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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





Cavanaugh Macdonald

CONSULTING, LLC

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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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Ms. Hacking
December 15, 2015
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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,

A handwritten signature in blue ink that reads 'Patrice Beckham' in a cursive script.

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

A handwritten signature in blue ink that reads 'Brent A. Banister' in a cursive script.

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



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REPORT OF THE ANNUAL GASB STATEMENT NO. 67

**REQUIRED INFORMATION FOR THE
TEACHERS RETIREMENT ASSOCIATION OF MINNESOTA**

PREPARED AS OF JUNE 30, 2015

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	<u>79,406</u>
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)	<u>20,446,091</u>
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	<u>20,446,091</u>
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	<u>2%</u>	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	<u>(1,669,607)</u>	<u>(1,592,686)</u>
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	<u>(1,669,607)</u>	<u>(1,592,686)</u>
Administrative expenses	<u>(11,509)</u>	<u>(9,430)</u>
Other	<u>3,550</u>	<u>3,855</u>
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	<u>340,208</u>	<u>299,300</u>	<u>270,708</u>	<u>244,935</u>	<u>222,723</u>	<u>220,538</u>	<u>220,270</u>	<u>209,717</u>	<u>187,339</u>	<u>179,022</u>
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)	<u>113,440</u>	<u>172,430</u>	<u>173,126</u>	<u>135,064</u>	<u>140,710</u>	<u>179,725</u>	<u>114,471</u>	<u>48,765</u>	<u>20,423</u>	<u>(66,897)</u>
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:

<u>Member</u>	<u>Employer</u>
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

Normal retirement

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.

Early retirement

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.

Form of payment

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).

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.



BASIC MEMBERS

Disability

<i>Age/service requirement</i>	Total and permanent disability with three years of Teaching Service
<i>Amount</i>	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.
<i>Form of payment</i>	Same as for retirement.
<i>Benefit increases</i>	Same as for retirement.

Death

Benefit A

<i>Age/Service requirements</i>	Choice of Benefit A, Benefit B or Benefit C Death before retirement.
<i>Amount</i>	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

<i>Age/Service requirements</i>	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.
<i>Amount</i>	The actuarial equivalent of any benefits the member could have received if resignation occurred on the date of death.

Benefit C

<i>Age/Service requirements</i>	As an active member who dies and leaves surviving children.
<i>Amount</i>	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).
<i>Benefit Increases</i>	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:

<u>Member</u>	<u>Employer</u>
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

Surviving spouse optional annuity

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

Refund of contributions

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.

Deferred annuity

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.

<i>Investment Return (Long-term Assumed Rate of Return)</i>	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.
<i>Future post-retirement adjustments</i>	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).
<i>Salary Increases</i>	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.
<i>Payroll Growth</i>	3.75% per year
<i>Future Service</i>	Members are assumed to earn future service at a full-time rate.



Summary of Actuarial Assumptions *(continued)*

<i>Mortality:</i>	<i>Pre-retirement</i>	RP 2000 non-annuitant generational mortality, white collar adjustment, male rates set back 5 years and female rates set back 7 years.												
	<i>Post-retirement</i>	RP 2000 annuitant generational mortality, white collar adjustment, male rates set back 2 years and female rates set back 3 years.												
	<i>Post-disability</i>	RP 2000 disabled retiree mortality, without adjustment												
<i>Disability</i>		Age-related rates based on experience; see table of sample rates.												
<i>Withdrawal</i>		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:												
		<table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>First Year</u></th> <th style="text-align: center;"><u>Second Year</u></th> <th style="text-align: center;"><u>Third Year</u></th> </tr> </thead> <tbody> <tr> <td>Male</td> <td style="text-align: center;">45%</td> <td style="text-align: center;">12%</td> <td style="text-align: center;">6%</td> </tr> <tr> <td>Female</td> <td style="text-align: center;">40%</td> <td style="text-align: center;">10%</td> <td style="text-align: center;">8%</td> </tr> </tbody> </table>		<u>First Year</u>	<u>Second Year</u>	<u>Third Year</u>	Male	45%	12%	6%	Female	40%	10%	8%
	<u>First Year</u>	<u>Second Year</u>	<u>Third Year</u>											
Male	45%	12%	6%											
Female	40%	10%	8%											
<i>Expenses</i>		Prior year administrative expenses expressed as percentage of prior year payroll.												
<i>Retirement Age</i>		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.												
<i>Percentage Married</i>		85% of male members and 65% of female members are assumed to be married. Members are assumed to have no children.												
<i>Age Difference</i>		Females two years younger than males.												
<i>Allowance for Combined Service Annuity</i>		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.												
<i>Refund of Contributions</i>		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.												
<i>Interest on member contributions</i>		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.												
<i>Commencement of deferred benefits</i>		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)

<u>Age</u>	Rate (%)			
	Ultimate Withdrawal		Disability	
	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

<u>Age</u>	Mortality Rates (%)					
	Pre-Retirement*		Post-Retirement**		Post-Disability	
	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 (%)					
	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