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GASB STATEMENT NO. 67 REPORT

FOR THE

TEACHERS RETIREMENT ASSOCIATION

OF MINNESOTA

FOR ACCOUNTING PURPOSES

PREPARED AS OF JUNE 30, 2015

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December 15, 2015

Ms. Laurie Hacking
Teachers Retirement Association of Minnesota
60 Empire Drive, Suite 400
St. Paul, MN 55103

Dear Ms. Hacking:

This report is prepared to assist the Teachers Retirement Association of Minnesota (TRA) in meeting the requirements of the Governmental Accounting Standards Board Statement No. 67 (GASB 67). The information is presented for the June 30, 2015 Measurement Date. These calculations have been made on a basis that is consistent with our understanding of this accounting standard.

The annual funding actuarial valuation, performed as of July 1, 2015, was used as the basis for preparing much of the information presented as of June 30, 2015 in this report. The funding valuation was based upon data, furnished by the TRA staff including active, inactive and retired member data and pertinent financial information. This information was reviewed for completeness and internal consistency, but was not audited by us. 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.

Since the June 30, 2014 GASB 67 report was issued, a comprehensive experience study was performed and a number of assumption changes were proposed, with an implementation date of July 1, 2016, to give both the Minnesota Legislature and the Legislative Commission for Pensions and Retirement time to review the proposed changes and to take action, as necessary. Because of the intentional delay and pending discussion, the proposed assumption changes are not reflected in this report. However, at the direction of TRA management, an 8.00% discount rate (SEIR) has been used to determine the Total Pension Liability as of June 30, 2015 in this report.

The Duluth Teacher Retirement Fund Association (DTRFA) was merged into TRA, effective June 30, 2015, so the merger is reflected in this report. As requested, we have presented this material as though the two systems were combined for the entire fiscal year in order to facilitate the preparation of accounting statements. Both the amount of the Total Pension Liability and the Fiduciary Net Position were impacted by the merger of the DTRFA.

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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 liability 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 67 for accounting valuation purposes. The calculation of the plan's liability for this report may not be applicable for funding the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB 67 may produce significantly different results.

We, Patrice A. Beckham, FSA and Brent A. Banister, FSA, are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein. We are available to answer any questions on the material contained in this report or to provide explanations or further details as may be appropriate.

Respectfully submitted,

Patrice Beckham   Brent A. Banister

Patrice A. Beckham, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

Brent A. Banister, PhD, FSA, EA, FCA, MAAA
Chief Pension Actuary

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SUMMARY OF PRINCIPAL RESULTS
($ IN THOUSANDS)

	2015
Valuation Date (VD):	July 1, 2015
Prior Measurement Date:	June 30, 2014
Measurement Date (MD):	June 30, 2015
Membership Data:	
Retirees and Beneficiaries	61,986
Inactive Vested Members	13,314
Inactive Nonvested Members	31,026
Active Employees	79,406
Total	185,732
Single Equivalent Interest Rate (SEIR):	
Long-Term Expected Rate of Return	8.00%
Municipal Bond Index Rate at Prior Measurement Date	4.35%
Municipal Bond Index Rate at Measurement Date	3.82%
Year in which Fiduciary Net Position is Projected to be Depleted	N/A
Single Equivalent Interest Rate at Prior Measurement Date	8.25%
Single Equivalent Interest Rate at Measurement Date	8.00%
Net Pension Liability:	
Total Pension Liability (TPL)	$26,632,080
Fiduciary Net Position (FNP)	20,446,091
Net Pension Liability (NPL = TPL – FNP)	$6,185,989
FNP as a percentage of TPL	76.77%

REPORT OF THE ANNUAL GASB STATEMENT NO. 67

REQUIRED INFORMATION FOR THE TEACHERS RETIREMENT ASSOCIATION OF MINNESOTA

PREPARED AS OF JUNE 30, 2015

INTRODUCTION

The Governmental Accounting Standards Board issued Statement No. 67 (GASB 67), *Financial Reporting for Pension Plans*, in June 2012. The effective date for reporting under GASB 67 for the Teachers Retirement Association of Minnesota (System) was the fiscal year ending June 30, 2014. Based on the provisions of GASB 67, the Teachers Retirement Association of Minnesota is a cost-sharing multiple employer defined benefit pension plan.

This report, prepared as of June 30, 2015 (the Measurement Date), presents information to assist the Teachers Retirement Association of Minnesota in meeting the requirements of GASB 67. Much of the material provided in this report is based on the data, assumptions and results of the annual funding actuarial valuation of the System performed as of July 1, 2015 (the Valuation Date). The results of that valuation were detailed in a separate report dated December 4, 2015.

GASB 67 replaces GASB 25, and represents a significant departure from the requirements of the prior statement. GASB 25 was more closely tied to funding efforts in that it required pension plans to report items consistent with the results of the plan's actuarial valuations, as long as those valuations met certain parameters. GASB 67 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.

A major change in GASB 67 is the requirement to determine the Total Pension Liability (TPL) utilizing the Entry Age Normal actuarial cost method. The Net Pension Liability (NPL) is equal to the TPL minus the System's Fiduciary Net Position (FNP) (basically the market value of assets). The benefit provisions recognized in the calculation of the TPL are summarized in Appendix B.

Among the items needed for the liability calculation is the discount rate, or Single Equivalent Interest Rate (SEIR), as described by GASB 67. To determine the SEIR, the FNP must be projected, using GASB 67 guidelines, into the future for as long as there are anticipated benefits payable under the plan's provisions applicable to the members and beneficiaries of the System on the Measurement Date. 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 Buyers General Obligation 20-year Municipal Bond Index Rate published monthly by the Board of Governors of the Federal Reserve System. Our calculations indicate that the FNP is not projected to be depleted, so the Municipal Bond Index Rate is not used in the determination of the SEIR for either the June 30, 2014 or the June 30, 2015 TPL. The SEIR used to determine the TPL at June 30, 2015 is 8.00%, the long-term assumed rate of return on investments. Please see Paragraph 31.b.(1) for more explanation of the development of the SEIR.

The FNP projections are based upon the Teachers Retirement Association of Minnesota's financial status on the Measurement Date, the indicated set of methods and assumptions, and the requirements of GASB 67. 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 necessary calculations, presented in the order laid out in GASB 67 for note disclosure and Required Supplementary Information (RSI).

The Duluth Teacher Retirement Fund Association (DTRFA) was merged into TRA, effective June 30, 2015, so the merger is reflected in this report. As requested, we have presented this material as though the two systems were combined for the entire fiscal year in order to facilitate the preparation of accounting statements. Both the amount of the Total Pension Liability and the Fiduciary Net Position were impacted by the merger of the DTRFA. We estimated the beginning of year Total Pension Liability for Duluth from the year-end membership data, using standard actuarial techniques to roll the results back to the beginning of the year. We were provided with combined Fiduciary Net Position statements.

SECTION I – NOTES TO FINANCIAL STATEMENTS

The material presented herein will follow the order presented in GASB 67. Paragraph numbers are provided for ease of reference.

Paragraphs 30.a. (1)-(3): This information will be supplied by the System.

Paragraph 30.a. (4): The data required regarding the membership of the System were furnished by the System. The following table summarizes the membership of the System as of July 1, 2015, the date of the valuation used to determine the June 30, 2015 Total Pension Liability.

Membership

Number as of June 30, 2015	
Retirees Or Their Beneficiaries Currently Receiving Benefits	61,986
Inactive Members Entitled To But Not Yet Receiving Benefits	13,314
Inactive Nonvested Members	31,026
Active Members	79,406
Total	185,732

Paragraphs 30.a. (5)-(6) and Paragraphs 30.b.-f.: This information will be supplied by the System.

Paragraph 31.a. (1)-(4): As stated earlier, the NPL is equal to the TPL minus the FNP. That result, as of June 30, 2015, is presented in the following table.

Fiscal Year Ending June 30, 2015		
Total Pension Liability	$	26,632,080
Fiduciary Net Position		20,446,091
Net Pension Liability	$	6,185,989
Ratio of Fiduciary Net Position to Total Pension Liability		76.77%

Paragraph 31.b.: This paragraph requires information to be disclosed regarding the actuarial assumptions and other inputs used to measure the TPL. The complete set of actuarial assumptions and other inputs utilized in developing the TPL are outlined in Appendix C. The TPL as of June 30, 2015 was determined based on an actuarial valuation prepared as of July 1, 2015, using the following actuarial assumptions:

Inflation	3.00 percent
Salary increases, including inflation	3.50 to 12.00 percent.
Wage growth rate	3.75 percent
Long-term investment rate of return, net of plan investment expense, including inflation	8.00 percent
Municipal Bond Index Rate	
Prior Measurement Date	4.35 percent
Measurement Date	3.82 percent
Year FNP is projected to be depleted	N/A
Single Equivalent Interest Rate, net of plan investment expense, including inflation	
Prior Measurement Date	8.25 percent
Measurement Date	8.00 percent
Cost of Living Adjustment	Once the funded ratio reaches 90% on a market value basis for two consecutive years, the COLA is scheduled by statute to increase from 2.0% to 2.5%. The funded ratio is not projected to reach 90% within the 50-year projection period in our model, so the COLA is not assumed to increase to 2.5%.

Mortality	Pre-retirement mortality rates were based on the RP-2000 non-annuitant generational mortality table with white collar adjustment and male rates set back 5 years and female rates set back 7 years. Post-retirement mortality rates were based on the RP-2000 annuitant generational mortality table with white collar adjustment and male rates set back 2 years and female rates set back 3 years. Post-disability mortality rates were based on the RP-2000 disabled retiree mortality table, without adjustment.

The actuarial assumptions used in the July 1, 2015 actuarial funding valuation are prescribed by Minnesota Statutes Section 356.215, the Legislative Commission on Pensions and Retirement (LCPR), and the Trustees. These were based on an experience study prepared October 30, 2009 for the period July 1, 2004 through June 30, 2008 with the exception of the long-term assumed rate of return. A limited scope experience study that addressed only the inflation and long-term rate of return (investment rate of return) assumptions for the GASB 67 valuation was prepared on August 29, 2014. As a result, the long-term assumed rate of return used for the June 30, 2014 GASB 67 valuation was 8.25%.

Since the June 30, 2014 GASB 67 report was issued, a comprehensive experience study was performed and a number of assumption changes were proposed, with an implementation date of July 1, 2016, to give both the Minnesota Legislature and the Legislative Commission for Pensions and Retirement time to review the proposed changes and to take action as necessary. Because of the intentional delay and pending discussion, the proposed assumption changes are not reflected in this report. However, at the direction of TRA management, an 8.00% discount rate (SEIR) has been used to determine the Total Pension Liability as of June 30, 2015 in this report.

Paragraph 31.b.(1)

(a) **Discount rate (SEIR):** The Total Pension Liability is calculated using a discount rate called the 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’s provisions applicable to the members and beneficiaries of the System on the Measurement Date. 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. Our calculations indicate that the FNP is not projected to be depleted. The discount rate used to measure the TPL at June 30, 2015 was 8.00 percent. This is a decrease from the SEIR at the Prior Measurement Date of 8.25 percent.

(b) Projected cash flows: The projection of cash flows used to determine the discount rate assumed that plan contributions from members and employers will be made at the current contribution rates as set out in state statute:

a. Employee contribution rates: 11.00% for Basic members and 7.50% for Coordinated members.
b. Employer contribution rates: 11.50% for Basic members and 7.50% for Coordinated members. In addition, a supplemental amount equal to 3.64% of Salary for Special School District #1 members until the System is fully funded.

Please note that supplemental contributions from the State were only partially reflected in the projected cash flows because the full amounts are not needed to determine that the Single Equivalent Interest Rate would be the long-term rate of return.

(c) Long-term rate of return: The long-term expected rate of return on pension plan investments is reviewed regularly as part of the experience study. An experience study was prepared in 2015 that resulted in selecting a long-term rate of return of 8.00%. Generally, several factors are considered in evaluating the long-term rate of return assumption including long-term historical data, estimates inherent in current market data, and an analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expense and inflation) were developed using assumptions for each major asset class, as well as estimates of variability and correlations, provided by the System's investment consultant (the State Board of Investment). These ranges were combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and then adding expected inflation. The assumption is intended to be a long-term assumption (30 to 50 years) and is not expected to change absent a significant change in the asset allocation, a change in the inflation assumption, or a fundamental change in the market that alters expected returns in future years.

(d) Municipal bond rate: the discount rate determination does not use a municipal bond rate. If it were required, the rate would be 3.82%.

(e) Periods of projected benefit payments: Projected future benefit payments for all current plan members were projected through 2114.

(f) Assumed asset allocation: The target asset allocation and best estimates of geometric real rates of return for each major asset class, as provided by the Minnesota State Board of Investment (SBI), are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Domestic Equities	45%	5.50%
International Equities	15%	6.00%
US Fixed Income	18%	1.45%
Alternative Investments	20%	6.40%
Cash	2%	0.50%
Total	100%	

*Geometric mean

(g) Sensitivity analysis: This paragraph requires disclosure of the sensitivity of the NPL to changes in the discount rate. The following presents the NPL of the System, calculated using the discount rate of 8.00 percent, as well as the System's NPL calculated using a discount rate that is 1-percentage-point lower (7.00 percent) or 1-percentage-point higher (9.00 percent) than the current rate:

($ in Thousands)	1% Decrease (7.00%)	Current Discount Rate (8.00%)	1% Increase (9.00%)
Net Pension Liability	$9,415,876	$6,185,989	$3,490,555

Paragraph 31.c.: The TPL at June 30, 2015 is based upon an actuarial valuation prepared as of June 30, 2015.

SECTION II – REQUIRED SUPPLEMENTARY INFORMATION

There are several tables of Required Supplementary Information (RSI) that need to be included in the System's financial statements:

Paragraphs 32.a.-c.: The required tables of schedules are provided in Appendix A.

Paragraph 32.d.: The money-weighted rates of return will be supplied by the System.

Paragraph 34: The following information should be noted regarding the RSI, particularly for the *Schedule of Employer Contributions*:

Changes of benefit and funding terms: The following changes were made by the Minnesota Legislature and reflected in the valuation performed as of July 1 listed below:

2015: The Duluth Teachers Retirement Fund Association was merged into TRA on June 30, 2015. This also resulted in an additional state-provided contribution stream of $14.377 million until the System becomes fully funded.

2014: The increase in the post-retirement benefit adjustment (COLA) is to be made once the System is 90% funded (on a market value basis) in two consecutive years, rather than just one year.

2013: The early retirement factors applicable to plan members were changed.

2010: The post-retirement benefit increases were suspended for 2011 and 2012, resuming in 2013 at 2.0%, and returning to 2.5% once the funding ratio of the plan reaches 90%. Also in 2010, changes were made to the interest rate credited on employee contributions, future increases on deferred vested benefits, and the requirement to receive a full post-retirement benefit adjustment. In addition, employee and employer contribution rates were increased 0.50% per year beginning July 1, 2011 through July 1, 2014. The legislation also created the "stabilizer" whereby the Board was also granted the authority to adjust contribution rates under certain conditions.

2006: The benefit multiplier for Coordinated members was increased, employee contribution rates were increased, and the deferred benefit increase rate was reduced.

Changes in actuarial assumptions:

7/1/2015 valuation:

- The Cost of Living Adjustment was assumed to increase from 2.0% annually to 2.5% annually on July 1, 2037 for funding calculations. The COLA was not assumed to increase for GASB calculations.
- The investment return assumption was changed from 8.25% to 8.00%.

7/1/2014 valuation:

- The Cost of Living Adjustment was assumed to increase from 2.0% annually to 2.5% annually once the legally specified criteria was met. This was estimated to occur July 1, 2034 for GASB calculations and July 1, 2031 for funding calculations.

7/1/2012 valuation:

- The investment return assumption was changed from 8.50% for all years to 8.00% for the next five years and 8.50% thereafter. This applies to funding calculations only.

7/1/2011 valuation:

- The salary increase assumption was changed to a service based assumption.
- The payroll growth assumption was decreased from 4.00% to 3.75%.
- The post-retirement mortality assumption was changed to the RP-2000 Mortality Tables, with white collar adjustments and male rates setback 2 years and female rates setback 3 years.
- The disabled mortality assumption was changed to the RP-2000 Disabled Retiree Mortality Tables.
- Assumed disability rates were changed to more closely reflect actual experience.
- Assumed retirement rates for Coordinated members were changed to more closely reflect actual experience.
- Assumed form of annuity election were changed to more closely reflect actual experience.
- Assumed difference in ages between spouses were changed to more closely reflect actual experience.

7/1/2008 valuation:

- Ultimate salary increase rates were lowered.
- The payroll growth assumption was lowered.
- Retirement rates were revised.

7/1/2006 valuation:

- The amortization date for the unfunded actuarial accrued liability was set at June 30, 2037.

Method and assumptions used in calculations of actuarially determined contributions.

The system is funded with contribution rates that vary by Basic vs Coordinated members and employers. The actuarially determined contributions in the *Schedule of Employer Contributions* are calculated as of the beginning of the fiscal year in which contributions are reported.

The following actuarial methods and assumptions were used to determine the actuarially determined employer contribution reported in the *Schedule of Employer Contributions* for the most recent fiscal year end, FY 2015, which was based on the July 1, 2014 valuation:

Actuarial cost method	Entry Age Normal
Amortization method	Level percentage of payroll, closed
Remaining amortization period	23 years
Asset valuation method	5-year moving average
Inflation	3.00 percent
Wage growth rate	3.75 percent
Salary increases, including inflation	3.50 to 12.00 percent
Long-term investment rate of return, net of investment expense, and including inflation	8.41 percent compounded annually to reflect an 8.00 percent assumption for three years and 8.50 percent thereafter.
Cost of Living Adjustment	2.00 percent per year, increasing to 2.50 percent per year on July 1, 2031.

Please see the information presented earlier in regard to Paragraph 34 for detailed information on the benefit changes and assumption changes that may have impacted the actuarially determined employer contributions shown in the *Schedule of Employer Contributions*.

APPENDIX A

REQUIRED SUPPLEMENTARY INFORMATION

Exhibit A

GASB 67 Paragraph 32(a) and (b)

SCHEDULE OF CHANGES IN THE EMPLOYERS' NET PENSION LIABILITY
Fiscal Year Ended June 30
($ in Thousands)

	2015	2014
Total Pension Liability		
Service Cost	$399,228	$367,621
Interest	2,019,707	1,895,469
Benefit term changes	0	0
Differences between expected and actual experience*	7,113	475,265
Assumption changes	576,075	0
Benefit payments, including member refunds	(1,669,607)	(1,592,686)
Net change in Total Pension Liability	$1,332,516	$1,145,669
Total Pension Liability - beginning**	$25,299,564	$23,755,943
Total Pension Liability - ending (a)	$26,632,080	$24,901,612
Plan Fiduciary Net Position		
Employer contributions	$340,208	$299,300
Non-employer contributions - Direct Aid (State/City/District)	41,587	21,001
Employee contributions	334,826	294,632
Net investment income	887,280	3,257,693
Benefit payments, including member refunds	(1,669,607)	(1,592,686)
Administrative expenses	(11,509)	(9,430)
Other	3,550	3,855
Net change in Plan Fiduciary Net Position	($73,665)	$2,274,365
Plan Fiduciary Net Position – beginning**	$20,519,756	$18,019,319
Plan Fiduciary Net Position - ending (b)	$20,446,091	$20,293,684
Net Pension Liability - ending (a) - (b)	$6,185,989	$4,607,928
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	76.77%	81.50%
Covered payroll	$4,306,426	$4,056,482
Employers' Net Pension Liability as a percentage of covered payroll	143.65%	113.59%

Note: Schedule is intended to show 10-year trend. Additional years will be reported as they become available.

* Includes impact of date change for expected increase in COLA to 2.50%, prior to the change in the SEIR to 8.0%.

** 2015 beginning of period TPL and FNP do not match the 2014 end of period amounts due to the DTRFA merger.

Exhibit B

GASB 67 Paragraph 32(c)

SCHEDULE OF EMPLOYER AND NON-EMPLOYER CONTRIBUTIONS
Fiscal Year Ended June 30
($ in Thousands)

	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Actuarially determined employer contribution*	495,235	492,731	463,788	401,725	384,943	421,813	355,189	280,327	229,642	133,389
Actual non-employer contributions	41,587	21,001	19,954	21,726	21,510	21,550	20,448	21,845	21,880	21,264
Actual employer contributions	340,208	299,300	270,708	244,935	222,723	220,538	220,270	209,717	187,339	179,022
Total contributions	381,795	320,301	290,662	266,661	244,233	242,088	240,718	231,562	209,219	200,286
Annual contribution deficiency (excess)	113,440	172,430	173,126	135,064	140,710	179,725	114,471	48,765	20,423	(66,897)
Covered-employee payroll**	4,306,426	4,056,482	3,917,310	3,871,809	3,838,111	3,787,757	3,761,484	3,645,230	3,532,159	3,430,645
Actual contributions as a percentage of covered-employee payroll**	8.87%	7.90%	7.42%	6.89%	6.36%	6.39%	6.40%	6.35%	5.92%	5.84%

* The 2015 Actuarially determined employer contribution includes the required amount for both DTRFA ($11,039) and TRA ($484,196).

** Covered-employee payroll is based upon the pensionable payroll reported to the System and may exclude additional compensation amounts that may need to be reported by the employer.

APPENDIX B

SUMMARY OF BENEFIT PROVISIONS VALUED

BASIC MEMBERS

This summary of provisions reflects our interpretation of applicable Statutes for purposes of preparing this valuation. This interpretation is not intended to provide a basis for administering the Plan.

Plan year

July 1 through June 30

Eligibility

Teachers first hired prior to July 1, 1978 employed by the Board of Education of Special School District No. 1, other than a charter school, and not covered by the Social Security Act. Certain part-time licensed employees of Special School District No. 1 are also covered. These members were transferred to TRA as part of the merger of the Minneapolis Teachers Retirement Fund Association (MTRFA) effective June 30, 2006.

Contributions

Shown as a percent of Salary:

Member	Employer
11.00%	15.14%

After June 30, 2015, the member and employer contribution rates may be adjusted if there is a sufficiency of at least 1.00% or a deficiency of at least 0.50%. The Board has discretion to adjust this rate based on discussion with the actuary and consideration of various metrics. The resulting rate may not go below the normal cost plus administrative expenses.

Potential contribution increases after June 30, 2015 are not reflected in this valuation report.

Employee contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).

Teaching service

A year is earned during a calendar year if the member is employed in a covered position and employee contributions are deducted. Certain part-time service and military service is also included.

BASIC MEMBERS

Salary	Periodic compensation used for contribution purposes excluding lump sum annual or sick leave payments, severance payments, any payments made in lieu of employer paid fringe benefits or expenses, and employer contributions to a Section 457 deferred compensation plan.
Average salary	Average of the five highest successive years of Salary.
Retirement	
<u>*Normal retirement*</u>	
Age/Service requirements	Age 60, or any age with 30 years of Teaching Service
Amount	2.50% of Average Salary for each year of Teaching Service.
<u>*Early retirement*</u>	
Age/Service requirements	Age 55 with less than 30 years of Teaching Service.
Amount	The greater of (a) or (b): (a) 2.25% of Average Salary for each year of Teaching Service with reduction of 0.25% for each month before the Member would first be eligible for a normal retirement benefit. (b) 2.50% of Average Salary for each year of Teaching Service assuming augmentation to the age of first eligibility for a normal retirement benefit at 3.00% per year and actuarial reduction for each month before the member would be first eligible for a normal retirement benefit. An alternative benefit is available to members who are at least age 50 and have seven years of Teaching Service. The benefit is based on the accumulation of the 6.50% "city deposits" to the Retirement Fund. Other benefits are also provided under this alternative depending on the member's age and Teaching Service.
<u>*Form of payment*</u>	Life annuity. Actuarially equivalent options are: (a) 10 or 15 year Certain and Life (b) 50%, 75% or 100% Joint and Survivor with bounce back feature (option is canceled if member is predeceased by beneficiary).
<u>*Benefit increases*</u>	Under current law, the annual post-retirement increase on January 1 is 2.0 percent. When the funding ratio reaches 90 percent (on a market value of assets basis) for two consecutive years, the annual increase will rise to 2.5 percent. A benefit recipient who has been receiving a benefit for at least 12 full months as of the June 30 preceding the increase date will receive a full increase. Members receiving benefits for at least one full month but less than 12 full months as of the June 30 preceding the increase date will receive a prorated increase.

BASIC MEMBERS

Disability

Age/service requirement	Total and permanent disability with three years of Teaching Service
Amount	An annuity actuarially equivalent to the continued accumulation of member and city contributions at the current rate for a period of 15 years (but not beyond age 65) plus an additional benefit equal to the smaller of 100% of the annuity provided by city contributions only or $150 per month. A member with 20 years of Teaching Service also receives an additional $7.50 per month. Payments stop earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.

Death

Choice of Benefit A, Benefit B or Benefit C

Benefit A

Age/Service requirements	Death before retirement.
Amount	The accumulation of member and city contributions plus 6.00% interest. Paid as a life annuity, 15-year Certain and Life, or lump sum. If an annuity is chosen the beneficiary also receives additional benefits.

Benefit B

Age/Service requirements	An active member with seven years of Teaching Service. A former member age 60 with seven years of Teaching Service who dies before retirement or disability benefits begin.
Amount	The actuarial equivalent of any benefits the member could have received if resignation occurred on the date of death.

Benefit C

Age/Service requirements	As an active member who dies and leaves surviving children.
Amount	A monthly benefit of $248.30 to the surviving widow while caring for a child and an additional $248.30 per month for each surviving dependent child. The maximum family benefit is $579.30 per month. Benefits to the widow cease upon death or when no longer caring for an eligible child. Benefits for dependent children cease upon marriage or age 18 (age 22 if a full time student).
Benefit Increases	Same as for retirement.

BASIC MEMBERS

Withdrawal

Refund of contribution

Age/Service requirements	Termination of Teaching Service.
Amount	Member's contributions earn 4.00% interest compounded annually. For vested members, a deferred annuity may be elected in lieu of a refund.

Deferred annuity

Age/Service Requirements	Seven years of Teaching Service
Amount	The benefit is computed under law in effect at termination and increased by the following percentage compounded annually: (a) 3.00% therefore until the earlier of January 1 of the year following attainment of age 55 and June 30, 2012; (b) 5.00% thereafter until the earlier of June 30, 2012 and when the annuity begins; and (c) 2.00% beginning July 1, 2012. In addition, the interest earned on the member and city contributions between termination and age 60 can be applied to provide an additional annuity.

COORDINATED MEMBERS

This summary of provisions reflects our interpretation of applicable Statutes for purposes of preparing this valuation. This interpretation is not intended to provide a basis for administering the Plan.

Plan year	July 1 through June 30
Eligibility	A public school or MNSCU teacher who is covered by the Social Security Act, except for teachers employed by St. Paul public schools or by the University of Minnesota. Charter school teachers employed by St. Paul or Duluth public schools are covered by TRA. No MNSCU teacher will become a new Member unless that person elects coverage as defined by Minnesota Statutes under Chapter 354B.
Contributions	Shown as a percent of Salary: Member 7.50% — Employer 7.50% Employer also contributes Supplemental amount equal to 3.64% of Salary (members employed by Special School District #1 only). After June 30, 2015, the member and employer contribution rates may be adjusted if there is a sufficiency of at least 1.00% or a deficiency of at least 0.50%. The Board has discretion to adjust this rate based on discussion with the actuary and consideration of various metrics. The resulting rate may not go below the normal cost plus administrative expenses. Potential contribution increases after June 30, 2015 are not reflected in this valuation report. Employee contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
Teaching service	A year is earned during a calendar year if the member is employed in a covered position and employee contributions are deducted. Certain part-time service and military service is also included.

COORDINATED MEMBERS

Salary	Periodic compensation used for contribution purposes excluding lump sum annual or sick leave payments, severance payments, any payments made in lieu of employer paid fringe benefits or expenses, and employer contributions to a Section 457 deferred compensation plan.
Average salary	Average of the five highest successive years of Salary. Average salary is based on all Allowable Service if less than five years.
Retirement	
<u>*Normal retirement*</u>	
Age/Service requirements	<u>First hired before July 1, 1989:</u> (a) Age 65 and three years of Allowable Service; or (b) Age 62 and 30 years of Allowable Service. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service. <u>First hired after June 30, 1989:</u> The age when first eligible for full Social Security retirement benefits (but not to exceed age 66) and three years of Allowable Service. Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service.
<u>*Early retirement*</u>	
Age/Service requirements	<u>First hired before July 1, 1989</u>: (a) Age 55 and three years of Allowable Service; or (b) Any age and 30 years of Allowable Service; or (c) Rule of 90: Age plus Allowable Service totals 90. <u>First hired after June 30, 1989:</u> (a) Age 55 with three years of Allowable Service.

COORDINATED MEMBERS

Retirement(continued)

Amount

First hired before July 1, 1989:

The greater of (a), (b) or (c):

(a) 1.20% of Average Salary for each of the first ten years of Allowable Service.
1.70% of Average Salary for each year of Allowable Service in excess of 10 prior to July 1, 2006, and
1.90% of Average Salary for years of Allowable Service after July 1, 2006.
No actuarial reduction if age plus years of service totals 90. Otherwise reduction of 0.25% for each month the member is under age 65 (or 62 if 30 years of Allowable Service) at time of retirement.

(b) 1.70% of Average Salary for each year of Allowable Service prior to July 1, 2006 and 1.90% for each year of Allowable Service beginning July 1, 2006, assuming augmentation to normal retirement age at 3.00% per year (2.50% per year for members hired after June 30, 2006) and actuarial reduction for each month the member is under the full Social Security benefit retirement age (not to exceed age 66). Beginning July 1, 2015, new early retirement reduction factors will apply, including special factors for members retiring at age 62 or later with at least 30 years of service.

(c) For eligible members: the monthly benefit that is actuarially equivalent to 2.2 times the members' accumulated deductions plus interest thereon.

First hired after June 30, 1989:

1.70% of Average Salary for each year of Allowable Service prior to July 1, 2006 and 1.90% for each year of Allowable Service beginning July 1, 2006, assuming augmentation to normal retirement age at 3.00% per year (2.50% per year for members hired after June 30, 2006) and actuarial reduction for each month the member is under the full Social Security benefit retirement age (not to exceed age 66). Beginning July 1, 2015, new early retirement reduction factors will apply, including special factors for members retiring at age 62 or later with at least 30 years of service.

Early Retirement Reduction Factors

Age	Hired before 7/1/89	Hired from 7/1/89 to 6/30/06	Hired after 6/30/06
55	43.56%	51.55%	54.08%
58	33.59%	40.46%	42.74%
60	24.65%	30.75%	32.74%
62	13.68%	18.96%	20.53%
65	0.00%	4.21%	4.68%
66	0.00%	0.00%	0.00%

Members who are age 62 with 30 years of service are eligible for a special set of reduction factors:

Age	Hired before 7/1/89	Hired from 7/1/89 to 6/30/06	Hired after 6/30/06
62	10.40%	14.46%	16.11%
63	6.64%	10.40%	11.70%
64	3.18%	6.64%	7.55%
65	0.00%	3.18%	3.65%
66	0.00%	0.00%	0.00%

All of the early retirement reduction factors shown are the ultimate factors. These are being phased in from the prior factors over a five-year period beginning July 1, 2015.

Form of Payment

Life annuity. Actuarially equivalent options are:

(a) 50%, 75% or 100% Joint and Survivor with bounce back feature (option is canceled if member is predeceased by beneficiary).
(b) 15 year Certain and Life
(c) Guaranteed Refund.

COORDINATED MEMBERS

Retirement(continued)

Benefit increases	Under current law, the annual post-retirement increase on January 1 is 2.0 percent. When the funding ratio reaches 90 percent (on a market value of assets basis) for two consecutive years, the annual increase will rise to 2.5 percent. A benefit recipient who has been receiving a benefit for at least 12 full months as of the June 30 preceding the increase date will receive a full increase. Members receiving benefits for at least one full month but less than 12 full months as of the June 30 preceding the increase date will receive a prorated increase.

Disability

Age/service requirement	Total and permanent disability before Normal Retirement Age with three years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at disability without reduction for commencement before Normal Retirement Age unless an optional annuity plan is selected. Payments stop at Normal Retirement Age or the five year anniversary of the effective date of the disability benefit, whichever is later. Payments stop earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.
Form of *payment*	Same as for retirement.
Benefit increases	Same as for retirement.

Retirement after disability

Age/service requirement	Normal Retirement Age or the five year anniversary of the effective date of the disability benefit, whichever is later.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before Normal Retirement Age or the normal retirement benefit available at Normal Retirement Age, or an actuarially equivalent optional annuity.
Benefit increases	Same as for retirement.

COORDINATED MEMBERS

Death

<u>*Surviving spouse optional annuity*</u>

Age/Service requirements	Member or former member with three years of Allowable Service who dies before retirement or disability benefits commence.
Amount	Survivor's payment of the 100% Joint and Survivor benefit or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced for early retirement with half the applicable reduction factor used from age 55 to actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer.
Benefit increase	Same as for retirement.

Withdrawal

<u>*Refund of contributions*</u>

Age/Service requirements	Thirty days following termination of teaching service.
Amount	Member's contributions earn 4.00% interest compounded annually. For vested members, a deferred annuity may be elected in lieu of a refund.

<u>*Deferred annuity*</u>

Age/Service requirements	Vested at date of termination. Current requirement is three years of Allowable Service.

COORDINATED MEMBERS

Withdrawal (continued)

Amount

For members first hired prior to July 1, 2006, the benefit is computed under law in effect at termination and increased by the following percentage compounded annually:

(a) 3.00% therefore until the earlier of January 1 of the year following attainment of age 55 and June 30, 2012;
(b) 5.00% thereafter until the earlier of June 30, 2012 and when the annuity begins; and
(c) 2.00% from July 1, 2012 forward.

Amount is payable as a normal or early retirement.

A member who terminated service before July 1, 1997 whose benefit does not commence until after June 30, 1997 shall receive an actuarially equivalent increase to reflect the change from 5.00% to 6.00% in the post-retirement interest assumption; or

For eligible members; the monthly benefit that is actuarially equivalent to 2.2 times the members' accumulated deductions plus interest thereon.

For members first hired July 1, 2006 and after, the benefit computed under law in effect at termination is increased by 2.50% compounded annually until June 30, 2012 and increased by 2.00% from July 1, 2012 forward until the annuity begins.

APPENDIX C

STATEMENT OF ACTUARIAL ASSUMPTIONS

The following assumptions were used in valuing the liabilities and benefits under the plan. All assumptions, other than the long-term assumed rate of return, are based on those prescribed for funding purposes by Statutes, the LCPR, or the Board of Trustees. These assumptions are based on the experience study dated October 30, 2009. TRA management selected 8.0% for the long term rate of return for GASB 67 measurement purposes.

The Allowance for Combined Service Annuity was based on the recommendation of a prior actuary. We are unable to judge the reasonableness of this assumption without performing a substantial amount of additional work beyond the scope of this assignment.

Investment Return (Long-term Assumed Rate of Return)	For funding purposes in July 1, 2015 valuation: 8.44% compounded annually to reflect an 8.0% assumption for two (2) years and 8.5% thereafter. For GASB 67 purposes: 8.00% for June 30, 2015 measurement date.
Future post-retirement adjustments	Once the funded ratio reaches 90% on a market value basis for two consecutive years, the COLA is scheduled by statute to increase from 2.0% to 2.5%. Future assets and liabilities were projected using the 2015 actuarial funding valuation results as a starting point and assuming all actuarial assumptions are met in future years. These assumptions include a rate of return on assets of 8.0% for the next two years and 8.5% thereafter. In particular, there is no assumption that the stabilizer provisions will be utilized by the Board. Based on this methodology, the increased COLA is expected to be implemented with the July 1, 2037 (no increase is expected for GASB 67 purposes) valuation. For the July 1, 2014 valuations, the COLA was expected to increase to 2.5% with the July 1, 2031 valuation (2034 for GASB 67 purposes).
Salary Increases	Reported salary for prior fiscal year, with new hires annualized, is increased according to the salary increase table shown in the rate table for current fiscal year and annually for each future year. See table of sample rates.
Payroll Growth	3.75% per year
Future Service	Members are assumed to earn future service at a full-time rate.

Summary of Actuarial Assumptions *(continued)*

Mortality: ***Pre-retirement***		RP 2000 non-annuitant generational mortality, white collar adjustment, male rates set back 5 years and female rates set back 7 years.
Post-retirement		RP 2000 annuitant generational mortality, white collar adjustment, male rates set back 2 years and female rates set back 3 years.
Post-disability		RP 2000 disabled retiree mortality, without adjustment
Disability		Age-related rates based on experience; see table of sample rates.
Withdrawal		Select and ultimate rates based on actual plan experience. Ultimate rates after the third year are shown in the rate table. Select rates are as follows:

	First Year	Second Year	Third Year
Male	45%	12%	6%
Female	40%	10%	8%

Expenses	Prior year administrative expenses expressed as percentage of prior year payroll.
Retirement Age	Graded rates beginning at age 55 as shown in rate table. Members who have attained the highest assumed retirement age will retire in one year.
Percentage Married	85% of male members and 65% of female members are assumed to be married. Members are assumed to have no children.
Age Difference	Females two years younger than males.
Allowance for Combined Service Annuity	Liabilities for active members are increased by 1.40% and liabilities for former members are increased by 4.00% to account for the effect of some Participants being eligible for a Combined Service Annuity.
Refund of Contributions	All employees withdrawing after becoming eligible for a deferred benefit are assumed to take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Interest on member contributions	Members and former members who are eligible for the money purchase annuity are assumed to receive interest credits equal to the Pre-Retirement interest rate. All other members and former members receive the interest crediting rate as specified in statutes.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at unreduced retirement age.

Summary of Actuarial Assumptions *(continued)*

Form of payment	Married members are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 10% elect 50% J&S option; 15% elect 75% J&S option; 70% elect 100% J&S option Females: 20% elect 50% J&S option; 10% elect 75% J&S option; 50% elect 100% J&S option Members eligible for deferred annuities (including current terminated deferred members) and future disability benefits are assumed to elect a life annuity.
Missing data for members	Membership data was supplied by TRA as of the valuation date. This information has not been audited by CMC. We have reviewed the information for internal consistency and we have no reason to doubt its substantial accuracy. In the small number of cases where submitted data was missing or incomplete and could not be recovered from prior years, the following assumptions were applied, if needed:

Data for active members:	
Salary, Service, and Date of Birth	Based on current active demographics.
Gender	Female
Data for terminated members:	
Date of birth	July 1, 1964
Average salary	$37,000
Date of termination	Derived from date of birth, original entry age, and service
Data for in-pay members:	
Beneficiary date of birth	Wife two years younger than husband
Gender	Based on first name
Form of payment	Life annuity for retirees and beneficiaries, 100% J&S option for disabled retirees.

Summary of Actuarial Assumptions *(continued)*

	Rate (%)			
	Ultimate Withdrawal		Disability	
Age	Male	Female	Male	Female
20	3.70	4.50	0.00	0.00
25	3.20	4.50	0.00	0.00
30	2.70	4.50	0.00	0.00
35	2.50	3.90	0.01	0.01
40	2.35	2.75	0.03	0.03
45	2.10	2.10	0.05	0.05
50	1.85	1.85	0.10	0.10
55	0.00	0.00	0.16	0.16
60	0.00	0.00	0.25	0.25
65	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00

	Mortality Rates (%)					
	Pre-Retirement*		Post-Retirement**		Post-Disability	
Age	Male	Female	Male	Female	Male	Female
20	0.0269	0.0155	0.0316	0.0184	2.2571	0.7450
25	0.0345	0.0188	0.0373	0.0194	2.2571	0.7450
30	0.0376	0.0197	0.0393	0.0223	2.2571	0.7450
35	0.0353	0.0235	0.0481	0.0363	2.2571	0.7450
40	0.0591	0.0401	0.0766	0.0527	2.2571	0.7450
45	0.0890	0.0562	0.1124	0.0763	2.2571	0.7450
50	0.1342	0.0837	0.1711	0.1229	2.8975	1.1535
55	0.1978	0.1344	0.5716	0.2681	3.5442	1.6544
60	0.2747	0.2015	0.5688	0.4253	4.2042	2.1839
65	0.4263	0.3107	0.9232	0.6736	5.0174	2.8026
70	0.6725	0.4979	1.5834	1.1211	6.2583	3.7635
75	0.9823	0.7591	2.6710	1.8784	8.2067	5.2230

* *Rates shown are RP 2000 employee mortality (base), white collar adjustment, set back 5 years for males and 7 years for females.*

** *Rates shown are RP 2000 annuitant mortality (base), white collar adjustment, set back 2 years for males and 3 years for females.*

Summary of Actuarial Assumptions *(continued)*

Salary Scale	
Service	**Salary Increase**
1	12.00%
2	9.00%
3	8.00%
4	7.50%
5	7.25%
6	7.00%
7	6.85%
8	6.70%
9	6.55%
10	6.40%
11	6.25%
12	6.00%
13	5.75%
14	5.50%
15	5.25%
16	5.00%
17	4.75%
18	4.50%
19	4.25%
20	4.00%
21	3.90%
22	3.80%
23	3.70%
24	3.60%
25 or more	3.50%

Summary of Actuarial Assumptions *(continued)*

	Retirement Rate (%)				
Age	**Coordinated Members Eligible for Rule of 90**	**Coordinated Members Not Eligible for Rule of 90**	**Age**	**Basic Members Eligible for 30 and Out Provision**	**Basic Members Not Eligible for 30 and Out Provision**
55 & Under	50	7	55 & Under	40	5
56	55	7	56	40	5
57	45	7	57	40	5
58	45	8	58	40	5
59	45	10	59	40	5
60	40	12	60	25	25
61	45	16	61	25	25
62	45	20	62	25	25
63	40	18	63	25	25
64	45	20	64	25	25
65	40	40	65	40	40
66	35	35	66	40	40
67	30	30	67	40	40
68	30	30	68	40	40
69	30	30	69	40	40
70	35	35	70-74	60	60
71 & Over	100	100	75-79	60	100
			80 & Over	100	100

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GASB STATEMENT NO. 68 REPORT

FOR THE

TEACHER RETIREMENT ASSOCIATION OF MINNESOTA

PREPARED AS OF JUNE 30, 2015

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January 29, 2016

Ms. Laurie Hacking
Executive Director
Teacher Retirement Association of Minnesota
60 Empire Drive, Suite 400
St. Paul, MN 55103

Dear Ms. Hacking:

Presented in this report is information to assist the Teacher Retirement Association of Minnesota (TRA) in providing information required under the Governmental Accounting Standards Board (GASB) Statement No. 68 to participating employers. GASB Statement No. 68 establishes accounting and financial reporting requirements for governmental employers who provide pension benefits to their employees through a trust. This report has been prepared as of June 30, 2015.

The annual actuarial valuation used as a basis for much of the information presented in this report, including the Net Pension Liability, was performed as of July 1, 2015. The valuation was based upon data, furnished by the TRA staff, concerning active, inactive and retired members along with pertinent financial information. This information was reviewed for completeness and internal consistency, but was not audited by us. 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.

Since the June 30, 2014 GASB 68 report was issued, a comprehensive experience study was performed and a number of assumption changes were proposed, with an implementation date of July 1, 2016, to give both the Minnesota Legislature and the Legislative Commission on Pensions and Retirement time to review the proposed changes and to take action, as necessary. Because of the intentional delay and pending discussion, the proposed assumption changes are not reflected in this report. However, at the direction of TRA management, an 8.00% discount rate (SEIR) has been used to determine the Total Pension Liability as of June 30, 2015 in this report. If the entire set of new assumptions had been used (which included an 8.00% long-term assumed rate of return), the Net Pension Liability would have been about $716 million higher and the Pension Expense would have been about $125 million higher.

The Duluth Teacher Retirement Fund Association (DTRFA) was merged into TRA, effective June 30, 2015, so the merger is reflected in this report. As requested, we have presented this material as though the two systems were combined for the entire fiscal year in order to facilitate the preparation of accounting statements. Both the amount of the Total Pension Liability and the Fiduciary Net Position were impacted by the merger of the DTRFA.

To the best of our knowledge, this report is complete and accurate. We note that the allocation of Net Pension Liability, pension expense, and deferred inflows and outflows to participating employers under GASB 68 will be provided by TRA and, therefore, is not included in this report.

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The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial principles and practices, as well as in conformity with Actuarial Standards of Practice issued by the Actuarial Standards Board. The calculations are based on the current provisions of the System, and on actuarial assumptions that are internally consistent and individually reasonable based on the actual experience of the System. In addition, the calculations were completed in compliance with the laws governing the System and, in our opinion, meet the requirements of GASB 68. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

These results are only for financial reporting and may not be appropriate for funding purposes or other types of analysis. Calculations for purposes other than satisfying the requirements of GASB 68 may produce significantly different results. Future actuarial results may differ significantly from the current results presented in this report due to such factors as changes in plan experience or changes in economic or demographic assumptions.

Respectfully submitted,

Patrice Beckham   Brent A. Banister

Patrice A. Beckham, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

Brent A. Banister, PhD, FSA, EA, FCA, MAAA
Chief Pension Actuary

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GASB STATEMENT NO. 68

TEACHER RETIREMENT ASSOCIATION OF MINNESOTA

PREPARED AS OF JUNE 30, 2015

SECTION I - SUMMARY OF PRINCIPAL RESULTS

($ IN THOUSANDS)

Valuation Date (VD):	July 1, 2015
Prior Measurement Date:	June 30, 2014
Measurement Date (MD):	June 30, 2015
Membership Data:	
Retirees and Beneficiaries	61,986
Inactive Vested Members	13,314
Inactive Nonvested Members	31,026
Active Employees	79,406
Total	185,732
Single Equivalent Interest Rate (SEIR):	
Long-Term Expected Rate of Return	8.00%
Municipal Bond Index Rate at Prior Measurement Date	4.35%
Municipal Bond Index Rate at Measurement Date	3.82%
Year in which Fiduciary Net Position is Projected to be Depleted	N/A
Single Equivalent Interest Rate at Prior Measurement Date	8.25%
Single Equivalent Interest Rate at Measurement Date	8.00%
Net Pension Liability:	
Total Pension Liability (TPL)	$26,632,080
Fiduciary Net Position (FNP)	20,446,091
Net Pension Liability (NPL = TPL – FNP)	$6,185,989
FNP as a percentage of TPL	76.77%
Pension Expense:	$413,081
Deferred Outflows of Resources:	$1,405,904
Deferred Inflows of Resources:	$1,086,514

SECTION II – INTRODUCTION

The Governmental Accounting Standards Board issued Statement No. 68 (GASB 68), *Accounting and Financial Reporting for Pensions* in June 2012. GASB 68's effective date for employers is the first fiscal year beginning after June 15, 2014. The Teacher Retirement Association of Minnesota (TRA or System) is a cost-sharing multiple employer defined benefit pension plan as defined by GASB 68. This report, prepared as of June 30, 2015 (the Measurement Date), presents information to assist the TRA in providing the required information under GASB 68 to participating employers. Much of the material provided in this report, including the Net Pension Liability, is based on the results of the GASB 67 report for TRA, which was issued December 15, 2015. See that report for more information on the member data, actuarial assumptions and methods used in developing the GASB 67 results.

GASB 68 replaces GASB 27, and also represents a significant departure from the requirements of the prior statement. GASB 27 required employers providing benefits through pension plans to report items consistent with the results of the plan's actuarial valuations for funding, as long as those valuations met certain parameters. Employers participating in a cost-sharing multiple employer plan, such as TRA, only had to disclose the amount of the required contribution as well as the actual contribution. GASB 68 creates disclosure and reporting requirements that may or may not be consistent with the basis used for funding the Plan. In fact, GASB 68 paragraph 159 states:

> "The Board concluded that it is not within the scope of its activities to set standards that establish a specific method of financing pensions (that being a policy decision for government officials or other responsible authorities to make) or to regulate a government's compliance with the financing policy or method it adopts. Accordingly, the Board established standards in this Statement within the context of accounting and financial reporting, not within the context of the funding of pensions."

Two major changes in GASB 68 are the requirements to include a proportionate share of the Net Pension Liability (NPL) on the participating employer's balance sheet and to determine a Pension Expense (PE), which may bear little relationship to the funding requirements for TRA. In fact, it is possible for the PE to be a negative expense item in some years. The NPL is set equal to the Total Pension Liability (TPL) minus the Fiduciary Net Position (FNP). The benefit provisions recognized in the calculation of the TPL are summarized in Appendix B. TRA is a cost-sharing multiple employer plan so the NPL and PE are allocated among the participating employers and non-employer entities. Those amounts, which are needed for the participating employers' financial statements, will be determined by TRA.

PE includes amounts for Service Cost (the Normal Cost under Entry Age Normal (EAN) for the year), interest on the TPL, employee contributions, administrative expenses, other cash flows during the year, recognition of increases/decreases in the TPL 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 PE is shown in Section III.

The unrecognized portions of each year's experience, assumption changes and investment gains/losses are used to develop Deferred Inflows of Resources and Deferred Outflows of Resources, which also must be included on the employer's Statement of Net Position.

Among the items needed for the TPL 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's provision 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 depletion date by a 20-year tax-exempt municipal bond (rating AA/Aa or higher) rate (Municipal Bond Index Rate). The rate used, if necessary, for this purpose is the Bond Buyer General Obligation 20-year Municipal Bond Index published monthly by the Board of Governors of the Federal Reserve System. Our calculations indicated that the FNP is not projected to be depleted, so the Municipal Bond Index Rate is not used in the determination of the SEIR. A SEIR of 8.00% for the Measurement Date and a SEIR of 8.25% for the Prior Measurement Date meet the requirements of GASB 67 and 68.

The FNP projections are based upon TRA's financial status on the Measurement Date, the indicated set of methods and assumptions, and the requirements of GASB 68. 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 Duluth Teacher Retirement Fund Association (DTRFA) was merged into TRA, effective June 30, 2015, so the merger was reflected in the June 30, 2015 GASB 67 report and is reflected in a consistent manner in this report. The material is presented as though the two systems were combined for the entire fiscal year in order to facilitate the preparation of accounting statements. Both the amount of the Total Pension Liability and the Fiduciary Net Position were impacted by the merger of the DTRFA. Please see the GASB 67 report for more details on the treatment of the DTRFA merger.

The sections that follow provide the results of all the required aggregate calculations, presented in the order laid out in GASB 68 for note disclosure and Required Supplementary Information (RSI). **TRA will prepare the calculation of the proportionate share of the NPL, Pension Expense, Deferred Inflows of Resources and Deferred Outflows of Resources for each participating employer or non-employer contributing entity.**

SECTION III – PENSION EXPENSE

As noted earlier, the collective Pension Expense (PE) consists of a number of different items. GASB 68 refers to the first as Service Cost, which is the Normal Cost using the Entry Age Normal (EAN) actuarial funding method. The second item is interest on the TPL at 8.25%, the SEIR in effect as of the Prior Measurement Date.

The next three items refer to any changes that occurred in the TPL (i.e., actuarial accrued liability (AAL) under EAN) due to:

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

Benefit changes, which are reflected immediately, will increase PE if there is a benefit improvement for existing System members, or decrease PE if there is a benefit reduction. For the year ended June 30, 2015, there were no benefit changes to be recognized.

The next item to be recognized is the portion of current year changes in TPL due to actual versus expected 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 System 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. At the beginning of the measurement period, this number is 13.38 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 5.73 years.

The last item under changes in TPL is changes in actuarial assumptions or other inputs. There was one change in the actuarial assumptions or other inputs since the Prior Measurement Date, a decrease in the long-term expected rate of return from 8.25% to 8.00%. The resulting change in the TPL will be recognized over the average expected remaining service life of the entire System membership, using the same approach that applied to experience gains and losses as described earlier.

Employee contributions for the year and projected earnings on the FNP at the long-term rate of return are subtracted from the amount determined thus far. One-fifth of current-period differences between projected and actual earnings on the FNP is recognized in the PE.

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

The calculation of the collective PE for the year ended June 30, 2015 is shown in the following table.

Collective Pension Expense
For the Year Ended June 30, 2015
($ in Thousands)

Service Cost	$399,228
Interest on the Total Pension Liability	2,019,707
Current-period Benefit Changes	0
Expensed portion of current-period difference between expected and actual experience in the total pension liability	1,241
Expensed portion of current-period changes of assumptions	100,537
Member Contributions	(334,826)
Projected Earnings on Plan Investments	(1,654,026)
Expensed portion of current-period differences between actual and projected earnings on plan investments	153,349
Administrative Expense	11,509
Other	(3,550)
Recognition of beginning deferred outflows of resources as pension expense	82,084
Recognition of beginning deferred inflows of resources as pension expense	(362,172)
Total Pension Expense	**$413,081**

Note: Average expected remaining service life for all members is 5.73.

SECTION IV – NOTES TO FINANCIAL STATEMENTS

The material presented herein will follow the order presented in GASB 68. Paragraph numbers are provided for ease of reference. Amounts are shown in the aggregate. TRA will determine the proportionate share of certain amounts for individual employers as required by GASB 68.

Paragraph 74: The information required is to be prepared by TRA and/or the individual employer.

Paragraph 75: The information required is to be prepared by the individual employer.

Paragraph 76(a) – (d): The information required is to be supplied by TRA.

Paragraph 77: This paragraph requires information to be disclosed regarding the significant actuarial assumptions and other inputs used to measure the TPL. The complete set of actuarial assumptions utilized in developing the TPL are outlined in Appendix C. The TPL was determined by an actuarial valuation performed as of July 1, 2015, using the following key actuarial assumptions:

Price Inflation	3.00 percent
Salary increases, including wage inflation	3.50 to 12.00 percent
Wage growth rate	3.75 percent
Long-term investment rate of return, net of plan investment expense, including inflation	8.00 percent
Municipal Bond Index Rate	
Prior Measurement Date	4.35 percent
Measurement Date	3.82 percent
Year FNP is projected to be depleted	N/A
Single Equivalent Interest Rate, net of plan investment expense, including inflation	
Prior Measurement Date	8.25 percent
Measurement Date	8.00 percent
Cost of Living Adjustment	Once the funded ratio reaches 90% on a market value basis for two consecutive years, the COLA is scheduled by statute to increase from 2.0% to 2.5%. The funded ratio is not projected to reach 90% within the 50-year projection period in our model, so the COLA is not assumed to increase to 2.5%.

Mortality	Pre-retirement mortality rates were based on the RP-2000 non-annuitant generational mortality table with white collar adjustment and male rates set back 5 years and female rates set back 7 years. Post-retirement mortality rates were based on the RP-2000 annuitant generational mortality table with white collar adjustment and males set back 2 years and female rates set back 3 years.

The actuarial assumptions used in the July 1, 2015 actuarial funding valuation are prescribed by Minnesota Statutes Section 356.215, the Legislative Commission on Pensions and Retirement (LCPR), and the Trustees. These were based on an experience study prepared October 30, 2009 for the period July 1, 2004 through June 30, 2008 with the exception of the long-term assumed rate of return. A limited scope experience study that addressed only the inflation and long-term rate of return (investment rate of return) assumptions for the GASB 68 valuation was prepared on August 29, 2014. As a result, the long-term assumed rate of return used for the June 30, 2014 GASB 68 valuation was 8.25%.

Since the June 30, 2014 GASB 68 report was issued, a comprehensive experience study was performed and a number of assumption changes were proposed, with an implementation date of July 1, 2016, to give both the Minnesota Legislature and the Legislative Commission on Pensions and Retirement time to review the proposed changes and to take action as necessary. Because of the intentional delay and pending discussion, the proposed assumption changes are not reflected in this report. However, at the direction of TRA management, an 8.00% discount rate (SEIR) has been used to determine the Total Pension Liability as of June 30, 2015 in this report. If the entire set of new assumptions had been used (which includes an 8.00% long-term assumed rate of return), the NPL would have been about $716 million higher and the PE would have been about $125 million higher.

Paragraph 78

(a) Discount rate (SEIR). The discount rate used to measure the TPL at June 30, 2015 was 8.00%. This is a decrease from the SEIR at the Prior Measurement Date of 8.25%.

(b) Projected cash flows. The projection of cash flows used to determine the discount rate assumed that plan contributions from members and employers will be made at the current contribution rates as set out in state statute:

a. Employee contribution rates: 11.00% for Basic members and 7.50% for Coordinated members.
b. Employer contribution rates: 11.50% for Basic members and 7.50% for Coordinated members. In addition, a supplemental amount equal to 3.64% of Salary for Special School District #1 members until the System is fully funded.

Please note that supplemental contributions from the State were only partially reflected in the projected cash flows because the full amounts are not needed to determine that the Single Equivalent Interest Rate would be the long-term rate of return.

Based on those assumptions, the System's FNP was projected to be available to make all projected future benefit payments of current System members. Therefore, the long-term expected rate of return on System investments of 8.00% was applied to all periods of projected benefit payments to determine the TPL.

(c) Long-term rate of return. The long-term expected rate of return on pension plan investments is reviewed regularly as part of the experience study. An experience study was prepared late in 2015 that resulted in selecting a long-term rate of return of 8.00%. Generally, several factors are considered in evaluating the long-term rate of return assumption including long-term historical data, estimates inherent in current market data, and an analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expense and inflation) were developed using assumptions for each major asset class, as well as estimates of variability and correlations, provided by the System's investment consultant (the State Board of Investment). These ranges were combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and then adding expected inflation. The assumption is intended to be a long-term assumption (30 to 50 years) and is not expected to change absent a significant change in the asset allocation, a change in the inflation assumption, or a fundamental change in the market that alters expected returns in future years.

(d) Municipal bond rate. A municipal bond rate was not used in determining the discount rate. If it were required, the rate would be 3.82%.

(e) Period of projected benefit payments. Projected future benefit payments for all current plan members were projected through 2114.

(f) Assumed asset allocation. The target asset allocation and best estimates of geometric real rates of return for each major asset class, as provided by the Minnesota State Board of Investment (SBI), are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Domestic Equities	45%	5.50%
International Equities	15%	6.00%
US Fixed Income	18%	1.45%
Alternative Investments	20%	6.40%
Cash	2%	0.50%
Total	100%	

*Geometric mean

(g) Sensitivity analysis. This paragraph requires disclosure of the sensitivity of the NPL to changes in the discount rate. The following presents the NPL of the System, calculated using the discount rate of 8.00 percent, as well as the System's NPL calculated using a discount rate that is 1-percentage-point lower (7.00 percent) or 1-percentage-point higher (9.00 percent) than the current rate. TRA will provide the individual employer's proportionate share calculation.

($ in Thousands)	1% Decrease (7.00%)	Current Discount Rate (8.00%)	1% Increase (9.00%)
Net Pension Liability	$9,415,876	$6,185,989	$3,490,555

Paragraph 79: The required information will be supplied by TRA.

Paragraph 80:

(a)-(b) This information will be supplied by TRA.

(c) The Measurement Date of the collective NPL is June 30, 2015. The TPL as of June 30, 2015 was determined based upon the annual actuarial funding valuation report performed as of the Valuation Date, June 30, 2015.

(d) There was one change in the actuarial assumptions that affected the measurement of the TPL since the Prior Measurement Date, i.e., the discount rate was lowered from 8.25% to 8.00%.

(e) There were no changes in the benefit terms since the Prior Measurement Date. Actual plan experience changed the outlook for the System's funding, and therefore in conjunction with the lower expected rate of return, the COLA is assumed to remain at 2.0% for all future years.

(f) The information will be supplied by TRA.

(g) Please see Section III of this report for the development of the collective PE. TRA will provide the individual employer amounts.

(h) Since certain expense items are recognized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce PE they are labeled Deferred Inflows of Resources. If they will increase PE they are labeled Deferred Outflows of Resources. The recognition 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 recognized over the average expected remaining service life of the active and inactive Plan members at the beginning of the measurement period. Investment gains and losses are recognized equally over a five-year period.

The following tables provide a summary of the amounts of the collective Deferred Outflows of Resources and collective Deferred Inflows of Resources as of the Measurement Date (June 30, 2015).

Collective Deferred Outflows of Resources								
($ in thousands)		June 30, 2014		Additions		Recognition		June 30, 2015
Differences between expected and actual experience								
FY 2014 Base	$	393,181	$	0	$	82,084	$	311,097
FY 2015 Base		0		7,113		1,241		5,872
Total	$	393,181	$	7,113	$	83,325	$	316,969
Changes of assumptions								
FY 2014 Base	$	0	$	0	$	0	$	0
FY 2015 Base		0		576,075		100,537		475,538
Total	$	0	$	576,075	$	100,537	$	475,538
Differences between projected and actual earnings								
FY 2014 Base	$	0	$	0	$	0	$	0
FY 2015 Base		0		766,746		153,349		613,397
Total	$	0	$	766,746	$	153,349	$	613,397
Total	$	393,181	$	1,349,934	$	337,211	$	1,405,904

Collective Deferred Inflows of Resources				
($ in thousands)	**June 30, 2014**	**Additions**	**Recognition**	**June 30, 2015**
Differences between expected and actual experience				
FY 2014 Base	$ 0	$ 0	$ 0	$ 0
FY 2015 Base	0	0	0	0
Total	$ 0	$ 0	$ 0	$ 0
Changes of assumptions				
FY 2014 Base	$ 0	$ 0	$ 0	$ 0
FY 2015 Base	0	0	0	0
Total	$ 0	$ 0	$ 0	$ 0
Differences between projected and actual earnings				
FY 2014 Base	$ 1,448,686	$ 0	$ 362,172	$ 1,086,514
FY 2015 Base	0	0	0	0
Total	$ 1,448,686	$ 0	$ 362,172	$ 1,086,514
Total	$ 1,448,686	$ 0	$ 362,172	$ 1,086,514

TRA will provide the individual employers' balances of the collective Deferred Inflows of Resources and collective Deferred Outflows of Resources.

(i): Collective amounts reported as Deferred Outflows of Resources and Deferred Inflows of Resources related to pensions will be recognized in PE in future fiscal years as follows:

($ in thousands) Year Ended June 30:	Deferred Outflows of Resources	Deferred Inflows of Resources
2016	$337,211	$362,172
2017	337,211	362,172
2018	337,211	362,170
2019	319,973	0
2020	74,298	0
Thereafter	0	0

TRA will provide the individual employers' balances of the collective Deferred Inflows of Resources and collective Deferred Outflows of Resources.

(j). This will be provided by TRA.

SECTION V – REQUIRED SUPPLEMENTARY INFORMATION

There are several tables of Required Supplementary Information (RSI) that need to be included in the System's financial statements:

Paragraphs 81(a) and (b): This information will be provided by TRA.

Paragraph 82: Information about factors that significantly affect trends in the amounts reported in the schedules required by paragraph 81 should be presented as notes to the schedules. At this point only two years are being reported, but comments on additional years will be added as they occur.

Changes of benefit and funding terms: The following changes were made by the Minnesota Legislature and reflected in the valuation performed as of July 1 listed below:

2015: The Duluth Teachers Retirement Fund Association was merged into TRA on June 30, 2015. This also resulted in a state-provided contribution stream of $14.377 million until the System becomes fully funded.

2014: The increase in the post-retirement benefit adjustment (COLA) will be made once the System is 90% funded (on a market value basis) in two consecutive years, rather than just one year.

Changes in actuarial assumptions:

7/1/2015 valuation:

- The Cost of Living Adjustment was assumed to increase from 2.0% annually to 2.5% annually once the legally specified criteria was met. This was estimated to occur on July 1, 2037 for funding calculations. The COLA was not assumed to increase for GASB calculations.
- The investment return assumption for the GASB valuation was changed from 8.25% to 8.00%.

7/1/2014 valuation:

- The Cost of Living Adjustment was assumed to increase from 2.0% annually to 2.5% annually once the legally specified criteria was met. This was estimated to occur on July 1, 2034 for GASB calculations and July 1, 2031 for funding calculations.

Method and assumptions used in calculations of actuarially determined contributions.

The system is funded with contribution rates that vary by Basic vs Coordinated members and employers. The actuarially determined contributions in the *Schedule of Employer Contributions* are calculated as of the beginning of the fiscal year in which contributions are reported.

The following actuarial methods and assumptions were used to determine the actuarially determined employer contribution reported in the *Schedule of Employer Contributions* for the most recent fiscal year end, FY 2015, which was based on the July 1, 2014 valuation:

Actuarial cost method	Entry Age Normal
Amortization method	Level percentage of payroll, closed
Remaining amortization period	23 years
Asset valuation method	5-year moving average
Inflation	3.00 percent
Wage growth rate	3.75 percent
Salary increases, including inflation	3.50 to 12.00 percent
Long-term investment rate of return, net of investment expense, and including inflation	8.41 percent compounded annually to reflect an 8.00 percent assumption for three years and 8.50 percent thereafter.
Cost of Living Adjustment	2.00 percent per year, increasing to 2.50 percent per year on July 1, 2031.

APPENDIX A

ADDITIONAL INFORMATION

SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY

Fiscal Year Ended June 30, 2015
($ in Thousands)

($ in thousands)	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) – (b)
Balances at June 30, 2014	$25,299,564	$20,519,756	$4,779,808
Changes for the year:			
Service cost	399,228		399,228
Interest	2,019,707		2,019,707
Benefit changes	0		0
Difference between expected and actual experience	7,113		7,113
Changes in assumptions	576,075		576,075
Contributions - employer		340,208	(340,208)
Contributions - non-employer		41,587	(41,587)
Contributions - member		334,826	(334,826)
Net investment income		887,280	(887,280)
Benefit payments, including refunds of employee contributions	(1,669,607)	(1,669,607)	0
Administrative expense		(11,509)	11,509
Other changes		3,550	(3,550)
Net changes	1,332,516	(73,665)	1,406,181
Balances at June 30, 2015	$26,632,080	$20,446,091	$6,185,989

Note: 2015 beginning of period TPL and FNP do not match the 2014 end of period amounts due to the DTRFA merger.

APPENDIX B

SUMMARY OF BENEFIT PROVISIONS VALUED

BASIC MEMBERS

This summary of provisions reflects our interpretation of applicable Statutes for purposes of preparing this valuation. This interpretation is not intended to provide a basis for administering the Plan.

Plan year

July 1 through June 30

Eligibility

Teachers first hired prior to July 1, 1978 employed by the Board of Education of Special School District No. 1, other than a charter school, and not covered by the Social Security Act. Certain part-time licensed employees of Special School District No. 1 are also covered. These members were transferred to TRA as part of the merger of the Minneapolis Teachers Retirement Fund Association (MTRFA) effective June 30, 2006.

Contributions

Shown as a percent of Salary:

Member	Employer
11.00%	15.14%

After June 30, 2015, the member and employer contribution rates may be adjusted if there is a sufficiency of at least 1.00% or a deficiency of at least 0.50%. The Board has discretion to adjust this rate based on discussion with the actuary and consideration of various metrics. The resulting rate may not go below the normal cost plus administrative expenses.

Potential contribution increases after June 30, 2015 are not reflected in this valuation report.

Employee contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).

Teaching service

A year is earned during a calendar year if the member is employed in a covered position and employee contributions are deducted. Certain part-time service and military service is also included.

BASIC MEMBERS

Salary — Periodic compensation used for contribution purposes excluding lump sum annual or sick leave payments, severance payments, any payments made in lieu of employer paid fringe benefits or expenses, and employer contributions to a Section 457 deferred compensation plan.

Average salary — Average of the five highest successive years of Salary.

Retirement

<u>*Normal retirement*</u>

Age/Service requirements — Age 60, or any age with 30 years of Teaching Service

Amount — 2.50% of Average Salary for each year of Teaching Service.

<u>*Early retirement*</u>

Age/Service requirements — Age 55 with less than 30 years of Teaching Service.

Amount — The greater of (a) or (b):

(a) 2.25% of Average Salary for each year of Teaching Service with reduction of 0.25% for each month before the Member would first be eligible for a normal retirement benefit.

(b) 2.50% of Average Salary for each year of Teaching Service assuming augmentation to the age of first eligibility for a normal retirement benefit at 3.00% per year and actuarial reduction for each month before the member would be first eligible for a normal retirement benefit.

An alternative benefit is available to members who are at least age 50 and have seven years of Teaching Service. The benefit is based on the accumulation of the 6.50% "city deposits" to the Retirement Fund. Other benefits are also provided under this alternative depending on the member's age and Teaching Service.

<u>*Form of payment*</u> — Life annuity. Actuarially equivalent options are:

(a) 10 or 15 year Certain and Life

(b) 50%, 75% or 100% Joint and Survivor with bounce back feature (option is canceled if member is predeceased by beneficiary).

<u>*Benefit increases*</u> — Under current law, the annual post-retirement increase on January 1 is 2.0 percent. When the funding ratio reaches 90 percent (on a market value of assets basis) for two consecutive years, the annual increase will rise to 2.5 percent. A benefit recipient who has been receiving a benefit for at least 12 full months as of the June 30 preceding the increase date will receive a full increase. Members receiving benefits for at least one full month but less than 12 full months as of the June 30 preceding the increase date will receive a prorated increase.

BASIC MEMBERS

Disability

Age/service requirement	Total and permanent disability with three years of Teaching Service
Amount	An annuity actuarially equivalent to the continued accumulation of member and city contributions at the current rate for a period of 15 years (but not beyond age 65) plus an additional benefit equal to the smaller of 100% of the annuity provided by city contributions only or $150 per month. A member with 20 years of Teaching Service also receives an additional $7.50 per month. Payments stop earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.

Death — Choice of Benefit A, Benefit B or Benefit C

Benefit A

Age/Service requirements	Death before retirement.
Amount	The accumulation of member and city contributions plus 6.00% interest. Paid as a life annuity, 15-year Certain and Life, or lump sum. If an annuity is chosen the beneficiary also receives additional benefits.

Benefit B

Age/Service requirements	An active member with seven years of Teaching Service. A former member age 60 with seven years of Teaching Service who dies before retirement or disability benefits begin.
Amount	The actuarial equivalent of any benefits the member could have received if resignation occurred on the date of death.

Benefit C

Age/Service requirements	As an active member who dies and leaves surviving children.
Amount	A monthly benefit of $248.30 to the surviving widow while caring for a child and an additional $248.30 per month for each surviving dependent child. The maximum family benefit is $579.30 per month. Benefits to the widow cease upon death or when no longer caring for an eligible child. Benefits for dependent children cease upon marriage or age 18 (age 22 if a full time student).
Benefit Increases	Same as for retirement.

BASIC MEMBERS

Withdrawal

<u>*Refund of contribution*</u>

Age/Service requirements	Termination of Teaching Service.
Amount	Member's contributions earn 4.00% interest compounded annually. For vested members, a deferred annuity may be elected in lieu of a refund.

<u>*Deferred annuity*</u>

Age/Service Requirements	Seven years of Teaching Service
Amount	The benefit is computed under law in effect at termination and increased by the following percentage compounded annually: (a) 3.00% therefore until the earlier of January 1 of the year following attainment of age 55 and June 30, 2012; (b) 5.00% thereafter until the earlier of June 30, 2012 and when the annuity begins; and (c) 2.00% beginning July 1, 2012. In addition, the interest earned on the member and city contributions between termination and age 60 can be applied to provide an additional annuity.

COORDINATED MEMBERS

This summary of provisions reflects our interpretation of applicable Statutes for purposes of preparing this valuation. This interpretation is not intended to provide a basis for administering the Plan.

Plan year

July 1 through June 30

Eligibility

A public school or MNSCU teacher who is covered by the Social Security Act, except for teachers employed by St. Paul public schools or by the University of Minnesota. Charter school teachers employed by St. Paul or Duluth public schools are covered by TRA.

No MNSCU teacher will become a new Member unless that person elects coverage as defined by Minnesota Statutes under Chapter 354B.

Contributions

Shown as a percent of Salary:

Member	Employer
7.50%	7.50%

Employer also contributes Supplemental amount equal to 3.64% of Salary (members employed by Special School District #1 only).

After June 30, 2015, the member and employer contribution rates may be adjusted if there is a sufficiency of at least 1.00% or a deficiency of at least 0.50%. The Board has discretion to adjust this rate based on discussion with the actuary and consideration of various metrics. The resulting rate may not go below the normal cost plus administrative expenses.

Potential contribution increases after June 30, 2015 are not reflected in this valuation report.

Employee contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).

Teaching service

A year is earned during a calendar year if the member is employed in a covered position and employee contributions are deducted. Certain part-time service and military service is also included.

COORDINATED MEMBERS

Salary

Periodic compensation used for contribution purposes excluding lump sum annual or sick leave payments, severance payments, any payments made in lieu of employer paid fringe benefits or expenses, and employer contributions to a Section 457 deferred compensation plan.

Average salary

Average of the five highest successive years of Salary. Average salary is based on all Allowable Service if less than five years.

Retirement

Normal retirement

Age/Service requirements

First hired before July 1, 1989:

(a) Age 65 and three years of Allowable Service; or
(b) Age 62 and 30 years of Allowable Service.

Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.

First hired after June 30, 1989:

The age when first eligible for full Social Security retirement benefits (but not to exceed age 66) and three years of Allowable Service.

Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service.

Early retirement

Age/Service requirements

First hired before July 1, 1989:

(a) Age 55 and three years of Allowable Service; or
(b) Any age and 30 years of Allowable Service; or
(c) Rule of 90: Age plus Allowable Service totals 90.

First hired after June 30, 1989:

(a) Age 55 with three years of Allowable Service.

COORDINATED MEMBERS

Retirement(continued)

Amount

First hired before July 1, 1989:

The greater of (a), (b) or (c):

(a) 1.20% of Average Salary for each of the first ten years of Allowable Service.
1.70% of Average Salary for each year of Allowable Service in excess of 10 prior to July 1, 2006, and
1.90% of Average Salary for years of Allowable Service after July 1, 2006.
No actuarial reduction if age plus years of service totals 90. Otherwise reduction of 0.25% for each month the member is under age 65 (or 62 if 30 years of Allowable Service) at time of retirement.

(b) 1.70% of Average Salary for each year of Allowable Service prior to July 1, 2006 and 1.90% for each year of Allowable Service beginning July 1, 2006, assuming augmentation to normal retirement age at 3.00% per year (2.50% per year for members hired after June 30, 2006) and actuarial reduction for each month the member is under the full Social Security benefit retirement age (not to exceed age 66). Beginning July 1, 2015, new early retirement reduction factors will apply, including special factors for members retiring at age 62 or later with at least 30 years of service.

(c) For eligible members: the monthly benefit that is actuarially equivalent to 2.2 times the members' accumulated deductions plus interest thereon.

First hired after June 30, 1989:

1.70% of Average Salary for each year of Allowable Service prior to July 1, 2006 and 1.90% for each year of Allowable Service beginning July 1, 2006, assuming augmentation to normal retirement age at 3.00% per year (2.50% per year for members hired after June 30, 2006) and actuarial reduction for each month the member is under the full Social Security benefit retirement age (not to exceed age 66). Beginning July 1, 2015, new early retirement reduction factors will apply, including special factors for members retiring at age 62 or later with at least 30 years of service.

Early Retirement Reduction Factors

Age	Hired before 7/1/89	Hired from 7/1/89 to 6/30/06	Hired after 6/30/06
55	43.56%	51.55%	54.08%
58	33.59%	40.46%	42.74%
60	24.65%	30.75%	32.74%
62	13.68%	18.96%	20.53%
65	0.00%	4.21%	4.68%
66	0.00%	0.00%	0.00%

Members who are age 62 with 30 years of service are eligible for a special set of reduction factors:

Age	Hired before 7/1/89	Hired from 7/1/89 to 6/30/06	Hired after 6/30/06
62	10.40%	14.46%	16.11%
63	6.64%	10.40%	11.70%
64	3.18%	6.64%	7.55%
65	0.00%	3.18%	3.65%
66	0.00%	0.00%	0.00%

All of the early retirement reduction factors shown are the ultimate factors. These are being phased in from the prior factors over a five-year period beginning July 1, 2015.

Form of Payment

Life annuity. Actuarially equivalent options are:

(a) 50%, 75% or 100% Joint and Survivor with bounce back feature (option is canceled if member is predeceased by beneficiary).
(b) 15 year Certain and Life
(c) Guaranteed Refund.

COORDINATED MEMBERS

Retirement(continued)

Benefit increases	Under current law, the annual post-retirement increase on January 1 is 2.0 percent. When the funding ratio reaches 90 percent (on a market value of assets basis) for two consecutive years, the annual increase will rise to 2.5 percent. A benefit recipient who has been receiving a benefit for at least 12 full months as of the June 30 preceding the increase date will receive a full increase. Members receiving benefits for at least one full month but less than 12 full months as of the June 30 preceding the increase date will receive a prorated increase.

Disability

Age/service requirement	Total and permanent disability before Normal Retirement Age with three years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at disability without reduction for commencement before Normal Retirement Age unless an optional annuity plan is selected. Payments stop at Normal Retirement Age or the five year anniversary of the effective date of the disability benefit, whichever is later. Payments stop earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.
Form of *payment*	Same as for retirement.
Benefit increases	Same as for retirement.

Retirement after disability

Age/service requirement	Normal Retirement Age or the five year anniversary of the effective date of the disability benefit, whichever is later.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before Normal Retirement Age or the normal retirement benefit available at Normal Retirement Age, or an actuarially equivalent optional annuity.
Benefit increases	Same as for retirement.

COORDINATED MEMBERS

Death

<u>*Surviving spouse optional annuity*</u>

Age/Service requirements	Member or former member with three years of Allowable Service who dies before retirement or disability benefits commence.
Amount	Survivor's payment of the 100% Joint and Survivor benefit or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced for early retirement with half the applicable reduction factor used from age 55 to actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer.
Benefit increase	Same as for retirement.

Withdrawal

<u>*Refund of contributions*</u>

Age/Service requirements	Thirty days following termination of teaching service.
Amount	Member's contributions earn 4.00% interest compounded annually. For vested members, a deferred annuity may be elected in lieu of a refund.

<u>*Deferred annuity*</u>

Age/Service requirements	Vested at date of termination. Current requirement is three years of Allowable Service.

COORDINATED MEMBERS

Withdrawal (continued)

Amount

For members first hired prior to July 1, 2006, the benefit is computed under law in effect at termination and increased by the following percentage compounded annually:

(a) 3.00% therefore until the earlier of January 1 of the year following attainment of age 55 and June 30, 2012;
(b) 5.00% thereafter until the earlier of June 30, 2012 and when the annuity begins; and
(c) 2.00% from July 1, 2012 forward.

Amount is payable as a normal or early retirement.

A member who terminated service before July 1, 1997 whose benefit does not commence until after June 30, 1997 shall receive an actuarially equivalent increase to reflect the change from 5.00% to 6.00% in the post-retirement interest assumption; or

For eligible members; the monthly benefit that is actuarially equivalent to 2.2 times the members' accumulated deductions plus interest thereon.

For members first hired July 1, 2006 and after, the benefit computed under law in effect at termination is increased by 2.50% compounded annually until June 30, 2012 and increased by 2.00% from July 1, 2012 forward until the annuity begins.

APPENDIX C

STATEMENT OF ACTUARIAL ASSUMPTIONS

AS OF JULY 1, 2015

The following assumptions were used in valuing the liabilities and benefits under the plan. All assumptions, other than the long-term assumed rate of return, are based on those prescribed for funding purposes by Statutes, the LCPR, or the Board of Trustees. These assumptions are based on the experience study dated October 30, 2009. A comprehensive experience study was performed in 2015 and a number of assumption changes were proposed, with an implementation date of July 1, 2016, to give both the Minnesota Legislature and the Legislative Commission on Pensions and Retirement time to review the proposed changes and to take action as necessary. Because of the intentional delay and pending discussion, the proposed assumption changes are not reflected in this report. However, TRA management selected 8.0% for the long term rate of return for GASB 67 measurement purposes.

The Allowance for Combined Service Annuity was based on the recommendation of a prior actuary. We are unable to judge the reasonableness of this assumption without performing a substantial amount of additional work beyond the scope of this assignment.

Investment Return (Long-term Assumed Rate of Return)	For funding purposes in July 1, 2015 valuation: 8.44% compounded annually to reflect an 8.0% assumption for two (2) years and 8.5% thereafter. For GASB 67 purposes: 8.00% for June 30, 2015 measurement date.
Future post-retirement adjustments	Once the funded ratio reaches 90% on a market value basis for two consecutive years, the COLA is scheduled by statute to increase from 2.0% to 2.5%. Future assets and liabilities were projected using the 2015 actuarial funding valuation results as a starting point and assuming all actuarial assumptions are met in future years. These assumptions include a rate of return on assets of 8.0% for the next two years and 8.5% thereafter. In particular, there is no assumption that the stabilizer provisions will be utilized by the Board. Based on this methodology, the increased COLA is expected to be implemented with the July 1, 2037 (no increase is expected for GASB 67/68 purposes) valuation. For the July 1, 2014 valuations, the COLA was expected to increase to 2.5% with the July 1, 2031 valuation (2034 for GASB 67/68 purposes).
Salary Increases	Reported salary for prior fiscal year, with new hires annualized, is increased according to the salary increase table shown in the rate table for current fiscal year and annually for each future year. See table of sample rates.
Payroll Growth	3.75% per year
Future Service	Members are assumed to earn future service at a full-time rate.

Summary of Actuarial Assumptions *(continued)*

Mortality:	***Pre-retirement***	RP 2000 non-annuitant generational mortality, white collar adjustment, male rates set back 5 years and female rates set back 7 years.
	Post-retirement	RP 2000 annuitant generational mortality, white collar adjustment, male rates set back 2 years and female rates set back 3 years.
	Post-disability	RP 2000 disabled retiree mortality, without adjustment

Disability

Age-related rates based on experience; see table of sample rates.

Withdrawal

Select and ultimate rates based on actual plan experience. Ultimate rates after the third year are shown in the rate table. Select rates are as follows:

	First Year	Second Year	Third Year
Male	45%	12%	6%
Female	40%	10%	8%

Expenses

Prior year administrative expenses expressed as percentage of prior year payroll.

Retirement Age

Graded rates beginning at age 55 as shown in rate table. Members who have attained the highest assumed retirement age will retire in one year.

Percentage Married

85% of male members and 65% of female members are assumed to be married. Members are assumed to have no children.

Age Difference

Females two years younger than males.

Allowance for Combined Service Annuity

Liabilities for active members are increased by 1.40% and liabilities for former members are increased by 4.00% to account for the effect of some Participants being eligible for a Combined Service Annuity.

Refund of Contributions

All employees withdrawing after becoming eligible for a deferred benefit are assumed to take the larger of their contributions accumulated with interest or the value of their deferred benefit.

Interest on member contributions

Members and former members who are eligible for the money purchase annuity are assumed to receive interest credits equal to the Pre-Retirement interest rate. All other members and former members receive the interest crediting rate as specified in statutes.

Commencement of deferred benefits

Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at unreduced retirement age.

Summary of Actuarial Assumptions *(continued)*

Form of payment	Married members are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 10% elect 50% J&S option 15% elect 75% J&S option 70% elect 100% J&S option Females: 20% elect 50% J&S option 10% elect 75% J&S option 50% elect 100% J&S option Members eligible for deferred annuities (including current terminated deferred members) and future disability benefits are assumed to elect a life annuity.
Missing data for members	Membership data was supplied by TRA as of the valuation date. This information has not been audited by CMC. We have reviewed the information for internal consistency and we have no reason to doubt its substantial accuracy. In the small number of cases where submitted data was missing or incomplete and could not be recovered from prior years, the following assumptions were applied, if needed:

Data for active members:

Salary, Service, and Date of Birth	Based on current active demographics.
Gender	Female

Data for terminated members:

Date of birth	July 1, 1964
Average salary	$37,000
Date of termination	Derived from date of birth, original entry age, and service

Data for in-pay members:

Beneficiary date of birth	Wife two years younger than husband
Gender	Based on first name
Form of payment	Life annuity for retirees and beneficiaries, 100% J&S option for disabled retirees.

Summary of Actuarial Assumptions *(continued)*

	Rate (%)			
	Ultimate Withdrawal		Disability	
Age	Male	Female	Male	Female
20	3.70	4.50	0.00	0.00
25	3.20	4.50	0.00	0.00
30	2.70	4.50	0.00	0.00
35	2.50	3.90	0.01	0.01
40	2.35	2.75	0.03	0.03
45	2.10	2.10	0.05	0.05
50	1.85	1.85	0.10	0.10
55	0.00	0.00	0.16	0.16
60	0.00	0.00	0.25	0.25
65	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00

	Mortality Rates (%)					
	Pre-Retirement*		Post-Retirement**		Post-Disability	
Age	Male	Female	Male	Female	Male	Female
20	0.0269	0.0155	0.0316	0.0184	2.2571	0.7450
25	0.0345	0.0188	0.0373	0.0194	2.2571	0.7450
30	0.0376	0.0197	0.0393	0.0223	2.2571	0.7450
35	0.0353	0.0235	0.0481	0.0363	2.2571	0.7450
40	0.0591	0.0401	0.0766	0.0527	2.2571	0.7450
45	0.0890	0.0562	0.1124	0.0763	2.2571	0.7450
50	0.1342	0.0837	0.1711	0.1229	2.8975	1.1535
55	0.1978	0.1344	0.5716	0.2681	3.5442	1.6544
60	0.2747	0.2015	0.5688	0.4253	4.2042	2.1839
65	0.4263	0.3107	0.9232	0.6736	5.0174	2.8026
70	0.6725	0.4979	1.5834	1.1211	6.2583	3.7635
75	0.9823	0.7591	2.6710	1.8784	8.2067	5.2230

* *Rates shown are RP 2000 employee mortality (base), white collar adjustment, set back 5 years for males and 7 years for females.*

** *Rates shown are RP 2000 annuitant mortality (base), white collar adjustment, set back 2 years for males and 3 years for females.*

Summary of Actuarial Assumptions *(continued)*

Salary Scale	
Service	**Salary Increase**
1	12.00%
2	9.00%
3	8.00%
4	7.50%
5	7.25%
6	7.00%
7	6.85%
8	6.70%
9	6.55%
10	6.40%
11	6.25%
12	6.00%
13	5.75%
14	5.50%
15	5.25%
16	5.00%
17	4.75%
18	4.50%
19	4.25%
20	4.00%
21	3.90%
22	3.80%
23	3.70%
24	3.60%
25 or more	3.50%

Summary of Actuarial Assumptions *(continued)*

	Retirement Rate (%)				
Age	**Coordinated Members Eligible for Rule of 90**	**Coordinated Members Not Eligible for Rule of 90**	**Age**	**Basic Members Eligible for 30 and Out Provision**	**Basic Members Not Eligible for 30 and Out Provision**
55 & Under	50	7	55 & Under	40	5
56	55	7	56	40	5
57	45	7	57	40	5
58	45	8	58	40	5
59	45	10	59	40	5
60	40	12	60	25	25
61	45	16	61	25	25
62	45	20	62	25	25
63	40	18	63	25	25
64	45	20	64	25	25
65	40	40	65	40	40
66	35	35	66	40	40
67	30	30	67	40	40
68	30	30	68	40	40
69	30	30	69	40	40
70	35	35	70-74	60	60
71 & Over	100	100	75-79	60	100
			80 & Over	100	100