Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

Teachers Retirement Association of Minnesota

Actuarial Valuation Report
As of July 1, 2012

www.CavMacConsulting.com

This page is intentionally left blank

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

November 29, 2012

Board of Trustees
Teachers Retirement Association of Minnesota
60 Empire Drive, Suite 400
St. Paul, MN 55103

Dear Board Members:

At your request, we have performed the annual actuarial valuation of the Teachers Retirement Association of Minnesota (TRA or System) as of July 1, 2012. The major findings of the actuarial valuation are contained in this report, which reflects the benefit provisions in place on July 1, 2012. There was no change to the actuarial methods or the plan provisions from the prior valuation. However, the 2012 Omnibus Retirement Bill, which was passed by the 2012 legislature and signed into law by the Governor in May, changed the investment return assumption (also called the discount rate) from 8.5% for all years to 8.0% for the next five years, and 8.5% thereafter. Additionally, there was a change in the methodology used to determine vesting status for certain inactive members without a date of termination in the census data.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by TRA staff. This information includes, but is not limited to, statutory provisions, member data and financial information. We found this information to be reasonable and comparable to information used in prior valuations. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete, our results may be different and our calculations may need to be revised.

The statutory benefits of the System are reflected in the actuarially calculated contribution rates which are developed using the Entry Age Normal (EAN) cost method. An asset smoothing method is used for actuarial valuation purposes. Gains and losses are reflected in the unfunded actuarial accrued liability and are amortized as a level percent of payroll over a closed period set in state statutes. Actuarial assumptions, including discount rates, mortality tables and others identified in this report, are prescribed by Minnesota Statutes Section 356.215, the Legislative Commission on Pensions and Retirement (LCPR), and the Trustees. These parties are responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation method, and actuarial assumptions. The policies, methods and assumptions used in this valuation are those that have been so prescribed and are described in Appendix C of this report.

Future actuarial results may differ significantly from the current results presented in this report due to factors such as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of potential results is not presented herein.

Some actuarial computations presented in this report are for purposes of determining the required contribution amounts for funding the System. Other actuarial computations presented in this report, those under GASB Statement No. 25, are for purposes of fulfilling financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements, the plan provisions described in Appendix B of this report, and of GASB Statement No. 25. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement System. In addition, to the best of our knowledge and belief the valuation was performed in accordance with the requirements of Minnesota Statues, Section 356.215, and the requirements of the Standards for Actuarial Work established by the State of Minnesota Legislative Commission on Pensions and Retirement (LCPR). We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein. Also, we meet the requirements of "approved actuary" under Minnesota Statues, Section 356.215, Subdivision 1, Paragraph (c).

Respectfully submitted,

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

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

TABLE OF CONTENTS

Sections **Page**

This page is intentionally left blank

SECTION 1 – EXECUTIVE SUMMARY

The Teachers Retirement Association of Minnesota (TRA or System) provides retirement, disability, and death benefits to Minnesota public school teachers, administrators, and college faculty. This report presents the results of the July 1, 2012 actuarial valuation of the System. The primary purposes of performing the actuarial valuation are to:

- determine the Required Contribution Rate as set forth in Chapter 356 of the Minnesota statutes;
- determine the sufficiency of the Statutory Contribution Rate as set forth in Chapter 354 of the Minnesota statutes;
- determine the experience of the System since the last valuation date;
- disclose asset and liability measures as of the valuation date; and
- analyze and report on trends in System contributions, assets, and liabilities over the past several years.

There was no change in the actuarial methods used in the actuarial valuation or in the benefit provisions from the prior valuation. However, legislation passed in 2012 changed the investment return assumption from 8.5% for all years to 8.0% for the next five years, and 8.5% thereafter (referred to as a select and ultimate investment return assumption). Additionally, there was a change in the methodology used to determine the vesting status for certain inactive members without a date of termination in the census data. The combined impact of these changes was an increase in the unfunded actuarial accrued liability of $142 million, an increase in the normal cost rate of 0.35% of payroll (from 8.18% to 8.53%), and an increase in the Required Contribution Rate of 0.60% of payroll.

The actuarial valuation results provide a "snapshot" view of the System's financial condition on July 1, 2012. The results reflect net unfavorable experience for the past plan year as demonstrated by an unfunded actuarial accrued liability (UAAL) that was higher than expected. The UAAL on July 1, 2012 is $6.219 billion as compared to an expected UAAL of $5.441 billion. The unfavorable experience was the combination of an experience loss of $752 million on the actuarial value of assets and a small net experience loss of about $26 million on System liabilities. With the experience loss on the actuarial value of assets this year, there is a now a deferred loss of $119 million.

A summary of the key results from the July 1, 2012 actuarial valuation is shown below. Further detail on the valuation results can be found in the following sections of this Executive Summary. The contribution deficiency does not reflect the member and employer contribution increases scheduled to occur on July 1, 2013 and July 1, 2014. After the scheduled contribution increases are fully phased in, the statutory contribution rate will be 2% of payroll higher than the rate in the current fiscal year.

	July 1, 2012 Valuation Results	July 1, 2011 Valuation Results
Total Required Contribution Rate (Chapter 356)	18.75%	16.57%
Statutory Contribution Rate (Chapter 354)	13.71%	12.69%
Sufficiency/(Deficiency)	(5.04%)	(3.88%)
Unfunded Actuarial Accrued Liability ($M)	$6,219	$5,039
Funded Ratio (Actuarial Assets)	72.99%	77.27%

The contribution deficiency increased from 3.88% of payroll in last year's valuation to 5.04% of payroll in the 2012 valuation. The increase in the deficiency was due largely to the experience loss on the actuarial value of assets and the change in the investment return assumption. The impact of these factors was partially offset by the increase in member and employer contribution rates of 0.50% each.

EXPERIENCE FOR THE LAST PLAN YEAR

Numerous factors contributed to the change in the Systems' assets, liabilities and actuarial contribution rate between July 1, 2011 and July 1, 2012. The components are examined in the following discussion.

ASSETS

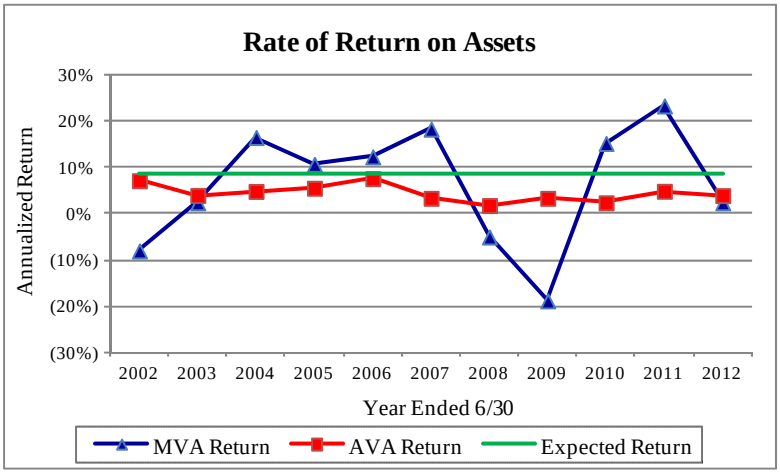
As of June 30, 2012, TRA had net assets of $16.7 billion, when measured on a market value basis. This was a decrease of $0.6 billion from the prior year.

The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the Required Contribution Rate (actuarial contribution rate). An asset valuation method, which smoothes the effect of market fluctuations, is used to determine the value of assets used in the valuation. The resulting amount is called the "actuarial value of assets". In this year's valuation, the actuarial value of assets as of June 30, 2012 was $16.8 billion, a decrease of $300 million from the value in the prior year. The components of change in the asset values are shown in the following table:

	Market Value ($M)		Actuarial Value ($M)	
Net Assets, June 30, 2011	$	17,297	$	17,132
- Employer and Member Contributions	+	506	+	506
- Benefit Payments and Administrative Expenses	-	1,507	-	1,507
- Investment Income	+	390	+	674
Net Assets, June 30, 2012	$	16,686	$	16,805

On a market value basis, the rate of return was 2.4% as reported by the State Board of Investment (SBI). The rate of return, net of investment expenses, measured on the actuarial value of assets was approximately 4.0%.

Please see Section II of this report for more detailed information on the market and actuarial value of assets.



Market value returns have been very volatile. An asset smoothing method is used to calculate the actuarial value of assets that recognizes investment gains and losses equally over a five year period. As can be seen in this graph, the return on actuarial assets is much smoother than the return on market value.

LIABILITIES

The actuarial accrued liability is that portion of the present value of future benefits that will not be paid by future normal costs. The difference between this liability and the actuarial value of assets at the same date is called the unfunded actuarial accrued liability (UAAL). The dollar amount of unfunded actuarial accrued liability is reduced if the contributions to the System exceed the normal cost for the year plus interest on the prior year's UAAL.

The unfunded actuarial accrued liability is shown as of July 1, 2012 in the following table:

	Actuarial Value of Assets	Market Value of Assets
($Millions)		
Actuarial Accrued Liability	$23,025	$23,025
Value of Assets	$16,805	$16,686
Unfunded Actuarial Accrued Liability*	$6,219	$6,338
Funded Ratio	72.99%	72.47%

*Numbers may not add due to rounding

See Section III of the report for the detailed development of the unfunded actuarial accrued liability.

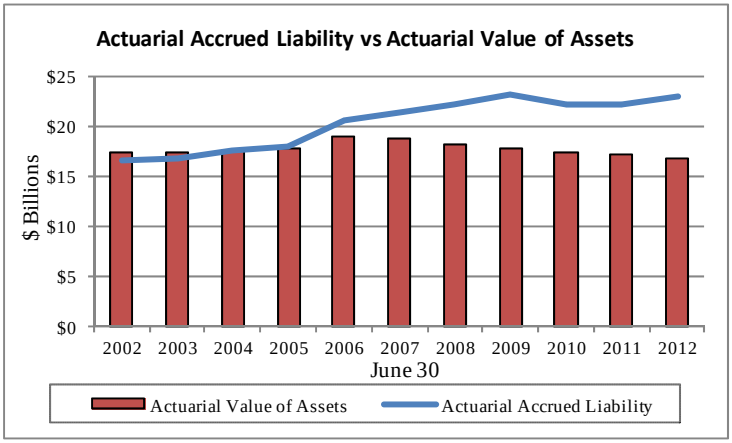
Changes in the UAAL occur for various reasons. The net change in the UAAL from July 1, 2011 to July 1, 2012 was $1.18 billion. The components of this net change are shown in the table below (in millions):

Unfunded Actuarial Accrued Liability, July 1, 2011 ($M)	$5,039
• Expected increase from amortization method	79
• Expected increase from contributions below Required Rate	166
• Investment experience	752
• Liability experience	26
• Other experience	15
• Change in methodology for vested inactive status	(54)
• Change in investment return assumption	196
Unfunded Actuarial Accrued Liability, July 1, 2012	$6,219

As shown above, various components impacted the UAAL. The most significant factors were: (1) the increase in the UAAL due to the loss on the actuarial value of assets ($752 million), (2) the increase due to changes in the investment return assumption ($196 million), and (3) the increase due to contributions below the Required Rate ($166 million).

Actuarial gains (losses), which result from actual experience that is more (less) favorable than anticipated based on the actuarial assumptions, are reflected in the UAAL and are measured as the difference between the expected

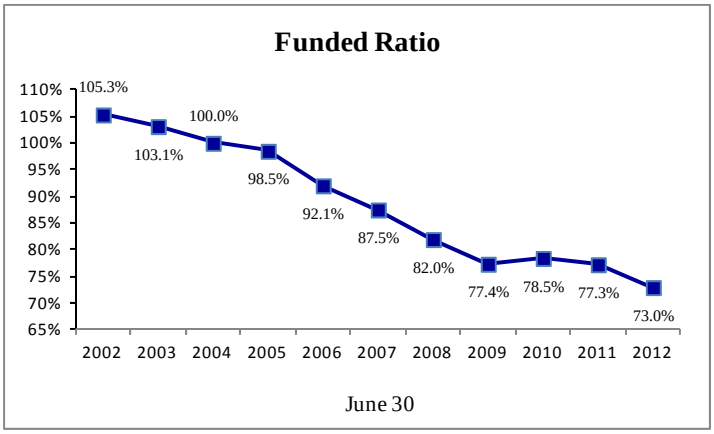
unfunded actuarial accrued liability and the actual unfunded actuarial accrued liability, taking into account any changes due to actuarial assumptions and methods or benefit provision changes. Overall, the System experienced a net actuarial loss of $778 million. The net actuarial loss may be explained by considering the separate experience of assets and liabilities. As noted earlier, there was a $752 million loss, measured on the actuarial value of assets. In addition, there was a liability loss of $26 million which arose from demographic experience in FY 2012 less favorable than anticipated by the actuarial assumptions. The liability loss was the result of various components of actuarial gains and losses, the largest of which was a gain from salary increases that were lower than the expected amounts.



The actuarial value of assets was slightly higher than the actuarial accrued liability in the early part of the period. Investment experience below the assumed rate of return of 8.5%, the merger of the Post Fund into TRA, and the merger of the Minneapolis Teachers Retirement Fund Association all served to increase the difference between the actuarial accrued liability and actuarial assets.

An evaluation of the unfunded actuarial accrued liability on a pure dollar basis may not provide a complete analysis since only the difference between the assets and liabilities (which are both very large numbers) is reflected. Another way to evaluate the unfunded actuarial accrued liability and the progress made in its funding is to track the funded ratio, the ratio of the actuarial value of assets to the actuarial accrued liability. The funded status information is shown below (in millions).

	7/1/08	7/1/09	7/1/10	7/1/11	7/1/12
Funded Ratio	82.0%	77.4%	78.5%	77.3%	73.0%
Unfunded Actuarial Accrued Liability ($M)	$4,004	$5,232	$4,758	$5,039	$6,219



The funded ratio has decreased over this period largely due to investment experience less than the 8.5% assumed rate of return and the dissolution of the Minnesota Post Retirement Investment Fund (MPRIF) with the associated transfer of assets and liabilities to TRA. The benefit reductions passed by the 2010 legislature along with strong investment returns in FY10 and FY11 stabilized the funded ratio in those years. A return on actuarial assets below the assumed rate of 8.5% in FY 2012 resulted in a reduction in the funded ratio in the current valuation.

SECTION 1 – EXECUTIVE SUMMARY

CONTRIBUTION RATE

Under the Entry Age Normal cost method, the actuarial contribution rate consists of two components:

- a "normal cost" for the portion of projected liabilities allocated by the actuarial cost method to service of members during the year following the valuation date, and
- an "unfunded actuarial accrued liability contribution" for the excess of the portion of projected liabilities allocated to service to date over the actuarial value of assets.

See Section IV of the report for the detailed development of these rates which are summarized in the following table:

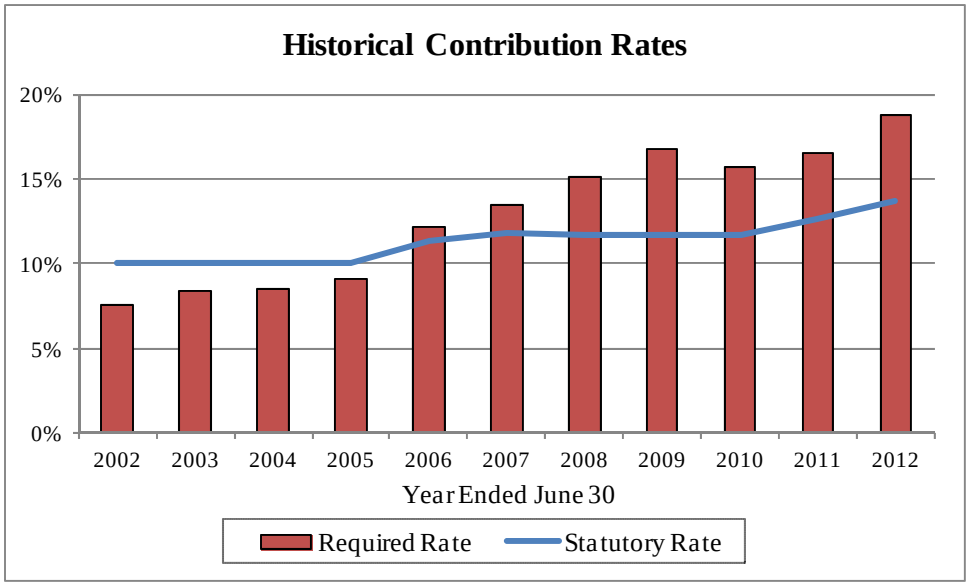
Contribution Rates	July 1, 2012	July 1, 2011
1. Statutory Contribution Rate	13.71%	12.69%
2. Normal Cost Rate	8.53%	8.17%
3. UAAL Contribution Rate	9.98%	8.16%
4. Expenses	0.24%	0.24%
5. Total Required Contribution Rate	18.75%	16.57%
6. Deficiency (1) - (5)	(5.04%)	(3.88%)

As discussed earlier, there were two changes first reflected in this valuation: (1) the investment return assumption was changed from 8.5% for all years to 8.0% for five years and 8.5% thereafter (select and ultimate), and (2) the methodology used to determine the vesting status for certain inactive members without a date of termination in the census data. The impact on the valuation results is summarized in the table below. All calculations shown are based on the actuarial value of assets.

	Before Changes	After Changes	Impact of Changes
Projected Benefit Funding Ratio	93.7%	92.3%	(1.4%)
Actuarial Accrued Liability Funding Ratio (AVA)	73.9%	73.0%	(0.9%)
Actuarial Value of Assets (AVA)	$ 16.81B	$ 16.81B	$ 0.00B
Unfunded Actuarial Accrued Liability (UAAL)	$ 6.08B	$ 6.22B	$ 0.14B
Normal Cost Rate (% of pay)	8.18%	8.53%	0.35%
Amortization of UAAL (% of pay)	9.73%	9.98%	0.25%
Expenses (% of pay)	0.24%	0.24%	0.00%
Total Required Contribution (% of pay)	18.15%	18.75%	0.60%
Contribution Deficiency (% of pay)	(4.44%)	(5.04%)	(0.60%)

The increase in the Total Required Contribution due to the changes is 0.60% of pay. The rate decreased 0.09% from the change in methodology for the vesting status determination, and increased 0.69% from the change in the investment return assumption.

A historical summary of the Statutory and Required Contribution Rates is shown in the graph below:



When the Statutory Contribution Rate is less than the Required Contribution Rate, the contribution deficiency creates an increase in the unfunded actuarial accrued liability. For the plan year ending June 30, 2012 the contribution deficiency increased the UAAL by $166 million.

The actuarial contribution rate (Required Contribution Rate) is determined based on the snapshot of the System taken on the valuation date, July 1, 2012. The actuarial contribution rate in future years will change each year as the deferred actuarial investment experience is recognized and other experience (both investment and demographic) impacts the System. Both the employer and employee contribution rates are scheduled to increase in future years. The rate will increase a total of 1% (0.5% employee and 0.5% employer) on July 1, 2013 and July 1, 2014, a total increase of 2% of payroll from the current contribution rate. Even when these increases are considered a contribution deficiency still exists, indicating the UAAL will not be amortized by 2037 if all actuarial assumptions are met. It should be noted, however, that the Board will have the option to increase contribution rates further (the "stabilizer" provisions of the 2010 law), and that if rates are changed, the UAAL may then be amortized by 2037.

SUMMARY

The investment return on the market value of assets for FY2012 was 2.4% as reported by SBI. However, due to the deferred investment gains and losses from past years, the return on the actuarial value of assets was 4.0%. The actuarial value of assets is slightly higher than the market value of assets, compared to last year when the actuarial value was slightly less than the market value. With the lower return on the actuarial value of assets, the funded ratio decreased from 77.27% in last year's valuation to 72.99% this year.

As mentioned earlier, the System utilizes an asset smoothing method in the valuation process. While this is a common procedure for public retirement systems, it is important to identify the potential impact of the deferred investment experience. The asset smoothing method impacts only the timing of when the actual market experience is recognized in the valuation process. The deferred investment experience of $119 million represents less than 1% of the market value of assets.

SECTION 1 – EXECUTIVE SUMMARY

The key valuation results from the July 1, 2012 actuarial valuation are shown below, using both actuarial and market value of assets.

	Actuarial Value	Market Value
Statutory Rate	13.71%	13.71%
Required Contribution		
Normal Cost	8.53%	8.53%
UAAL Contribution	9.98%	10.17%
Expenses	0.24%	0.24%
Total Required Contribution	18.75%	18.94%
Deficiency	(5.04%)	(5.23%)
UAAL ($M)	$6,219	$6,338
Funded Ratio	72.99%	72.47%

The long-term financial health of this retirement System, and all retirement systems, is heavily dependent on two key items: (1) future investment returns and (2) contributions to the System. Changes were made by the 2010 Legislature to strengthen the funding of TRA and enhance its long term sustainability. Contributions were increased by a total of 4%, to be phased in over four years beginning July 1, 2011, and benefit reductions were implemented. These changes, along with strong investment performance in two of the last three fiscal years, have significantly improved the projected long term funding of the System. However, a contribution deficiency still exists even when future scheduled contribution increases are considered. Given the current funded status, the deferred investment experience and scheduled increases in the Statutory Contribution Rate, the System's funded ratio is expected to remain around 70% over the long term, even if all actuarial assumptions are met. In order for the funded ratio to reach 100% by June 30, 2037 contributions would have to increase beyond the scheduled rates, benefits would have to be lowered or favorable experience would have to occur.

We conclude this executive summary by presenting comparative statistics and actuarial information on both the July 1, 2012 and July 1, 2011 valuations.

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows.

	Actuarial Valuation as of	
	July 1, 2012	**July 1, 2011**
1. PARTICIPANT DATA		
A. Active members		
1. Number	76,649	76,755
2. Projected annual earnings for fiscal year *(000s)*	4,146,325	4,106,922
3. Average projected annual earnings for fiscal year 2013	54,095	53,507
4. Average age	43.5	43.5
5. Average service	12.0	12.0
B. Service retirements	50,780	49,079
C. Survivors	4,054	3,856
D. Disability retirements	591	602
E. Deferred retirements	12,201	13,237
F. Terminated other non-vested	27,591	25,196
G. Total	**171,866**	**168,725**
2. LIABILITIES AND FUNDING RATIOS *(dollars in thousands)*		
A. Accrued Benefit Funding Ratio		
1. Current assets (AVA)	$ 16,805,077	$ 17,132,383
2. Current benefit obligations	21,908,767	21,054,036
3. Funding ratio	76.70%	81.37%
B. Actuarial Accrued Liability Funding Ratio		
1. Current assets (AVA)	$ 16,805,077	$ 17,132,383
2. Market value of assets (MVA)	16,686,105	17,297,392
3. Actuarial accrued liability	23,024,505	22,171,493
4. Unfunded actuarial accrued liability *(B.3. - B.1.)*	6,219,428	5,039,110
5. Funding ratio (AVA) *(B.1. / B.3.)*	72.99%	77.27%
6. Funding ratio (MVA) *(B.2. / B.3.)*	72.47%	78.02%
C. Projected Benefit Funding Ratio		
1. Current and expected future assets	$ 24,130,838	$ 22,686,711
2. Current and expected future benefit obligations	26,142,509	25,083,218
3. Funding ratio (AVA)	92.30%	90.45%
3. CONTRIBUTIONS *(% of Payroll)*		
A. Normal Cost Rate	8.53%	8.17%
B. UAAL Amortization Payment	9.98%	8.16%
C. Expenses	0.24%	0.24%
D. Total Required Contribution (Chapter 356)	18.75%	16.57%
E. Statutory Contribution (Chapter 354)	13.71%	12.69%
F. Contribution (Deficiency)/Sufficiency *(3.E. - 3.D.)*	(5.04%)	(3.88%)

SECTION II

PLAN ASSETS

This page is intentionally left blank

SECTION II - PLAN ASSETS

In this section, the values assigned to the assets held by the System are presented. These assets are valued on two different bases: the market value and the actuarial value.

Market Value of Net Assets

For certain accounting statement purposes, System assets are valued at current market prices. These values represent the "snapshot" of the fair value of System assets as of the valuation date.

Actuarial Value of Net Assets

The market value of assets may not necessarily be the best measure of the System's ongoing ability to meet its obligations.

To arrive at a suitable value for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens volatility in the market value while still indirectly recognizing market value. The methodology used to determine the actuarial value of assets is prescribed in Minnesota Statutes, Section 356.215, Subdivision 1, Paragraph (f). The assets are valued based on a five-year moving average of expected and market values (five-year average actuarial value) determined as follows:

- At the end of each plan year, an average asset value is calculated as the average of the market asset value at the beginning and end of the fiscal year net of investment income for the fiscal year;
- The investment gain or (loss) is determined as the excess of actual investment income over the expected investment income based on the average asset value as calculated above;
- The investment gain or (loss) so determined is recognized over five years at 20% per year;
- The asset value is the sum of the market value plus the scheduled recognition of investment gains or (losses) during the current and the preceding four fiscal years. The Minnesota Post Retirement Investment Fund (MPRIF) was dissolved on June 30, 2009. For the purpose of determining the actuarial value of assets, the MPRIF asset loss for the fiscal year ending June 30, 2009 is recognized incrementally over five years at 20% per year, similar to the smoothing described above. Prior to June 30, 2009, MPRIF asset gains and losses were not smoothed.

TABLE 1

STATEMENT OF PLAN NET ASSETS AT MARKET VALUE

(Dollars in Thousands)

	June 30, 2012 Amount	June 30, 2011 Amount
Cash and short-term investments		
Cash	$ 7,393	$ 4,277
Building account cash	29	59
Short term investments	320,809	464,404
Total cash and short term investments	$ 328,231	$ 468,740
Receivables	14,854	15,624
Investments (at fair value)		
Fixed income pool	$ 3,716,922	$ 3,821,522
Minneapolis pool	174	196
Alternative investments pool	2,609,840	2,530,478
Indexed equity pool	2,714,967	3,076,747
Domestic equity pool	4,829,112	4,675,143
Global equity pool	2,481,316	2,723,272
Total investments	$ 16,352,331	$ 16,827,358
Securities lending collateral	$ 1,515,373	$ 1,185,570
Building		
Land	$ 171	$ 171
Building and equipment	11,279	11,279
- Reserve for building depreciation	(3,110)	(2,821)
Deferred bond charge	146	146
- Reserve for deferred bond charge amortization	(55)	(50)
Total building	$ 8,431	$ 8,725
Fixed assets net of accumulation depreciation	4,350	2,815
Total Assets	**$ 18,223,570**	**$ 18,508,832**

TABLE 1 (continued)

STATEMENT OF PLAN NET ASSETS AT MARKET VALUE

(Dollars in Thousands)

	June 30, 2012	June 30, 2011
Liabilities	Amount	Amount
Current		
Accounts payable	$ 8,741	$ 9,863
Accrued compensated absences	82	68
Accrued expenses - building	3	61
Bonds payable	284	265
Bonds interest payable	41	43
Securities lending collateral	1,515,372	1,185,570
Total current liabilities	$ 1,524,523	$ 1,195,870
Long term		
Accrued compensated absences	$ 688	$ 673
Accrued OPEB liability*	45	57
Bonds payable	8,373	8,656
Total long term liabilities	$ 9,106	$ 9,386
Total Liabilities	**$ 1,533,629**	$ **1,205,256**
Net assets held in trust for pension benefits	**$ 16,689,941**	**$ 17,303,576**
Earnings Limitation Savings Account (ELSA) accounts payable	(3,836)	(6,184)
Net assets held in trust, after adjustment for ELSA accounts	**$ 16,686,105**	$ **17,297,392**

** Provided by TRA*

TABLE 2

RECONCILIATION OF PLAN ASSETS (MARKET VALUE)

(Dollars in Thousands)

The following exhibit shows the revenue, expenses and resulting assets of the Fund as reported by the Teachers Retirement Association for the Plan's fiscal years ended June 30, 2012 and 2011.

	For Year Ended	
	June 30, 2012	**June 30, 2011**
1. Market Value of Fund Balance at Beginning of Year	**$ 17,297,392**	**$ 14,917,240**
2. Contributions		
a. Member	$ 239,834	$ 218,024
b. Employer	244,935	222,723
c. Direct aid (state/city/county)	21,726	21,510
d. Earnings Limitation Savings Account (ELSA)	859	1,291
e. Total contributions	$ 507,354	$ 463,548
3. Investment Income		
a. Investment income/(loss)	$ 405,944	$ 3,414,280
b. Investment expenses	(22,757)	(24,150)
c. Total investment income/(loss)	$ 383,187	$ 3,390,130
4. Other	4,070	4,271
5. Total Income (2.e. + 3.c. + 4.)	**$ 894,611**	**$ 3,857,949**
6. Benefits Paid		
a. Annuity benefits	$ (1,485,527)	$ (1,459,550)
b. Refunds	(11,836)	(23,813)
c. Total benefits paid	$ (1,497,363)	$ (1,483,363)
7. Administrative Expenses	$ (10,023)	$ (9,264)
8. Total Disbursements (6.c. + 7.)	**$ (1,507,386)**	**$ (1,492,627)**
9. Increase/(Decrease) in ELSA Account Value	1,488	14,830
10. Market Value of Fund Balance at End of Year (1. + 5. + 8. + 9.)	**$ 16,686,105**	**$ 17,297,392**

TABLE 3

ACTUARIAL VALUE OF ASSETS AS OF JUNE 30, 2012

(Dollars in Thousands)

1. Market value of assets available for benefits				**$ 16,686,105**
2. Determination of average balance				
a. Assets available at July 1, 2011*				$ 17,303,576
b. Assets available at June 30, 2012*				16,689,941
c. Net investment income for fiscal year ending June 30, 2012				383,187
d. Average balance *(a. + b. - c.) / 2*				$ 16,805,165
3. Expected return *(8.5% * 2.d.)*				1,428,439
4. Actual return				383,187
5. Current year unrecognized asset return				(1,045,252)
6. Unrecognized asset returns				
		Original Amount	**% Not Recognized**	
a. Year ended June 30, 2012	$	(1,045,252)	80%	$ (836,202)
b. Year ended June 30, 2011		2,163,878	60%	1,298,327
c. Year ended June 30, 2010		953,497	40%	381,399
d. Year ended June 30, 2009		(4,812,478)	20%	(962,496)
e. Total return not yet recognized				$ (118,972)
7. Actuarial value of assets at June 30, 2012 (1. - 6.e.)				**$ 16,805,077**

* *Before recognition of ELSA accounts payable.*

This page is intentionally left blank

SECTION III

PLAN LIABILITIES

This page is intentionally left blank

SECTION III - PLAN LIABILITIES

In the previous section, an analysis was given of the assets of the System as of the valuation date, July 1, 2012. In this section, the discussion will focus on the commitments of the System, which are referred to as its liabilities.

Table 5 contains an analysis of the actuarial present value of all future benefits (PVFB) for contributing members, inactive members, retirees and their beneficiaries. The analysis is provided for each group.

The liabilities summarized in Table 5 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes measures of both benefits already earned and future benefits expected to be earned. For all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and, if an optional benefit is chosen, for the lives of the surviving beneficiaries.

The actuarial assumptions used to determine liabilities are based on the results of the 2004-2008 Quadrennial Experience Study. This set of assumptions is shown in Appendix C.

The liabilities reflect the benefit structure in place as of July 1, 2012. The scheduled future increases in the employee and employer contribution rates on July 1, 2013 and July 1, 2014 are not reflected in this valuation unless so noted.

Actuarial Liabilities

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. An actuarial cost method is a mathematical technique that allocates the present value of future benefits into annual costs. In order to perform this allocation, it is necessary for the funding method to "breakdown" the present value of future benefits into two components:

(1) that which is attributable to the past and

(2) that which is attributable to the future.

Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial accrued liability". The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the "normal cost". Table 6 contains the calculation of actuarial accrued liabilities for all groups.

TABLE 4

ACTUARIAL VALUATION BALANCE SHEET AS OF JULY 1, 2012

(Dollars in Thousands)

The actuarial balance sheet is based on the fundamental equation that, at any given time, the present value of benefits to be paid in the future must be equal to the assets on hand plus the present value of future contributions to be received. The total contribution rate is determined as that amount which will make the total present and potential assets balance with the total present value of future benefits.

The contributions made in excess of amounts required for current benefit payments are accumulated as a reserve to help meet benefit payments in later years. This reserve system is designed to enable the establishment of a level rate of contribution each year.

A. Actuarial Value of Assets		$ 16,805,077
B. Expected Future Assets		
1. Present value of expected future statutory supplemental contributions*		$ 4,207,757
2. Present value of expected future normal cost contributions		3,118,004
3. Total expected future assets *(1. + 2.)*		$ 7,325,761
C. Total Current and Expected Future Assets**		$ 24,130,838

	Non-Vested Benefits	Vested Benefits	Total
D. Current Benefit Obligations			
1. Benefit recipients			
a. Service retirements	$ 0	$ 13,674,503	$ 13,674,503
b. Disability	0	150,024	150,024
c. Survivors	0	839,806	839,806
2. Deferred retirements with augmentation to Normal Retirement Date	0	505,116	505,116
3. Former members without vested rights***	67,664	0	67,664
4. Active members	37,498	6,634,156	6,671,654
5. Total Current Benefit Obligations	$ 105,162	$ 21,803,605	$ 21,908,767

E. Expected Future Benefit Obligations	4,233,742
F. Total Current and Expected Future Benefit Obligations	26,142,509
G. Unfunded Current Benefit Obligations *(D.5. - A.)*	5,103,690
H. Unfunded Current and Future Benefit Obligations *(F. - C.)*	2,011,671

* *Under LCPR guidelines, this amount does not include supplemental payments which could occur after the expiration of the remaining 25 year amortization period. Reflects contribution rate increases scheduled in statute.*

** *Does not reflect deferred investment experience in the asset smoothing method. Total expected future assets on a market value basis is $ 24,011,866.*

*** *Former members with insufficient service to vest who have not collected a refund of member contributions as of the valuation date.*

TABLE 5

DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY AS OF JULY 1, 2012

(Dollars in Thousands)

	Actuarial Present Value of Projected Benefits	Actuarial Present Value of Future Normal Costs	Actuarial Accrued Liability
1. Active Members			
a. Retirement annuities	$ 9,970,684	$ (2,393,633)	$ 7,577,051
b. Disability Benefits	188,239	(74,372)	113,867
c. Survivor benefits	96,016	(35,018)	60,998
d. Deferred retirements	643,785	(507,800)	135,985
e. Refunds	6,672	(107,181)	(100,509)
f. Total	$ 10,905,396	$ (3,118,004)	$ 7,787,392
2. Deferred Retirements with Future Augmentation to Normal Retirement Date	505,116	0	505,116
3. Former Members Without Vested Rights	67,664	0	67,664
4. Benefit Recipients	14,664,333	0	14,664,333
5. Total Actuarial Accrued Liability	$ 26,142,509	$ (3,118,004)	$ 23,024,505
6. Actuarial Value of Assets			$ 16,805,077
7. Unfunded Actuarial Accrued Liability (UAAL)			$ 6,219,428

* On a market value of assets basis, the unfunded actuarial accrued liability is $6,338,400.

TABLE 6

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)

(Dollars in Thousands)

A. Unfunded actuarial accrued liability at beginning of year	$	5,039,110
B. Changes due to interest requirements and current rate of funding*		
1. Normal cost and actual administrative expenses	$	345,672
2. Contributions		(507,354)
3. Interest on A., B.1., and B.2.		421,593
4. Total *(B.1. + B.2. + B.3.)*	$	259,911
C. Expected unfunded actuarial accrued liability at end of year *(A. + B.4.)*	$	5,299,021
D. Increase (decrease) due to actuarial losses (gains) because of experience deviations from expected		
1. Salary increases	$	(223,645)
2. Investment return (AVA)		752,332
3. Mortality of active members		(3,759)
4. Mortality of benefit recipients		12,444
5. Retirement from active service		45,750
6. Other items		195,218
7. Total	$	778,340
E. Unfunded actuarial accrued liability at end of year before plan amendments and changes in actuarial assumptions *(C. + D.7.)*	$	6,077,361
F. Change in unfunded actuarial accrued liability due to changes in plan provisions	$	0
G. Change in unfunded actuarial accrued liability due to changes in actuarial assumptions**	$	195,694
H. Change in unfunded actuarial accrued liability due to change in method to determine vested status of certain inactive members	$	(53,627)
I. Unfunded actuarial accrued liability at end of year *(E. + F. + G. + H.)*	$	6,219,428

* *The amortization of the unfunded actuarial accrued liability (UAAL) using the current amortization method results in initial payments less than the "interest only" payment on the UAAL. Payments less than the interest only amount will result in the UAAL increasing in the absence of actuarial gains.*

** *The effect of the change to a select (8% for five years) and ultimate (8.5%) investment return assumption.*

SECTION IV

SYSTEM CONTRIBUTIONS

This page is intentionally left blank

SECTION IV - CONTRIBUTIONS

Sections II and III were devoted to a discussion of the assets and liabilities of the System. A comparison of Tables 3 and 4 indicates that current assets fall short of meeting the actuarial present value of future projected benefits (total liability). This is expected in all but a fully closed fund, where no further contributions are anticipated.

In an active system, there will almost always be a difference between the actuarial value of assets and total liabilities. This deficiency has to be made up by future contributions and investment returns. An actuarial valuation sets out a schedule of future contributions that will finance this deficiency in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. Under an actuarial cost method, the contributions required to meet the difference between current assets and current liabilities are allocated each year between two elements: (1) the normal cost and (2) the payment on the unfunded actuarial accrued liability.

The term "fully funded" is often applied to a system in which contributions at the normal cost rate are sufficient to pay for the benefits of existing employees as well as for those of new employees. More often than not, systems are not fully funded, either because of past benefit improvements that have not been completely funded and/or because of actuarial deficiencies that have occurred because experience has not been as favorable as anticipated. Under these circumstances, an unfunded actuarial accrued liability (UAAL) exists.

Description of Rate Components

The actuarial cost method for the System is the traditional Entry Age Normal (EAN) – level percent of pay cost method. Under the EAN cost method, the actuarial present value of each member's projected benefits is allocated on a level basis over the member's compensation between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The actuarial present value of benefits allocated to prior years of service is called the actuarial accrued liability. The unfunded actuarial accrued liability (UAAL) represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains/losses (actual experience versus experience expected based on the actuarial assumptions). The UAAL is amortized over a period set in state statute (by June 30, 2037). Contributions to fund the UAAL are determined as a level percentage of payroll assuming payroll increases 3.75% each year.

TABLE 7

NORMAL COST AT JULY 1, 2012

(Dollars in Thousands)

	Percent of Pay		Dollar Amount
1. Normal Cost Rate			
a. Retirement benefits	6.70%	$	277,891
b. Disability benefits	0.19%		7,883
c. Survivor benefits	0.10%		4,153
d. Deferred retirement benefits*	1.24%		51,427
e. Refunds	0.30%		12,442
f. Total	8.53%	$	353,796

* For vested members, includes the greater of the refund amount or the present value of the deferred monthly benefit.

TABLE 8

DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE

(Dollars in Thousands)

		Amount
A. Determination of Unfunded Actuarial Accrued Liability (UAAL)*		
1. Actuarial accrued liability	$	23,024,505
2. Actuarial value of assets		16,805,077
3. Unfunded actuarial accrued liability	$	6,219,428
B. Determination of Supplemental Contribution Rate*		
1. Present value of future payrolls through the amortization date of June 30, 2037	$	62,332,580
2. Supplemental contribution rate *(A.3. / B.1.)***		9.98%

* *On a market value of assets basis, the unfunded actuarial accrued liability is $6,338,400 and the supplemental contribution rate is 10.17% of payroll.*

** *The amortization factor as of July 1, 2012 is 15.0332.*

TABLE 9

DETERMINATION OF CONTRIBUTION SUFFICIENCY/(DEFICIENCY)

(Dollars in Thousands)

The annual required contribution (ARC) is the sum of normal cost, a supplemental contribution to amortize the UAAL, and an allowance for expenses. The statutory contribution rates do not reflect the scheduled increases for July 1, 2013 and July 1, 2014.

	Percent of Payroll		Dollar Amount
A. Statutory contributions - Chapter 354			
1. Employee contributions	6.50%	$	269,572
2. Employer contributions*	6.69%		277,520
3. Supplemental contributions**			
a. 1993 Legislation	0.12%		5,062
b. 1996 Legislation	0.09%		3,711
c. 1997 Legislation	0.31%		12,954
4. Total	13.71%	$	568,819
B. Required contributions - Chapter 356			
1. Normal cost			
a. Retirement benefits	6.70%	$	277,891
b. Disability benefits	0.19%		7,883
c. Survivors	0.10%		4,153
d. Deferred retirement benefits	1.24%		51,427
e. Refunds	0.30%		12,442
f. Total	8.53%	$	353,796
2. Supplemental contribution for the amortization of the Unfunded Actuarial Accrued Liability by June 30, 2037	9.98%		413,803
3. Allowance for expenses	0.24%	$	9,951
4. Total annual contribution for fiscal year ending June 30, 2013***	18.75%	$	777,550
C. Contribution Sufficiency / (Deficiency) *(A.4. - B.4.)****	(5.04%)	$	(208,731)

Note: Projected annual payroll for fiscal year beginning on the valuation date: $4,146,325

* *Employer contribution rate is blended to reflect rates of 14.14% of pay for Basic members, 6.50% of pay for Coordinated members not employed by Special School District #1, and 10.14% of pay for Coordinated members who are employed by Special School District #1.*

** *Includes contributions from School District #1, the City of Minneapolis, and matching state contributions.*

*** *On a market value of assets basis, the total required contribution is 18.94% of payroll and the contribution deficiency is (5.23%) of payroll.*

TABLE 10

STATUTORY AND REQUIRED CONTRIBUTION AMOUNTS

(Dollars in Thousands)

Basic Members

	Percent of Payroll		Dollar Amount
A. Statutory contributions - Chapter 354			
1. Employee contributions	10.00%	$	175
2. Employer contributions*	14.14%		248
3. Supplemental contributions**			
a. 1993 Legislation	0.12%		2
b. 1996 Legislation	0.09%		2
c. 1997 Legislation	0.31%		5
4. Total	24.66%	$	432
B. Required contributions - Chapter 356			
1. Normal cost			
a. Retirement benefits	11.71%	$	205
b. Disability benefits	0.47%		8
c. Survivors	0.43%		8
d. Deferred retirement benefits	1.96%		34
e. Refunds	0.48%		8
f. Total	15.05%	$	263

Note: Projected annual payroll for fiscal year beginning on the valuation date: $1,753 for 19 members.

* *All Basic active members are teachers employed by Special School District #1; employer contribution rate of 14.14% of payroll applies.*

** *Includes contributions from School District #1, the City of Minneapolis and matching state contributions.*

TABLE 11

STATUTORY AND REQUIRED CONTRIBUTION AMOUNTS

(Dollars in Thousands)

Coordinated Members

	Percent of Payroll		Dollar Amount
A. Statutory contributions - Chapter 354			
1. Employee contributions	6.50%	$	269,397
2. Employer contributions*	6.69%		277,272
3. Supplemental contributions**			
a. 1993 Legislation	0.12%		5,060
b. 1996 Legislation	0.09%		3,709
c. 1997 Legislation	0.31%		12,949
4. Total	13.71%	$	568,387
B. Required contributions - Chapter 356			
1. Normal cost			
a. Retirement benefits	6.70%	$	277,686
b. Disability benefits	0.19%		7,875
c. Survivors	0.10%		4,145
d. Deferred retirement benefits	1.24%		51,393
e. Refunds	0.30%		12,434
f. Total	8.53%	$	353,533

Note: Projected annual payroll for fiscal year beginning on the valuation date: $4,144,572. This includes $3,923,638 for 72,628 Coordinated members who are not employed by Special School District #1 and $220,934 for 4,002 members who are employed by Special School District #1.

* *Employer contribution rate is blended to reflect rates of 6.5% of pay for Coordinated members not employed by Special School District #1, and 10.14% of pay for Coordinated members who are employed by Special School District #1.*

** *Includes contributions from School District #1, the City of Minneapolis, and matching state contributions.*

SECTION V

PLAN ACCOUNTING

This page is intentionally left blank

SECTION V - PLAN ACCOUNTING

GASB Statement No. 25, as amended by GASB Statement No. 50, establishes financial reporting standards for defined benefit pension plans. In addition to two required statements regarding plan assets, the statement requires two schedules and accompanying notes disclosing information relative to the funded status of the plan and historical contribution patterns.

- The Schedule of Funding Progress provides information about whether the financial strength of the Plan is improving or deteriorating over time.

- The Schedule of Employer Contributions provides historical information about the annual required contribution (ARC) and the percentage of the ARC that was actually contributed.

The actuarial assumptions and methods used in the actuarial valuation are acceptable under GASB standards. The information presented in this section of the report is based on the valuation results.

TABLE 12

SUMMARY OF MEMBERSHIP DATA

	July 1, 2012		July 1, 2011
Active members:			
Vested	61,727		62,121
Non-vested	14,922		14,634
Total	76,649		76,755
Pensioners and Beneficiaries	55,425		53,537
Terminated vested members entitled to, but not yet receiving, benefits:	12,201	*	13,237
Other terminated, non-vested members entitled to a refund of contributions	27,591		25,196
Total	**171,866**		**168,725**

*Methodology used to identify vested status for certain inactive members was changed in the July 1, 2012 valuation.

TABLE 13

SCHEDULE OF FUNDING PROGRESS*

(Dollars in Thousands)

Provided below is the information required under GASB Statement No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans*, as amended by GASB Statement No. 50.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Actual Covered Payroll (Previous FY) (c)	UAAL as a Percentage of Covered Payroll [(b) - (a)] / (c)
07/01/91	$ 5,614,924	$ 7,213,720	$ 1,598,796	77.84%	$ 1,943,375	82.27%
07/01/92	6,324,733	7,662,522	1,337,789	82.54%	1,989,624	67.24%
07/01/93	7,045,937	8,266,059	1,220,122	85.24%	2,065,881	59.06%
07/01/94	7,611,936	9,115,266	1,503,330	83.51%	2,150,300	69.91%
07/01/95	8,348,124	9,717,623	1,369,499	85.91%	2,204,693	62.12%
07/01/96	9,541,221	10,366,168	824,947	92.04%	2,268,390	36.37%
07/01/97	11,103,759	10,963,637	(140,122)	101.28%	2,359,011	(5.94%)
07/01/98	12,727,546	12,046,312	(681,234)	105.66%	2,422,957	(28.12%)
07/01/99	14,011,247	13,259,569	(751,678)	105.67%	2,625,254	(28.63%)
07/01/00	15,573,151	14,802,441	(770,710)	105.21%	2,704,575	(28.50%)
07/01/01	16,834,024	15,903,984	(930,040)	105.85%	2,812,000	(33.07%)
07/01/02	17,378,994	16,503,099	(875,895)	105.31%	2,873,771	(30.48%)
07/01/03	17,384,179	16,856,379	(527,800)	103.13%	2,952,887	(17.87%)
07/01/04	17,519,909	17,518,784	(1,125)	100.01%	3,032,483	(0.04%)
07/01/05	17,752,917	18,021,410	268,493	98.51%	3,121,571	8.60%
07/01/06	19,035,612	20,679,111	1,643,499	92.05%	3,430,645	47.91%
07/01/07	18,794,389	21,470,314	2,675,925	87.54%	3,532,159	75.76%
07/01/08	18,226,985	22,230,841	4,003,856	81.99%	3,645,230	109.84%
07/01/09	17,882,408	23,114,802	5,232,394	77.36%	3,761,484	139.10%
07/01/10	17,323,146	22,081,634	4,758,488	78.45%	3,787,757	125.63%
07/01/11	17,132,383	22,171,493	5,039,110	77.27%	3,838,111	131.29%
07/01/12	16,805,077	23,024,505	6,219,428	72.99%	3,871,809	160.63%

* Information prior to 2004 provided by Milliman; from 2004 to 2008 provided by The Segal Company; and 2009 to 2010 by Mercer.

TABLE 14

SCHEDULE OF CONTRIBUTIONS FROM THE EMPLOYER AND OTHER CONTRIBUTING ENTITIES

(Dollars in Thousands)

The GASB Statement No. 25 (as amended by GASB 50) required and actual contributions are as follows:

Plan Year Ended June 30	Actuarially Required Contribution Rate (a)	Actual Covered Payroll (b)	Actual Member Contributions (c)	Annual Required Contributions [(a)*(b)] - (c)	Actual Employer Contributions[2]	Percentage Contributed
1991	13.11%	$ 1,943,375	$ 89,313	$ 165,463	$ 159,439	96.36%
1992	13.04%	1,989,624	91,506	167,941	162,370	96.68%
1993	13.13%	2,065,881	94,709	176,541	168,071	95.20%
1994	12.75%	2,150,300	100,803	173,360	171,855	99.13%
1995	14.73%	2,204,693	143,536	181,215	179,672	99.15%
1996	14.30%	2,268,390	148,051	176,329	184,495	104.63%
1997	12.78%	2,359,011	154,161	147,321	191,670	130.10%
1998[3]	9.55%	2,422,957	124,096	107,296	151,323	141.03%
1999[2]	8.39%	2,625,254	132,040	88,219	130,526	147.96%
2000[2]	8.36%	2,704,575	138,696	87,406	134,419	153.79%
2001[2,4]	7.92%	2,812,000	145,075	77,635	139,799	180.07%
2002[2]	7.85%	2,873,771	152,331	73,260	142,222	194.13%
2003[2,5]	7.57%	2,952,887	155,577	67,957	149,481	219.96%
2004[2]	8.37%	3,032,483	159,140	94,679	151,029	159.52%
2005[2]	8.46%	3,121,571	160,982	103,103	157,693	152.95%
2006[6]	9.05%	3,430,645	177,085	133,389	200,286	150.15%
2007[7]	12.16%	3,532,159	199,869	229,642	209,219	91.11%
2008[8]	13.44%	3,645,230	209,592	280,327	231,562	82.60%
2009[9]	15.08%	3,761,484	212,043	355,189	240,718	67.72%
2010[10]	16.81%	3,787,757	214,909	421,813	242,088	57.39%
2011[11]	15.71%	3,838,111	218,024	384,943	244,233	63.45%
2012[12]	16.57%	3,871,809	239,834	401,725	266,661	66.38%
2013[13]	18.75%					

[1] *Information prior to 2004 provided by Milliman USA; 2004 to 2008 information provided by The Segal Company; 2009 and 2010 information provided by Mercer.*

[2] *Includes contributions from other sources (if applicable)*

[3] *Actuarially Required Contributions calculated according to parameters of GASB 25 using a 30-year amortization method of the negative unfunded actuarial accrued liability.*

[4] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions and Asset Valuation Method is 7.31%.*

[5] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 8.11%.*

[6] *Actuarially Required Contribution Rate shown is the contribution rate stated in the TRA July 1, 2005 actuarial valuation.*

[7] *Actuarially Required Contributions calculated according to parameters of GASB 25 (30-year amortization period), and post-merger of the Minneapolis Teachers' Retirement Fund Association.*

[8] *Actuarially Required Contribution Rate prior to change in Asset Valuation Method is 11.58%.*

[9] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 15.36%.*

[10] *Actuarially Required Contribution Rate prior to change in Asset Valuation Method is 19.98%.*

[11] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions and Plan Provisions is 18.91%.*

[12] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 16.91%.*

[13] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 18.15%.*

TABLE 15

PROJECTED BENEFIT PAYMENTS

(Dollars in Thousands)

The table below shows estimated benefits expected to be paid over the next ten years, based on the assumptions used in the valuation. The "Actives" column shows benefits expected to be paid to members currently active on July 1, 2012. The "Retirees" column shows benefits expected to be paid to all other members. This includes those who, as of July 1, 2012, are receiving benefit payments or who terminated employment and are entitled to a deferred benefit.

Year Ending June 30	Actives	Retirees	Total
2013	$ 112,340	$ 1,467,888	$ 1,580,228
2014	178,406	1,450,025	1,628,431
2015	244,685	1,437,438	1,682,123
2016	310,846	1,424,636	1,735,482
2017	376,782	1,413,216	1,789,998
2018	444,535	1,402,457	1,846,992
2019	514,278	1,390,183	1,904,460
2020	584,653	1,376,603	1,961,256
2021	654,537	1,360,213	2,014,750
2022	723,706	1,342,241	2,065,947
2023	790,673	1,322,093	2,112,766
2024	856,962	1,299,404	2,156,366
2025	925,294	1,273,530	2,198,824
2026	997,881	1,244,910	2,242,791
2027	1,075,809	1,214,348	2,290,157
2028	1,159,408	1,181,452	2,340,860
2029	1,249,149	1,145,884	2,395,033
2030	1,345,358	1,107,790	2,453,148
2031	1,448,163	1,067,089	2,515,252
2032	1,557,106	1,024,215	2,581,320
2033	1,671,650	979,320	2,650,970
2034	1,792,325	933,359	2,725,684
2035	1,917,669	885,600	2,803,268
2036	2,047,001	836,421	2,883,422
2037	2,175,964	785,770	2,961,734
2038	2,301,685	733,321	3,035,006

This page is intentionally left blank

APPENDIX A

SUMMARY STATISTICS ON MEMBERSHIP DATA

This page is intentionally left blank

TABLE 16

RECONCILIATION OF MEMBERS*

			Benefit Recipients****			
	Active Members**	Former Members***	Service Retirements	Disability Retirements	Survivors	Total
Members on 7/1/2011	**76,755**	**38,410**	**49,079**	**602**	**3,856**	**168,702**
New hires	4,434	-	-	-	-	**4,434**
Return from inactive	1,808	(1,808)	-	-	-	**0**
Return from zero balance	359	-	-	-	-	**359**
Transfer to inactive	(4,179)	4,179	-	-	-	**0**
Refunded	(300)	(636)	-	-	-	**(936)**
Restored write-off	-	149	-	-	-	**149**
Repay refunds	-	59	-	-	-	**59**
Transfer from non-status	-	20	-	-	-	**20**
Retirements	(2,095)	(565)	2,746	(71)		**15**
Benefits began	-	-	-	74	385	**459**
Benefits ended	-	-	-	(1)	(62)	**(63)**
Deaths	(39)	(56)	(1,045)	(10)	(126)	**(1,276)**
Adjustments for Disabilitants	(44)	9	-	-	-	**(35)**
Adjustments (Other)	(50)	31	-	(3)	1	**(21)**
Net changes	(106)	1,382	1,701	(11)	198	**3,164**
Members on 7/1/2012	**76,649**	**39,792**	**50,780**	**591**	**4,054**	**171,866**

* *All figures in this chart were provided by the Teachers Retirement Association. Recipient counts include all pensions in force, including double counting of multiple benefit types. Service Retirements include Supplemental and Variable optional joint annuitants.*

** *Active members include 19 Basic and 76,630 Coordinated members.*

*** *Former members include 29 Basic and 39,763 Coordinated members.*

**** *Benefit recipients include 4,932 Basic members and 50,493 Coordinated members.*

Former Member Statistics	**Vested**	**Non-vested**	**Total**
Number	12,201	27,591	39,792
Average Age	47.6	44.3	45.3
Average Service (years)	7.6	1.0	3.0
Average annual benefits, with augmentation to Normal Retirement Date and 4% Combined Service Annuity load	$9,916	N/A	N/A
Average refund value, with 4% Combined Service Annuity load	$29,354	$2,505	$10,738

TABLE 17

DISTRIBUTION OF ACTIVE MEMBERS*

	Years of Service as of July 1, 2012										
Age	**<3****	**3-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 +**	**Total**
<25	2,131	30									**2,161**
Avg. Earnings	21,475	39,680									**21,728**
25-29	4,418	2,512	1,743								**8,673**
Avg. Earnings	25,017	39,365	45,358								**33,261**
30-34	2,006	1,488	5,646	1,423							**10,563**
Avg. Earnings	22,465	37,975	48,192	58,563							**43,264**
35-39	1,321	678	2,342	4,650	919						**9,910**
Avg. Earnings	20,571	38,264	48,637	61,052	68,384						**51,843**
40-44	1,384	628	1,656	2,733	3,948	746					**11,095**
Avg. Earnings	19,039	35,758	45,209	59,826	67,947	72,270					**54,921**
45-49	1,069	511	1,305	1,589	2,126	2,537	606	1			**9,744**
Avg. Earnings	16,213	32,106	45,419	58,455	66,624	71,468	72,953	49,379			**56,764**
50-54	891	441	1,076	1,425	1,424	1,712	2,094	590			**9,653**
Avg. Earnings	16,141	28,384	43,685	56,270	64,576	69,539	72,351	71,547			**57,890**
55-59	735	292	715	1,017	1,290	1,294	1,320	1,802	399		**8,864**
Avg. Earnings	11,651	26,690	39,517	55,443	62,562	68,991	71,926	73,002	75,100		**59,503**
60-64	548	172	413	545	693	799	651	416	467	113	**4,817**
Avg. Earnings	7,773	23,951	37,723	52,446	62,369	67,811	74,144	77,764	77,678	74,309	**57,138**
65-69	288	61	97	80	117	95	62	44	30	42	**916**
Avg. Earnings	4,444	15,043	27,626	50,603	58,860	69,271	76,077	81,945	80,970	80,924	**39,894**
70 +	131	24	20	19	9	10	7	9	6	18	**253**
Avg. Earnings	4,232	10,863	22,850	44,830	65,778	62,632	84,293	77,892	90,542	82,700	**26,344**
Total	**14,922**	**6,837**	**15,013**	**13,481**	**10,526**	**7,193**	**4,740**	**2,862**	**902**	**173**	**76,649**
Avg. Earnings	**20,188**	**36,126**	**46,172**	**58,873**	**66,132**	**70,199**	**72,622**	**73,539**	**76,733**	**76,788**	**50,533**

* *Active members include 19 Basic and 76,630 Coordinated members.*

** *This exhibit does not reflect service earned in Combined Service Annuity benefits. It should not be relied upon as an indicator of non-vested status.*

In each cell, the top number is the count of active participants for the age/service combination and the bottom number is the amount of average annual earnings. Earnings shown in this exhibit are actual salaries earned during the fiscal year ending June 30, 2012 as reported by the Teachers Retirement Association of Minnesota.

TABLE 18

DISTRIBUTION OF SERVICE RETIREMENTS

	Years Since Retirement as of July 1, 2012							
Age	**<1**	**1-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25 +**	**Total**
<55	1	1						**2**
Avg. Benefit	34,744	39,688						**37,216**
55-59	666	1,358	19					**2,043**
Avg. Benefit	34,544	33,866	40,120					**34,145**
60-64	1,018	4,845	4,058	186		1*	1*	**10,109**
Avg. Benefit	27,311	30,894	26,435	34,450		3,625	1,501	**28,803**
65-69	467	2,790	4,855	4,983	143	1*	2*	**13,241**
Avg. Benefit	20,623	20,958	22,640	22,430	37,622	2,009	2,208	**22,292**
70-74	43	379	1,768	4,932	2,469	73	6	**9,670**
Avg. Benefit	12,346	17,391	19,477	25,168	26,733	26,373	3,100	**24,161**
75-79	4	47	213	1,582	3,600	1,330	38	**6,814**
Avg. Benefit	35,556	14,893	15,603	25,198	33,559	32,475	17,414	**30,628**
80-84		8	38	156	1,457	1,851	1,305	**4,815**
Avg. Benefit		22,650	14,307	24,899	32,820	33,472	31,686	**32,344**
85-89		2	9	21	115	816	1,625	**2,588**
Avg. Benefit		55,681	25,371	24,995	35,316	31,804	33,079	**32,702**
90 +			1	1	3	74	1,419	**1,498**
Avg. Benefit			3,836	5,533	18,232	34,100	28,381	**28,612**
Total	**2,199**	**9,430**	**10,961**	**11,861**	**7,787**	**4,146**	**4,396**	**50,780**
Avg. Benefit	**27,807**	**27,759**	**23,400**	**24,162**	**31,351**	**32,695**	**30,952**	**27,210**

** Pertaining to the accounts of former participants in the Minnesota Variable Annuity Fund.*

In each cell, the top number is the count of retired participants for the age/years retired combination and the bottom number is the average annual benefit amount.

TABLE 19

DISTRIBUTION OF SURVIVORS

	Years Since Death as of July 1, 2012							
Age	**<1**	**1-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25 +**	**Total**
<45	20	72	36	15	4			**147**
Avg. Benefit	13,223	16,458	16,430	11,179	32,533			**15,910**
45-49	9	24	13	9	2		2	**59**
Avg. Benefit	8,398	16,853	12,945	17,017	37,030		22,514	**15,603**
50-54	9	37	24	6	3	1	1	**81**
Avg. Benefit	21,174	16,849	13,851	21,260	2,888	33,084	23,805	**16,537**
55-59	13	53	39	16	8	2	1	**132**
Avg. Benefit	17,923	15,877	16,733	18,582	20,103	7,622	12,304	**16,763**
60-64	31	112	84	43	16	5		**291**
Avg. Benefit	23,405	20,711	19,441	18,957	16,145	13,743		**20,001**
65-69	57	182	142	88	30	12	2	**513**
Avg. Benefit	23,660	21,315	20,813	17,985	22,833	15,758	8,616	**20,775**
70-74	46	207	167	100	52	32	11	**615**
Avg. Benefit	24,775	23,822	25,538	23,173	21,415	23,826	18,065	**23,947**
75-79	57	206	184	131	90	39	24	**731**
Avg. Benefit	32,452	32,194	30,284	32,021	32,241	25,794	25,473	**31,146**
80-84	47	190	191	129	88	66	59	**770**
Avg. Benefit	34,082	32,960	31,772	29,924	33,789	29,117	30,184	**31,778**
85-89	23	136	119	74	53	40	42	**487**
Avg. Benefit	34,667	31,332	32,710	27,522	34,575	34,230	30,406	**31,758**
90 +	10	44	59	35	27	22	31	**228**
Avg. Benefit	40,840	33,635	35,020	29,132	31,387	30,129	32,899	**32,914**
Total	**322**	**1,263**	**1,058**	**646**	**373**	**219**	**173**	**4,054**
Avg. Benefit	**26,816**	**25,986**	**26,652**	**25,653**	**29,452**	**27,527**	**28,822**	**26,696**

In each cell, the top number is the count of survivor participants for the age/years since death combination and the bottom number is the average annual benefit amount.

TABLE 20

DISTRIBUTION OF DISABILITY RETIREMENTS

	Years Disabled as of July 1, 2012							
Age	**<1**	**1-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25 +**	**Total**
<45	4	11	9	2				**26**
Avg. Benefit	12,868	7,337	7,219	2,521				**7,776**
45-49		14	5	6	1			**26**
Avg. Benefit		10,364	8,225	9,929	4,493			**9,627**
50-54	6	27	18	5	4			**60**
Avg. Benefit	24,520	16,270	13,190	7,039	7,027			**14,786**
55-59	11	58	46	21	8	5		**149**
Avg. Benefit	29,687	23,009	18,357	14,966	15,505	11,593		**20,146**
60-64	7	75	115	75	30	7		**309**
Avg. Benefit	21,802	24,058	22,189	18,848	24,606	16,747		**21,934**
65-69	2	12	5	1	1			**21**
Avg. Benefit	9,709	18,841	20,618	35,427	45,213			**20,440**
Total	**30**	**197**	**198**	**110**	**44**	**12**		**591**
Avg. Benefit	**23,239**	**20,457**	**19,408**	**16,937**	**21,364**	**14,599**		**19,540**

In each cell, the top number is the count of disabled participants for the age/years disabled combination and the bottom number is the average annual benefit amount.

This page is intentionally left blank

APPENDIX B

SUMMARY OF PLAN PROVISIONS

This page is intentionally left blank

APPENDIX B - SUMMARY OF PLAN PROVISIONS

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:

Date of Increase	Member	Employer
July 1, 2010	9.00%	13.14%
July 1, 2011	9.50%	13.64%
July 1, 2012	10.00%	14.14%
July 1,2013	10.50%	14.64%
July 1, 2014	11.00%	15.14%

After June 30, 2015, the member and employer contribution rates may be adjusted as follows:

- if a contribution sufficiency of at least 1% has existed for two consecutive years, the member and employer contribution rates may be decreased to a level that is necessary to maintain a 1% sufficiency

- if a contribution deficiency of at least 0.25% has existed for two consecutive years, the member and employer contribution rates may each be increased as shown:

Contribution Deficiency	Allowable Increase in Member and Employer Contribution Rates
<2% of pay	0.25% of pay
2% to 4% of pay	0.50% of pay
>4% of pay	0.75% of pay

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.

APPENDIX B - SUMMARY OF PLAN PROVISIONS

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	Benefit recipients received no annual increases in 2011 and 2012. Beginning January 1, 2013 the annual increase will be 2.0% per year. When the funding ratio reaches 90% (on a Market Value of Assets basis), the annual increase will be 2.5%. A benefit recipient who has been receiving a benefit for at least 18 full months as of December 31 will receive a full increase. Members receiving benefits for at least six full months but less than 18 full months will receive a pro-rata increase.

APPENDIX B - SUMMARY OF PLAN PROVISIONS

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.

APPENDIX B - SUMMARY OF PLAN PROVISIONS

BASIC MEMBERS

Withdrawal

Refund of contribution

Age/Service requirements	Termination of Teaching Service.
Amount	Member's contributions with 6.00% interest compounded annually through June 30, 2011. Beginning July 1, 2011, a member's contributions earn 4.00% interest compounded annually. 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.

APPENDIX B - SUMMARY OF PLAN PROVISIONS

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 or Duluth 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:

Date of Increase	Member	Employer
July 1, 2010	5.50%	5.50%
July 1, 2011	6.00%	6.00%
July 1, 2012	6.50%	6.50%
July 1, 2013	7.00%	7.00%
July 1, 2014	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 as follows:

- if a contribution sufficiency of at least 1% has existed for two consecutive years, the member and employer contribution rates may be decreased to a level that is necessary to maintain a 1% sufficiency
- if a contribution deficiency of at least 0.25% has existed for two consecutive years, the member and employer contribution rates may each be increased as shown:

Contribution Deficiency	Allowable Increase in Member and Employer Contribution Rates
<2% of pay	0.25% of pay
2% to 4% of pay	0.50% of pay
>4% of pay	0.75% of pay

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.

APPENDIX B - SUMMARY OF PLAN PROVISIONS

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 age 65 at 3.00% per year and actuarial reduction for each month the member is under age 65.

(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).

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	Benefit recipients received no annual increase in 2011 and 2012. Beginning January 1, 2013 the annual increase will be 2.0% per year. When the funding ratio reaches 90% (on a Market Value of Assets basis), the annual increase will revert to 2.5%. A benefit recipient who has been receiving a benefit for at least 18 full months as of December 31 will receive a full increase. Members receiving benefits for at least six full months but less than 18 full months will receive a pro-rata 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 with 6.00% interest compounded annually through June 30, 2011. Beginning July 1, 2011, a member's contributions earn 4.00% interest compounded annually. 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

ACTUARIAL METHODS AND ASSUMPTIONS

This page is intentionally left blank

APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS

Actuarial Cost Method

Liabilities and contributions in this report are computed using the Individual Entry Age Normal Cost Method. This method is prescribed by Minnesota Statutes.

The objective under this method is to fund each member's benefits under the Plan as payments which are level as a percentage of salary, starting at original participation date (or employment date), and continuing until the assumed date of retirement termination, disability or death. For valuation purposes, entry age for each member is determined as the age at valuation minus years of service as of the valuation date.

At any given date, a liability is calculated equal to the contributions which would have been accumulated if this method of funding had always been used, the current plan provisions had always been in place, and all assumptions had been met. The difference between this liability and the assets (if any) which are held in the fund is the unfunded actuarial accrued liability. The unfunded actuarial accrued liability is typically funded over a chosen period in accordance with the amortization schedule.

A detailed description of the calculation follows: The normal cost for each active member under the assumed retirement age is determined by applying to earnings the level percentage of salary which, if contributed each year from date of entry into the Plan until the assumed retirement (termination, disability or death) date, is sufficient to provide the full value of the benefits expected to be payable.

- The present value of future normal costs is the total of the discounted values of all active members' normal cost, assuming these to be paid in each case from the valuation date until retirement (termination, disability or death) date.

- The present value of projected benefits is calculated as the value of all benefit payments expected to be paid to the Plan's current members, including active and retired members, beneficiaries, and terminated members with vested rights.

- The actuarial accrued liability is the excess of the present value of projected benefits over the present value of future normal costs.

- The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the assets of the fund, and represents that part of the actuarial accrued liability which has not been funded by accumulated past contributions.

Amortization Method

The unfunded actuarial accrued liability is amortized as a level percentage of payroll each year to the statutory amortization date of June 30, 2037, assuming payroll increases of 3.75% per year (effective with the 2011 valuation). If the unfunded actuarial accrued liability is negative, the surplus amount is amortized over 30 years as a level percentage of payroll. If there is an increase in the unfunded actuarial accrued liability due to a change in the actuarial assumptions, plan provisions, or actuarial cost method, a new amortization period is determined. This new amortization period is determined by blending the period needed to amortize the prior unfunded actuarial accrued liability over the prior amortization period and the increase in unfunded actuarial accrued liability amortized over 30 years. If there is a decrease in the unfunded actuarial accrued liability, no change is made to the amortization period.

APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS

Asset Valuation Method

As prescribed in the Minnesota Statutes Section 356.215, Subdivision 1, Paragraph (f), the assets are valued based on a five-year moving average of expected and market values (five-year average actuarial value) determined as follows:

- At the end of each plan year, an average asset value is calculated as the average of the market asset value at the beginning and end of the fiscal year net of investment income for the fiscal year;
- The investment gain or (loss) is taken as the excess of actual investment income over the expected investment income based on the average asset value as calculated above;
- The investment gain or (loss) so determined is recognized over five years at 20% per year;
- The asset value is the sum of the market value plus the scheduled recognition of investment gains or (losses) during the current and the preceding four fiscal years. The Minnesota Post Retirement Investment Fund (MPRIF) was dissolved on June 30, 2009. For the purpose of determining the actuarial value of assets, the MPRIF asset loss for the fiscal year ending June 30, 2009 is recognized incrementally over five years at 20% per year, similar to the smoothing described above. Prior to June 30, 2009, MPRIF asset gains and losses were not smoothed.

Supplemental Contributions

The City of Minneapolis, the Minneapolis School District, and the State of Minnesota are scheduled to make the following supplemental contributions to the Fund in FY13:

1993 Legislation:	Supplemental contributions of $5,061,764 annually are assumed to be made until the amortization date of June 30, 2037 or full actuarial funding is achieved, whichever is earlier. Amount is variable as described in Minnesota Statutes, Chapter 354A.12. Assumed amount is based on actual amount received in most recent fiscal year, and information provided by the Teachers Retirement Association.
1996 Legislation:	Supplemental contributions of $3,710,708 annually are assumed to be made until the amortization date of June 30, 2037 or full actuarial funding is achieved, whichever is earlier. Amount is variable as described in Minnesota Statutes, Chapter 423A.02. Assumed amount is based on actual amount received in most recent fiscal year, and information provided by the Teachers Retirement Association.
1997 Legislation:	Supplemental contributions of $12,954,000 annually are assumed to be made until the amortization date of June 30, 2037. Amount is fixed in statute.

The 1993 Legislation amount increased from $4,984,135 to $5,061,764 since the prior valuation and the 1996 Legislation amount increased from $3,571,685 to $3,710,708 since the prior valuation.

APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS

Entry Age Calculation

As required by the LCPR Standards for Actuarial Work, a member's Entry Age is calculated as the age at the valuation date less years of service. Age on the valuation date is calculated as age nearest birthday. The years of service for each member are provided by TRA.

Decrement Timing

All decrements are assumed to occur in the middle of the plan year. This is the preferred decrement timing in the LCPR Standards for Actuarial Work.

Funding Objective

The fundamental financing objective of the fund is to establish contribution rates which, when expressed as a percentage of active member payroll, will remain approximately level from generation to generation and meet the required deadline for full funding.

Benefits included or excluded

To the best of our knowledge, all material benefits have been included in the liability.

IRC Section 415(b): The limitations of Internal Revenue Code Section 415(b) have been incorporated into our calculations. Annual benefits may not exceed the limits in IRC Section 415. This limit is indexed annually. For 2012, the limit is $200,000.

IRC Section 401(a)(17): The limitations of Internal Revenue Code Section 401(a)(l7) have been incorporated into our calculations. Compensation for any 12-month period used to determine accrued benefits may not exceed the limits in IRC Section 401(a)(17) for the calendar year in which the 12-month period begins. This limit is indexed annually. For 2012, the limit is $250,000. Certain members first hired before July I, 1995 may have a higher limit.

APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. All assumptions are prescribed by Statutes, the LCPR, or the Board of Trustees. The assumptions prescribed are based on the last experience study, dated October 30, 2009.

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		Pre-retirement: 8.35% compounded annually to reflect an 8.0% assumption for five (5) years and 8.5% thereafter. Post-retirement: 6.35% compounded annually
Benefit Increases after Retirement		Payment of 2.0% annual benefit increases after retirement are accounted for by using a 6.35% post-retirement assumption, as directed by the LCPR actuary.
Salary Increases		Reported salary for prior fiscal year, with new hires annualized, increased according to the salary increase table shown in the rate table to 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.
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.

Summary of Actuarial Assumptions *(continued)*

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.

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:

Data for active members:

Salary	$51,200
Date of Birth	July 1, 1968
Gender	Female

Data for terminated members:

Date of birth	July 1, 1963
Average salary	$29,000
Date of termination	Derived from date of birth, original entry age, and service

Summary of Actuarial Assumptions *(continued)*

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.

Changes in actuarial assumptions and methods since the previous valuation

The investment return assumption was changed to a five year select rate of 8.0% and an ultimate return assumption of 8.5%. The methodology used to determine vested status for inactive members without a date of termination in the census was also changed which had a small financial impact.

Future post-retirement adjustments

Once the funded ratio reaches 90% on a market value basis, the COLA is scheduled by statute to revert back from 2.0% to 2.5%. Future assets and liabilities were projected using the 2012 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 five years and 8.5% thereafter. The projections also assume the COLA remains at 2% and that future statutory contribution rates are not increased beyond the increases currently provided for in the statutes. In particular, there is no assumption that the stabilizer provisions will be utilized by the Board. Based on these projections, the funded status is not expected to reach 90% any time in the next 40 years. Therefore, we have not reflected any change in the COLA assumption from the current 2.0%.

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

GLOSSARY

Actuarial Asset Value. The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method. The goal of an asset valuation method is to produce a relatively stable asset value thereby reducing year-to-year volatility in contribution requirements.

Actuarial Accrued Liability. The portion of the present value of all benefits attributable to service already rendered.

Actuarial Cost Method. Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Annual Pension Cost. A measure of the periodic cost of an employer's participation in a defined benefit pension plan.

Annual Required Contributions (ARC). The employer's periodic required contributions to a defined benefit pension plan, calculated in accordance with the parameters of GASB 25 (as amended by GASB 50) or GASB 27.

ASA. Associate of the Society of Actuaries.

Current Benefit Obligations. The present value of benefits earned to the valuation date, based on current service and including future salary increases to retirement.

EA. Enrolled Actuary.

FSA. Fellow of the Society of Actuaries.

MAAA. Member of the American Academy of Actuaries.

Normal Cost. The annual cost assigned to the current year, under the actuarial cost method in use.

Present Value. Sometimes called "actuarial present value," the current worth (on the valuation date) of an amount or series of amounts payable or receivable in the future. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Statement No. 25 of the Governmental Accounting Standards Board (GASB 25). The accounting standard governing the financial reporting for defined benefit pension plans and note disclosures for defined contribution plans.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27). The accounting standard governing a state or local governmental employer's accounting for pensions.

Statement No. 50 of the Governmental Accounting Standards Board (GASB 50). The accounting standard amending both GASB 25 and GASB 27 to require a schedule of funding progress under the Entry Age Normal method for plans that use the aggregate funding method to determine the Annual Required Contribution.