 4,329,311
(b) Actual Benefit Payments and Refunds for the Year July 1, 2017 – June 30, 2018	(161,082)	(161,082)
(c) Interest on TOL = [(a) x (0.080)] + [(b) x (0.040)]	355,491	339,902
(d) Service Cost for the Year July 1, 2017 – June 30, 2018 at the End of the Year	95,382	95,382
(e) Changes of Benefit Terms	0	0
(f) Changes of Assumptions (or other inputs)	56,483	56,483
(g) TOL Rolled Forward to June 30, 2018 = (a) + (b) + (c) + (d) + (e) + (f)	$ 4,870,446	$ 4,659,996
(h) Difference between Expected and Actual Experience (Gain)/Loss		$ (210,450)

* The TOL used in the roll-forward as of June 30, 2017 is calculated using the discount rate as of the Prior Measurement Date.

TOL Roll-Forward – LIF ($ in Thousands)	Expected	Actual
(a) TOL as of June 30, 2017*	$ 109,736	$ 109,069
(b) Actual Benefit Payments and Refunds for the Year July 1, 2017 – June 30, 2018	(5,453)	(5,453)
(c) Interest on TOL = [(a) x (0.075)] + [(b) x (0.0375)]	8,026	7,976
(d) Service Cost for the Year July 1, 2017 – June 30, 2018 at the End of the Year	1,068	1,068
(e) Changes of Benefit Terms	0	0
(f) Changes of Assumptions or Other Inputs	0	0
(g) TOL Rolled Forward to June 30, 2018 = (a) + (b) + (c) + (d) + (e) + (f)	$ 113,377	$ 112,660
(h) Difference between Expected and Actual Experience (Gain)/Loss		$ (717)

* The TOL used in the roll-forward as of June 30, 2017 is calculated using the discount rate as of the Prior Measurement Date.

Paragraphs 96(d) and (e): The following change was made to the assumptions as noted:
Changes to benefit terms:

June 30, 2018 (Valuation Date: June 30, 2017)

MIF

- With the passage of House Bill 471, the eligibility for non-single subsidies (NSS) for the KEHP-participating members who retired prior to July 1, 2010 is restored, but the State will only finance, via its KEHP "shared responsibility" contributions, the costs of the NSS related to those KEHP-participating members who retired on or after July 1, 2010.

LIF

- None

Changes to assumptions or other inputs:

MIF

- Updated health care trend rates were implemented

Paragraph 96(f): There were no changes between the measurement date of the collective net OPEB liability and the employer's reporting date.

Paragraph 96(g): Please see Section V of the report for the development of the collective OPEB expense. The OE for each employer is shown in Schedule B.

Paragraph 96(h): Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce OPEB expense they are labeled deferred inflows. If they will increase OPEB expense they are labeled deferred outflows. As noted in the previous section, the amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average remaining service life of the active and inactive System members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five year period.

The table below provide a summary of the deferred inflows and outflows as of the Measurement Date. The allocation of deferred inflows and outflows will be determined by the System.

Medical Insurance Fund (MIF)	Deferred Outflows of Resources ($ Thousands)	Deferred Inflows of Resources ($ thousands)
Differences between expected and actual experience	$ 0	$ 177,721
Changes of Assumptions	$ 47,699	$ 0
Net difference between projected and actual earnings on plan investments	$ 0	$ 14,125
Total	$ 47,699	$ 191,846

Life Insurance Fund (LIF)	Deferred Outflows of Resources ($ Thousands)	Deferred Inflows of Resources ($ thousands)
Differences between expected and actual experience	$ 0	$ 605
Changes of Assumptions	$ 0	$ 0
Net difference between projected and actual earnings on plan investments	$ 7,697	$ 0
Total	$ 7,697	$ 605

Paragraph 96(i): The collective amounts reported as deferred outflows of resources and deferred inflows of resources related to OPEBs will be recognized in OPEB expense as follows:

Deferred Amounts to be Recognized in Fiscal Years Following the Reporting Date ($ Thousands):		
	Deferred Outflows / (Inflows) of Resources **MIF**	Deferred Outflows / (Inflows) of Resources **LIF**
Year 1	($29,056)	$ 2,100
Year 2	($29,056)	$ 2,100
Year 3	($29,056)	$ 2,099
Year 4	($22,737)	$ 950
Year 5	($23,945)	($ 112)
Thereafter	($10,297)	($ 45)

Paragraph 96(j): There are non-employer contributions recognized for the support provided by non-employer contributing entities in TRS.

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SECTION IV – REQUIRED SUPPLEMENTARY INFORMATION

Paragraph 97(a) and (b): CMC was not required to provide this information.

Paragraph 98: Information about factors that significantly affect trends in the amounts in the schedules required by paragraph 98 should be presented as notes to the schedule. Comments on additional years will be added as they occur.

Changes to benefit terms:

June 30, 2018 (Valuation Date: June 30, 2017)

MIF

- With the passage of House Bill 471, the eligibility for non-single subsidies (NSS) for the KEHP-participating members who retired prior to July 1, 2010 is restored, but the State will only finance, via its KEHP "shared responsibility" contributions, the costs of the NSS related to those KEHP-participating members who retired on or after July 1, 2010.

LIF

- None

Methods and assumptions used in calculations of Actuarially Determined Contributions. The Actuarially Determined Contribution rates, as a percentage of payroll, used to determine the Actuarially Determined Contribution amounts in the Schedule of Employer Contributions (Schedule A) are calculated as of the indicated Valuation Date. The following actuarial methods and assumptions (from the indicated actuarial valuations) were used to determine contribution rates reported in that schedule for the year ending June 30, 2018:

Valuation Date	
MIF	June 30, 2017
LIF	June 30, 2015
Actuarial cost method	Entry Age Normal
Amortization method	Level Percent of Payroll
Amortization period	
MIF	23 years, Closed
LIF	30 years, Open
Asset valuation method	
MIF	Five-year smoothed value
LIF	Five-year smoothed value
Inflation	
MIF	3.00%
LIF	3.50%
Real wage growth	0.50%
Wage Inflation	
MIF	3.50%
LIF	4.00%
Salary increases, including wage inflation	
MIF	3.50% - 7.20%
LIF	4.00% - 8.10%
Discount Rate	
MIF	8.00%
LIF	7.50%
MIF Health Care Cost Trends	
Under Age 65	7.75% for FYE 2018 decreasing to an ultimate rate of 5.00% by FYE 2024
Ages 65 and Older	5.75% for FYE 2018 decreasing to an ultimate rate of 5.00% by FYE 2024
Medicare Part B Premiums	0.00% for FYE 2018 with an ultimate rate of 5.00% by 2030

MIF Under Age 65 Claims

The current premium charged by KEHP is used as the base cost and is projected forward using only the health care trend assumption (no implicit rate subsidy is recognized).

SECTION V – OPEB EXPENSE

The OPEB Expense (OE) consists of a number of different items. GASB 75 refers to the first item as Service Cost which is the Normal Cost using the Entry Age Normal actuarial funding method. The second item is interest on the TOL at the Discount Rate in effect as of the Prior Measurement Date.

The next three items refer to any changes that occurred in the TOL due to:

- benefit changes, or
- actual versus expected experience, or
- changes in assumptions or other inputs.

Benefit changes, which are reflected immediately, will increase OE, if there is a benefit improvement for existing Plan members, or decrease OE, if there is a benefit reduction. For the year ended June 30, 2018, there were no benefit changes to be recognized.

The next item to be recognized is the portion of current year changes in TOL due to actual versus expected Plan experience for the year. The portion to recognize in the current year is determined by spreading the total change over the average expected remaining service life of the entire Plan membership at the beginning of the measurement period. The average expected remaining service life of active members is the average number of years the active members are expected to remain in covered employment. For the year ended June 30, 2018 this number is 10.70 years. The average expected remaining service life of the inactive members is zero. Therefore, the recognition period is the weighted average of these two amounts, or 6.43 years. The development of the average remaining service life is shown in the table below.

Calculation of Weighted Average Years of Working Lifetime

	Number (1)	Average Years of Working Lifetime (2)
a. Active Members	72,130	10.70
b. Inactive Members	47,867	0.00
c. Total	119,997	
Weighted Average Years of Working Lifetime [(a.1. * a.2.) + (b.1. * b.2.)] / c.1.		6.43

The last item under changes in TOL is changes in assumptions or other inputs. The portion to recognize in the current year is determined by spreading the total change over the average expected remaining service life of the entire Plan membership, similar to the way experience gains and losses are recognized.

Member contributions for the year and projected earnings on the FNP at the discount rate serve to reduce the expense. One-fifth of current-period difference between actual and projected earning on the FNP are recognized in the OPEB expense.

Investment Earnings (Gain)/Loss as of June 30, 2018 ($ thousands)	MIF	LIF
a. Expected asset return rate	8.00%	7.50%
b. Beginning of year market value of assets (BOY)	$ 958,390	$ 87,777
c. End of year market value of assets (EOY)	1,190,281	84,462
d. Expected return on BOY for plan year (a. x b.)	76,671	6,583
e. External Cash Flow		
Contributions – State of Kentucky	80,959	897
Contributions – Other Emplyees	106,143	161
Contributions – Active Members	130,778	0
Benefits paid	(161,082)	(5,453)
Administrative expenses and other	(1,748)	(31)
Total net external cash flow	155,050	(4,426)
f. Expected return on net cash flow (a. x 0.5 x e.)	6,202	(166)
g. Projected earnings for plan year (d. + f.)	82,873	6,417
h. Net investment income (c. – b. – e.)	76,841	1,111
Investment earnings (gain)/loss (g. – h.)	**$ 6,032**	**$ 5,306**

The current year portions of previously determined experience and assumption amounts, recognized as Deferred Outflows of Resources and Deferred Inflows of Resources are included. Deferred Outflows of Resources are added to the OE while Deferred Inflows of Resources are subtracted from the OE. Finally, other miscellaneous items are included.

Collective OPEB Expense Determined as of the Measurement Date ($ thousands)	MIF	LIF
Service Cost	$ 95,382	$ 1,068
Interest on the TOL and net cash flow	355,491	8,026
Current-period benefit changes	0	0
Expensed portion of current-period difference between expected and actual experience	(32,729)	(112)
Expensed portion of current-period changes of assumptions	8,784	0
Member contributions	(130,778)	0
Projected earnings on plan investments	(82,873)	(6,417)
Expensed portion of current-period differences between projected and actual earnings on plan investments	1,206	1,061
Administrative expense	1,748	31
Other	(8,971)	(79)
Recognition of beginning deferred outflows of resources as OPEB expense	0	1,151
Recognition of beginning deferred inflows of resources as OPEB expense	(6,317)	0
Collective OPEB Expense	$ 200,943	$ 4,729

Schedule A– Summary of Main Benefit Provisions

ELIGIBILITY FOR ACCESS TO RETIREE MEDICAL PLAN COVERAGE:

Service Retirement: For employees hired prior to July 1, 2008, Retiree Medical Plan coverage eligibility is attained when an employee retires, which is possible after the completion of 27 years of service or attainment of age 55 and 5 years of service. For employees hired on or after July 1, 2008, employees may retire after the completion of 27 years of service, the attainment of age 55 and 10 years of service, or the attainment of age 60 and 5 years of service, but must complete a minimum of 15 years of service to be eligible for Retiree Medical Plan coverage.

Disability Retirement: Disabled employees hired prior to July 1, 2008 with at least 5 years of service, who are totally and permanently incapable of being employed as a teacher, are eligible for Retiree Medical Plan coverage. Disabled employees hired after July 1, 2008 must have 15 years of service to be eligible for Retiree Medical Plan coverage.

Members and dependents under age 65 and eligible for Medicare due to a disability after January 1, 2013 are required to be covered under MEHP. Under age 65 members who retired prior to Jan. 1, 2013, are grandfathered from this requirement and allowed a choice of KEHP or MEHP coverage. Actual census data and current plan elections were used for current disabled retirees. Until sufficient experience emerges, the valuation conservatively assumes all future disabled members under the age of 65 will be covered under KEHP.

Survivors: Spouses of employees who die in service while eligible to retire, as well as survivors of service and disabled retirees, are eligible for Retiree Medical Plan coverage.

Termination: For employees hired prior to July 1, 2008 and who terminated with at least 5 years of service, Retiree Medical Plan coverage eligibility is attained at age 60. For employees hired on or after July 1, 2008 and who terminated with at least 15 years of service, Retiree Medical Plan coverage eligibility is attained at age 60.

Reemployed Retirees: Retirees who return to work in an agency that participates in KEHP are required to terminate their coverage through the System. Additionally, if a retiree returns to work somewhere that does not participate in the KEHP, but offers health insurance, the retiree must terminate System coverage unless the employer coverage is of lesser value. For valuation purposes, active employees identified as currently receiving retiree health care through the System are valued as retirees.

COVERED MEMBER RETIREE MEDICAL PLAN CONTRIBUTIONS:

Under Age 65 Retiree Shared Responsibility Contribution: Effective July 1, 2010, retirees under the age of 65 began a three-year phase-in of the Shared Responsibility Contribution. This contribution reduces the applicable amount of the full contribution provided by the System to retirees, by adjusting the Shared Responsibility Contribution amount by 100% less the appropriate percentage from the Retiree Percentage Contribution table below. Effective July 1, 2012, the full Shared Responsibility Contribution equals the Standard Medicare Part B premium paid by retirees ages 65 and older.

Monthly Under Age 65 Shared Responsibility Contribution Timeline			
Effective Date	Medicare Part B Monthly Cost	Formula	Shared Responsibility Contribution
July 1, 2010	$110.50	(1/3 x $110.50)	$ 37.00
January 1, 2011	115.40	(1/3 x 115.40)	39.00
July 1, 2011	115.40	(2/3 x 115.40)	77.00
January 1, 2012	99.90	(2/3 x 99.90)	66.00
July 1, 2012	99.90	99.90	99.90
January 1, 2013	104.90	104.90	104.90
January 1, 2014	104.90	104.90	104.90
January 1, 2015	104.90	104.90	104.90
January 1, 2016	121.80	121.80	121.80
January 1, 2017	134.00	134.00	134.00

Retiree Years of Service Percentage Contribution: Retirees contribute the following percentages based on years of service at retirement, which are then applied to the Retiree Contribution Rate Basis:

Retiree Percentage Contribution*				
	Entered System Before 7/1/2002			
Year of Service	Age 65 or Older and Covered Before 1/1/2005	Age 65 After or Covered After 12/31/2004	Entered System After 6/30/2002 and Before 7/1/2008	Entered System After 6/30/2008
5 – 9.99	30%	75%	90%	Not Eligible
10 – 14.99	20	50	75	Not Eligible
15 – 19.99	10	25	55	55%
20 – 24.99	0	0	35	35
25 – 25.99	0	0	10	10
26 – 26.99	0	0	5	5
27 or more	0	0	0	0

**0% for disabled retirees that retired prior to 1/1/2002*

COVERED MEMBER RETIREE MEDICAL PLAN CONTRIBUTIONS (CONTINUED):

Monthly Retiree Contribution Rate Basis Effective January 1, 2018					
	Under Age 65 (KEHP)				Ages-65 and Older (MEHP)
Tier Elected	LivingWell CDHP	LivingWell PPO	Standard PPO	Standard CDHP	
Single	$ 660.04	$ 646.96	$ 635.46	$ 656.60	$258.00
Parent Plus*	851.84	802.26	847.99	878.24	n/a
Couple*	1,029.02	1,060.74	1,197.60	1,189.96	n/a
Family*	1,131.64	1,105.34	1,314.66	1,303.24	n/a
Family C-R*	738.64	719.12	743.42	771.84	n/a

Under Age 65 Retiree Plan Cost Contribution: An additional contribution according to the table below is required to be paid by retirees under the age of 65 based upon the plan elected and the date of retirement:

Monthly Under Age 65 Plan Cost Contribution* Effective January 1, 2018				
Tier Elected	LivingWell CDHP	LivingWell PPO	Standard PPO	Standard CDHP
Single	$ 49.42	$ 82.38	$ 49.92	$ 26.20
Parent Plus	126.66	234.82	127.92	62.40
Couple	296.62	528.36	299.58	260.06
Family	348.12	662.26	351.60	312.06
Family C-R	80.32	157.56	81.12	29.10

* *Does not include the additional contribution required to be paid by retirees under the age of 65 who use tobacco ($40 for Single or Family Cross-Reference, and $80 for Parent Plus, Couple or Family). Also, this does not include the additional contribution required to be paid by retirees und the age of 65 who do not complete their LivingWell Promise, which is an additional $40 per month for all levels of coverage—single, parent +, couple, and family. Approximately 600 retirees did not complete their LivingWell Promise for 2017.*

COVERED MEMBER MEDICAL PLAN CONTRIBUTIONS (CONTINUED):

Spouse Contributions: 100% of the full cost for non-Medicare eligible dependents is paid through a combination of payments from beneficiaries and the State. Spouses of current post-65 retirees and surviving spouses of deceased retirees with a date of death on or after July 1, 2002 pay 100% of the full contribution. Spouses of active members who died while eligible to retire prior to July 1, 2002, are provided the same subsidy by the System that would have been provided to the retiree for the lifetime of the spouse, or until remarriage. Spouses of active members who die while eligible to retire on or after July 1, 2002 or later pay 100% of the full contribution.

Survivors: Spouses of employees who die in service while eligible to retire, as well as survivors of service and disabled retirees, are eligible for Retiree Medical Plan coverage if elected within 30 days of the employee's/retiree's death with no future remarriage. Otherwise, survivor is not eligible for Retiree Medical Plan coverage.

Spousal Shared Risk Waiver for MEHP: Beginning in 2013, eligible spouses who waive the MEHP coverage, will no longer have the opportunity to enroll during any annual MEHP open enrollment so most spousal waivers on the MEHP are now permanent waivers unless a KTRS specific qualifying event is met. This does not apply to the KEHP. This MEHP eligibility rule became necessary to mitigate spousal adverse selection with zero premium Medicare Advantage plans on the individual and open market.

Monthly Surviving Spouse Contribution Effective January 1, 2018					
Tier Elected by Surviving Spouse	Under Age 65 (KEHP)				Ages 65 and Older (MEHP)
	LivingWell CDHP	LivingWell PPO	Standard PPO	Standard CDHP	
Single	$716.90	$736.78	$692.82	$690.24	$258.00
Parent Plus	985.94	1,044.52	983.35	948.08	n/a

SYSTEM RETIREE MEDICAL PLAN CONTRIBUTIONS: The System Contribution Rate Basis is determined annually by the System; and the full cost is projected based on historical claims data. For retirees, the following percentages are based on years of service at retirement and are then applied to the System Contribution Rate Basis:

Percentage of System Contribution Rate Provided to Retirees*				
	Entered System Before 7/1/2002		Entered System After 6/30/2002 and Before 7/1/2008	
Year of Service	Age 65 or Older and Covered Before 1/1/2005	Age 65 After or Covered After 12/31/2004		Entered System After 6/30/2008
5 – 9.99	70%	25%	10%	Not Eligible
10 – 14.99	80	50	25	Not Eligible
15 – 19.99	90	75	45	45%
20 – 24.99	100	100	65	65
25 – 25.99	100	100	90	90
26 – 26.99	100	100	95	95
27 or more	100	100	100	100

**100% for disabled retirees that retired prior to 1/1/2002*

SYSTEM RETIREE MEDICAL PLAN CONTRIBUTIONS (CONTINUED):

Monthly System Contribution Rate Basis Effective January 1, 2018					
	Under Age 65 (KEHP)*				Ages-65 and Older (MEHP)
Tier Elected	LivingWell CDHP	LivingWell PPO	Standard PPO	Standard CDHP	
Single	$ 660.04	$ 646.96	$ 635.46	$ 656.60	$258.00
Parent Plus	851.84	802.26	847.99	878.24	n/a
Couple	1,029.02	1,060.74	1,197.60	1,189.96	n/a
Family	1,131.64	1,105.34	1,314.66	1,303.24	n/a
Family C-R	738.64	719.12	743.42	771.84	n/a

* *Irrespective of a participating retiree's service, an additional $7.44 per month is paid by the System to the Department of Employee Insurance (DEI) for KEHP coverage.*

ACTIVE MEMBER RETIREE MEDICAL PLAN CONTRIBUTIONS: Actively employed members make payroll contributions to the Medical Insurance Fund based upon the following schedule:

Active Member Percentage of Payroll Contribution Made to Medical Insurance Fund

Active Member Percentage of Payroll Contribution Made to Medical Insurance Fund					
University Employees		School District Employees (Non-Federal)		Other Employees	
Hired Before 7/1/2008	Hired On or After 7/1/2008	Hired Before 7/1/2008	Hired On or After 7/1/2008	Hired Before 7/1/2008	Hired On or After 7/1/2008
2.775	2.775	3.750	3.750	3.750	3.750

LIFE INSURANCE PLAN BENEFITS:

(1) Effective July 1, 2000, the Teachers' Retirement System shall:

(a) Provide a life insurance benefit in a minimum amount of five thousand dollars ($5,000) for its members who are retired for service or disability. This life insurance benefit shall be payable upon the death of a member retired for service or disability to the member's estate or to a party designated by the member on a form prescribed by the retirement system; and

(b) Provide a life insurance benefit in a minimum amount of two thousand dollars ($2,000) for its active contributing members. This life insurance benefit shall be payable upon the death of an active contributing member to the member's estate or to a party designated by the member on a form prescribed by the retirement system.

Note: Members employed on a substitute or part-time basis and working at least 69% of a full contract year in a single fiscal year will be eligible for a life insurance benefit for the balance of the fiscal year or the immediately succeeding fiscal year under certain conditions. For non-vested members employed on a substitute or part-time basis, the life insurance benefit is provided if death occurs as the result of a physical injury on the job. For vested members employed on a substitute or part-time basis, death does not have to be the result of a physical injury on the job for life insurance benefits to be provided.

Schedule B – Statement of Actuarial Assumptions and Methods

The rates of retirement, disability, mortality, termination, salary increases, and rates of future benefit participation used in the valuation were selected based on the actuarial experience study prepared as of June 30, 2015, submitted to and adopted by the Board on June 19, 2016. The health care cost trend rates, and expected plan costs were determined by the actuary based on recent experience.

VALUATION DATE: June 30, 2017

DISCOUNT RATE: 8.0% per annum, compounded annually for the Medical Insurance Fund
7.5% per annum, compounded annually for the Life Insurance Fund

HEALTH CARE COST TREND RATES: Following is a chart detailing health care trend assumptions.

Fiscal Year Ended	Annual Trend Rate		
	Medicare Part B	Under Age 65	Ages 65 and Older
2018	0.00%	7.75%	5.75%
2019	1.87	7.00	5.50
2020	4.29	6.50	5.25
2021	4.39	6.00	5.00
2022	4.88	5.50	5.00
2023	5.68	5.25	5.00
2024	5.19	5.00	5.00
2025	6.06	5.00	5.00
2026	6.49	5.00	5.00
2027	5.62	5.00	5.00
2028	5.37	5.00	5.00
2029	5.12	5.00	5.00
2030 and beyond	5.00	5.00	5.00

Schedule B – Statement of Actuarial Assumptions and Methods

AGE RELATED MORBIDITY: For retirees ages 65 and older, per capita health care costs are adjusted to reflect expected health care cost changes related to age. The increase to the net incurred health care claims is assumed to be:

Participant Age	Annual Increase
65 – 69	3.0%
70 – 74	2.5
75 – 79	2.0
80 – 84	1.0
85 - 89	0.5
90 and over	0.0

For the retiree health care liabilities of those under age 65, the current premium charged by the Kentucky Employees' Health Plan (KEHP) is used as the base cost and is projected forward using the health care trend assumption. No implicit rate subsidy is calculated or recognized as the implicit rate subsidy is deemed the responsibility of the KEHP. Under Actuarial Standard of Practice No. 6 (ASOP No. 6), aging subsidies (or implicit rate subsidies) should be recognized, as the differences in health care utilization and cost due to age have been demonstrated and well quantified.

The impact of aging on a valuation's results can be as significant as the use of mortality, trend, and discounting. It has been the long-standing position that the responsibility for compliance with GASB Statement No. 43, when it relates to KEHP implicit subsidies, rests with KEHP, not the System, as the System has no operational authority over KEHP. As such, KEHP implicit subsidies are excluded from the OPEB valuation process of the Retiree Medical Plan. As GASB 74 and 75 prohibit such a deviation from ASOP No. 6, additional consideration to the current treatment of KEHP implicit rate subsidies may be needed in the future. The estimated impact of KEHP implicit subsidies to the actuarial accrued liability is an increase of $687,878,632.

RETIREE MEDICAL PLAN COSTS: Assumed per capita health care costs were based on past experience and trended based on the assumptions. Following are charts detailing retiree per capita assumptions. These amounts include medical, drug, and administrative costs and represent the amount that the System pays as the full contribution amount. An additional $7.44 per month is paid to the Department of Employee Insurance (DEI) and is not included in the under age 65 costs listed below. For retirees ages 65 and older, the average costs shown are normalized to age 65 and then age adjusted in calculating liabilities.

Monthly Under Age 65 (KEHP) Full Costs as of January 1, 2018				
Tier Elected	LivingWell CDHP	LivingWell PPO	Standard PPO	Standard CDHP
Single	$ 709.46	$ 729.34	$ 685.38	$ 682.80
Parent Plus	978.50	1,037.08	975.91	940.64
Couple	1,325.64	1,589.10	1,497.18	1,450.02
Family	1,479.76	1,767.60	1,666.26	1,615.30
Family C-R	818.96	876.68	824.54	800.94

Average Monthly System Full Costs and Contributions			
Year	Under Age-65 (KEHP) Contributions	Ages 65 and Older (MEHP) Full Costs	Ages 65 and Older (MEHP) Contributions
CY 2008	484	278	278
CY 2009	545	301[1]	301
CY 2010	594	373[1]	373
CY 2011	626	289[1]	289
CY 2012	622	270[2]	270
CY 2013	635	294[2]	294
CY 2014	679	290[2]	290
CY 2015	669	240[2]	240
CY 2016	681	260[2]	260
CY 2017	680	252[2]	252
CY 2018	688	258[2]	258

[1] Under GASB 45, cost reductions for the amount of the Medicare Part D Retiree Drug Subsidy cannot be taken into account in the gross cost calculations.

[2] 2,257 current, Medicare-eligible benefit recipients have been identified by the client to be ineligible for premium-free Medicare Part A benefits. For these individuals, the full cost of coverage is, on average, $575 per month. It is assumed 9% of current retirees under the age of 65 who were hired prior to 4/1/1986 will be ineligible for premium-free Medicare Part A benefits upon reaching Medicare eligibility (age 65) and 0% of these retirees will cover a spouse. All active members are assumed to have begun contributing to Medicare as of 4/1/1986 and are assumed eligible for premium-free Medicare Part A benefits.

Schedule B – Outline of Actuarial Assumptions and Methods

CURRENT RETIREE MEDICAL PLAN PARTICIPATION: Actual census data and current plan elections (including waivers) provided by the System were used for those retirees currently participating in the Retiree Medical Plan. Current participants are assumed to maintain their current Retiree Medical Plan coverage until they are no longer eligible.

ANTICIPATED RETIREE MEDICAL PLAN PARTICIPATION: The assumed annual rates of health care plan participation for future retirees are as follows:

	Member Participation		
Years of Service	Entered System Before 7/1/2002	Entered System After 6/30/2002 and Before 7/1/2008	Entered System After 6/30/2008
5-9.99	20%	20%	Not Eligible
10-14.99	49	20	Not Eligible
15-19.99	70	41	41%
20-24.99	91	61	61
25-25.99	91	76	76
26-26.99	91	84	84
27 or more	91	91	91

ANTICIPATED RETIREE MEDICAL PLAN ELECTIONS: The assumed rates of plan election for future retirees participating in the KEHP plans are provided in the following table. As the assumed plan election rates are estimates and actual results may be materially different, this assumption will need to be revised as experience evolves.

LivingWell CDHP	LivingWell PPO	Standard PPO	Standard CDHP
42%	43%	12%	3%

SPOUSE COVERAGE IN RETIREE MEDICAL PLAN: Actual census data and current plan elections were used for MEHP and KEHP covered spouses (including beneficiaries) of current retirees. For spouses of future retirees, 25% of future male retirees are assumed to cover their spouse and 15% of future female retirees are assumed to cover their spouse. Male retirees are assumed to be three years older than their spouse and female retirees are assumed to be one year younger than their spouse.

DISABLED DEPENDENT CHILDREN IN RETIREE MEDICAL PLAN: The liability associated with disabled dependent children was determined to be de minimis and was therefore excluded from this valuation.

Schedule B – Outline of Actuarial Assumptions and Methods

WITHDRAWAL ASSUMPTION: Future vested members who terminate employment prior to retirement are assumed to elect to withdraw their contributions based upon their age and service at termination of employment as follows:

Rates of Withdrawal Upon Termination of Employment			
Age at Termination of Employment	Years of Service		
	5 - 10	10 - 15	15+
Under Age 55	20%	15%	10%
Ages 55+	10%	10%	10%

All vested members who terminate employment prior to retirement are assumed to elect to withdraw their contributions prior to receiving a pension benefit based upon their service as follows:

Rates of Withdrawal Prior to Receiving a Pension Benefit			
Years of Service			
5 - 10	10 - 15	15 - 27	27+
25%	15%	10%	25%

All vested members who terminate employment prior to retirement and who are assumed to elect to receive a pension benefit are assumed to begin receiving their benefit at age 60.

PAYROLL GROWTH: 3.50% per annum, compounded annually.

PRICE INFLATION: 3.00% per annum, compounded annually.

AFFORDABLE CARE ACT (ACA): The impact of the Affordable Care Act (ACA) was addressed in this valuation. Review of the information currently available did not identify any specific provisions of the ACA that are anticipated to significantly impact results. While the impact of certain provisions such as the excise tax on high-value health insurance plans beginning in 2020 (if applicable), mandated benefits and participation changes due to the individual mandate should be recognized in the determination of liabilities, overall future plan costs and the resulting liabilities are driven by the assumed rate of health care inflation (i.e., trend). The trend assumption forecasts the anticipated increase to initial per capita costs, taking into account health care cost inflation, increases in benefit utilization, government-mandated benefits, and technological advances. Given the uncertainty regarding the ACA's implementation (e.g., the impact of excise tax on high-value health insurance plans, changes in participation resulting from the implementation of state-based health insurance exchanges), continued monitoring of the ACA's impact on the Retiree Medical Plan's liability will be required.

ASSET VALUATION METHOD: Market Value of Assets.

Schedule B – Outline of Actuarial Assumptions and Methods

SEPARATIONS FROM SERVICE: Representative values of the assumed annual rates of salary increases, death, disability, withdrawal, service retirement and early retirement are as follows:

MALES

Age	SALARY*	DEATH	DISABILITY	WITHDRAWAL 0 – 4	WITHDRAWAL 5 – 9	WITHDRAWAL 10+	RETIREMENT Before 27 Years of Service	RETIREMENT After 27 Years of Service**
20	7.20%	0.019%	0.01%	11.00%				
25	6.40	0.021	0.01	11.00	3.00%			
30	5.40	0.025	0.01	11.00	3.00	3.00%		
35	4.70	0.043	0.04	12.00	3.50	1.40		
40	4.20	0.060	0.09	12.00	4.50	1.40		
45	3.80	0.084	0.20	12.00	4.50	1.30		17.0%
50	3.70	0.119	0.30	14.00	4.50	1.90		17.0
55	3.50	0.202	0.58	15.00	4.50	2.40	5.0%	45.0
60	3.50	0.340	0.75	15.00	4.00	2.40	13.0	35.0
62	3.50	0.419	0.75	15.00	3.80	2.40	15.0	25.0
65	3.50	0.565	0.75	15.00	3.50	2.40	20.0	25.0
70	3.50	0.913	0.75	20.00	0.00	0.00	20.0	20.0
75	3.50	1.556	0.75	20.00	0.00	0.00	100.0	100.0

FEMALES

Age	SALARY*	DEATH	DISABILITY	WITHDRAWAL 0 – 4	WITHDRAWAL 5 – 9	WITHDRAWAL 10+	RETIREMENT Before 27 Years of Service	RETIREMENT After 27 Years of Service**
20	7.20%	0.007%	0.01%	9.00%				
25	6.40	0.008	0.01	9.00	4.00%			
30	5.40	0.010	0.03	12.00	4.00	1.65%		
35	4.70	0.018	0.06	12.00	4.00	1.50		
40	4.20	0.026	0.12	12.00	4.00	1.30		
45	3.80	0.042	0.25	13.00	4.00	1.20		15.0%
50	3.70	0.062	0.44	13.00	5.00	1.50		18.0
55	3.50	0.096	0.65	15.00	5.00	2.00	5.5%	50.0
60	3.50	0.157	0.85	15.00	5.00	2.00	14.0	40.0
62	3.50	0.197	0.85	15.00	4.60	2.00	14.0	40.0
65	3.50	0.287	0.85	15.00	4.00	2.00	22.0	35.0
70	3.50	0.495	0.85	15.00	0.00	0.00	20.0	35.0
75	3.50	0.831	0.85	15.00	0.00	0.00	100.0	100.0

Annual Rate of all columns.

* *Includes wage inflation at 3.5% per annum.*
** *Plus 7.5% in year when first eligible for unreduced retirement with 27 years of service.*

DEATHS AFTER RETIREMENT: The RP-2000 Combined Mortality Table projected to 2025 using scale BB (set forward two years for males and one year for females) is used for death after service retirement and beneficiaries. The RP-2000 Disabled Mortality Table (set forward two years for males and seven years for females) is used for death after disability retirement. There is a margin for future mortality improvement in the tables used by the System. Based on the results of the most recent experience study, the numbers of expected future deaths are 15-19% less than the actual number of deaths that occurred during the study period for healthy retirees and 13-17% less than expected under the selected table for disabled retirees. Representative values of the assumed annual rates of death after service retirement and after disability retirement are shown below:

	Annual Rate of Death After			
	Service Retirement		Disability Retirement	
Age	Male	Female	Male	Female
45	0.1609%	0.1135%	2.3306%	1.2482%
50	0.2474	0.1718	2.9279	1.5650
55	0.4246	0.2658	3.4400	1.7807
60	0.6985	0.4409	3.5881	2.3164
65	1.1300	0.8100	3.8275	3.1687
70	1.8697	1.3739	4.7566	4.4032
75	3.2147	2.2899	6.3153	6.0857
80	5.5160	3.7551	8.3527	8.4679
85	9.5631	6.3873	10.9122	12.7572
90	17.2787	11.2476	17.2787	19.4718
95	27.1263	18.1190	27.1263	24.2074

SCHEDULE C

SCHEDULE OF DIFFERENCES BETWEEN EXPECTED AND ACTUAL EXPERIENCE

Medical Insurance Fund (MIF)			Increase/(Decrease) in OPEB Expense Arising from the Recognition of the Effects of the Differences Between Expected and Actual Experience							
Year	Difference Between Expected and Actual Experience	Recognition Period (Years)	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	Thereafter
2017-2018	$0	6.47	$0	$0	$0	$0	$0	$0	$0	$0
2018-2019	($210,450)	6.43	$0	($32,729)	($32,729)	($32,729)	($32,729)	($32,729)	($32,729)	($14,076)
			$0	($32,729)	($32,729)	($32,729)	($32,729)	($32,729)	($32,729)	($14,076)

Life Insurance Fund (LIF)			Increase/(Decrease) in OPEB Expense Arising from the Recognition of the Effects of the Differences Between Expected and Actual Experience							
Year	Difference Between Expected and Actual Experience	Recognition Period	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	Thereafter
2017-2018	$0	6.47	$0	$0	$0	$0	$0	$0	$0	$0
2018-2019	($717)	6.43	$0	($112)	($112)	($112)	($112)	($112)	($112)	($45)
			$0	($112)	($112)	($112)	($112)	($112)	($112)	($45)

SCHEDULE C (continued)

DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF RESOURCES ARISING FROM DIFFERENCES BETWEEN EXPECTED AND ACTUAL EXPERIENCE

MIF Year	Experience Losses (a)	Experience Gains (b)	Amounts Recognized in OPEB Expense Through June 30, 2018 (c)	Deferred Ouflows of Resources (a) – (c)	Deferred Inflows of Resources (b) – (c)
2017-2018	$0	$0	$0	$0	$0
2018-2019	$0	$210,450	$32,729	$0	$177,721
			$32,729	$0	$177,721

LIF Year	Experience Losses (a)	Experience Gains (b)	Amounts Recognized in OPEB Expense Through June 30, 2018 (c)	Deferred Ouflows of Resources (a) – (c)	Deferred Inflows of Resources (b) – (c)
2017-2018	$0	$0	$0	$0	$0
2018-2019	$0	$717	$112	$0	$605
			$112	$0	$605

SCHEDULE C (continued)

SCHEDULE OF DIFFERENCES BETWEEN PROJECTED AND ACTUAL EARNINGS ON PLAN INVESTMENTS

Medical Insurance Fund (MIF)			Increase/(Decrease) in OPEB Expense Arising from the Recognition of the Effects of the Differences Between Projected and Actual Earnings on OPEB Plan Investments					
Year	Difference Between Projected and Actual Earnings on OPEB Plan Investments	Recognition Period (Years)	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	Thereafter
2017-2018	($31,585)	5.0	($6,317)	($6,317)	($6,317)	($6,317)	($6,317)	$0
2018-2019	$6,032	5.0	$0	$1,206	$1,206	$1,206	$1,206	$1,208
			($6,317)	($5,111)	($5,111)	($5,111)	($5,111)	$1,208

Life Insurance Fund (LIF)			Increase/(Decrease) in OPEB Expense Arising from the Recognition of the Effects of the Differences Between Projected and Actual Earnings on OPEB Plan Investments					
Year	Difference Between Projected and Actual Earnings on OPEB Plan Investments	Recognition Period (Years)	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	Thereafter
2017-2018	$5,754	5.0	$1,151	$1,151	$1,151	$1,151	$1,150	$0
2018-2019	$5,306	5.0	$0	$1,061	$1,061	$1,061	$1,061	$1,062
			$1,151	$2,212	$2,212	$2,212	$2,211	$1,062

SCHEDULE C (continued)

DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF RESOURCES ARISING FROM DIFFERENCES BETWEEN EXPECTED AND ACTUAL INVESTMENT EARNINGS

MIF Year	Difference Between Projected and Actual Earnings on OPEB Plan Investments (a)	Amounts Recognized in OPEB Expense Through June 30, 2018 (b)	Amounts of Deferred Resources (Inflows)/Outflows (a) – (b)
2017-2018	($31,585)	($12,634)	($18,951)
2018-2019	$6,032	$1,206	$4,826
		($11,428)	($14,125)

LIF Year	Difference Between Projected and Actual Earnings on OPEB Plan Investments (a)	Amounts Recognized in OPEB Expense Through June 30, 2018 (b)	Amounts of Deferred Resources (Inflows)/Outflows (a) – (b)
2017-2018	$5,754	$2,302	$3,452
2018-2019	$5,306	$1,061	$4,245
		$3,363	$7,697

SCHEDULE C (continued)

SCHEDULE OF CHANGES OF ASSUMPTIONS

Medical Insurance Fund (MIF)

			Increase/(Decrease) in Pension Expense Arising from the Recognition of the Effects of Assumption Changes							
Year	Assumption Changes	Recognition Period (Years)	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	Thereafter
2017-2018	$0	6.47	$0	$0	$0	$0	$0	$0		$0
2018-2019	$56,483	6.43	$0	$8,784	$8,784	$8,784	$8,784	$8,784	$8,784	$3,779
			$0	$8,784	$8,784	$8,784	$8,784	$8,784	$8,784	$3,779

Life Insurance Fund (LIF)

			Increase/(Decrease) in Pension Expense Arising from the Recognition of the Effects of Assumption Changes							
Year	Assumption Changes	Recognition Period (Years)	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	Thereafter
2017-2018	$0	6.47	$0	$0	$0	$0	$0	$0	$0	$0
2018-2019	$0	6.43	$0	$0	$0	$0	$0	$0	$0	$0
			$0	$0	$0	$0	$0	$0	$0	$0

SCHEDULE C (continued)

DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF

MIF Year	Assumption Losses (a)	Assumption Gains (b)	Amounts Recognized in OPEB Expense Through June 30, 2018 (c)	Deferred Outflows of Resources (a) – (c)	Deferred Inflows of Resources (b) – (c)
2017-2018	$0	$0	$0	$0	$0
2018-2019	$56,483	$0	$8,784	$47,699	$0
			$8,784	$47,699	$0

LIF Year	Assumption Losses (a)	Assumption Gains (b)	Amounts Recognized in OPEB Expense Through June 30, 2018 (c)	Deferred Outflows of Resources (a) – (c)	Deferred Inflows of Resources (b) – (c)
2017-2018	$0	$0	$0	$0	$0
2018-2019	$0	$0	$0	$0	$0
			$0	$0	$0

SCHEDULE C (continued)

SUMMARY OF RECOGNIZED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF RESOURCES

Medical Insurance Fund (MIF)	Net Increase/(Decrease) in OPEB Expense							
	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	Thereafter
Differences between Expected and Actual Experience	$0	($32,729)	($32,729)	($32,729)	($32,729)	($32,729)	($32,729)	($14,076)
Changes of Assumptions	$0	$8,784	$8,784	$8,784	$8,784	$8,784	$8,784	$3,779
Differences between Projceted and Actual Earnings on OPEB Plan Investments	($6,317)	($5,111)	($5,111)	($5,111)	($5,111)	$1,208	$0	$0
Grand Total	($6,317)	($29,056)	($29,056)	($29,056)	($29,056)	($22,737)	($23,945)	($10,297)

SCHEDULE C (continued)

Life Insurance Fund (LIF)	Net Increase/(Decrease) in OPEB Expense							
	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	Thereafter
Differences between Expected and Actual Experience	$0	($112)	($112)	($112)	($112)	($112)	($112)	($45)
Changes of Assumptions	$0	$0	$0	$0	$0	$0	$0	$0
Differences between Projceted and Actual Earnings on OPEB Plan Investments	$1,151	$2,212	$2,212	$2,212	$2,211	$1,062	$0	$0
Grand Total	$1,151	$2,100	$2,100	$2,100	$2,099	$950	($112)	($45)