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## **Teachers Retirement Association of Minnesota**

**Actuarial Valuation Report  
As of July 1, 2011**





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# Cavanaugh Macdonald

CONSULTING, LLC

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December 5, 2011

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 an actuarial valuation of the Teachers Retirement Association of Minnesota (TRA or System) as of July 1, 2011. The major findings of the valuation are contained in this report. This report reflects the benefit provisions in place on July 1, 2011. There was no change to the actuarial methods or the plan provisions from the prior valuation. There were two changes in the actuarial assumptions used in the valuation. The salary increase assumption was changed to a service based assumption and the payroll growth assumption was decreased from 4.50% to 3.75%.

This is the first valuation prepared by Cavanaugh Macdonald Consulting, LLC (CMC). As part of our transition work, we replicated the July 1, 2010 actuarial valuation. While results were well within acceptable limits, there was a difference in the key valuation measurements. Based on our experience in replicating valuation results from other software programs, these differences are neither unusual nor significant. The details of the replication are included in the Executive Summary of the report.

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 last year's valuation. 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 statutorily defined benefits of the System are included 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

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Board of Trustees  
December 5, 2011  
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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 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 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 and goals. The calculations in this report have been made on a basis consistent with our understanding of 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 Statutes, 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 Statutes, Section 356.215, Subdivision 1, Paragraph (c).

Respectfully submitted,

A handwritten signature in blue ink that reads "Patrice Beckham".

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

A handwritten signature in blue ink that reads "Brent A. Banister".

Brent Banister PhD, FSA, EA, FCA, MAAA  
Senior Actuary



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## 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, 2011 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.

This is the first actuarial valuation prepared by Cavanaugh Macdonald Consulting, LLC (CMC). As part of our transition work, we replicated the July 1, 2010 actuarial valuation. Results were well within acceptable limits, but as is typical in a takeover situation, there were differences in the key valuation results. Based on our experience in replicating valuation results from other valuation software programs, these differences are neither unusual nor significant. It is common for differences in valuation results to occur simply due to the use of different pension valuation software. A summary of the replication results is shown below:

	July 1, 2010 Valuation Results (\$M)		
	Mercer	CMC	CMC/Mercer
Present Value of Future Benefits	\$24,981	\$24,866	99.5%
Actuarial Accrued Liability	\$22,082	\$21,844	98.9%
Normal Cost Rate	8.36%	8.39%	100.4%

There were no changes in the actuarial methods used in the actuarial valuation or in the benefit provisions since the last valuation. However, there were two changes in the actuarial assumptions used in the valuation: (1) the salary increase assumption was changed to a service based assumption and (2) the payroll growth assumption was decreased from 4.50% to 3.75%. The decrement timing assumption was also changed from beginning of year to mid-year. The assumption and decrement timing changes decreased the unfunded actuarial accrued liability by \$315 million, decreased the normal cost rate by 0.24% of payroll (from 8.41% to 8.17%), and decreased the Required Contribution Rate by 0.34% of payroll.

The actuarial valuation results provide a “snapshot” view of the System’s financial condition on July 1, 2011. 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, 2011 is \$5.039 billion as compared to an expected UAAL of \$4.489 billion. The unfavorable experience was the combination of an experience loss of \$601 million on the actuarial value of assets and a small experience gain of about \$51 million on System liabilities. While there was a loss on the actuarial value of assets, it is worth noting that the investment return on a market value basis was strong enough that the System moved from a deferred loss of \$2.4 billion to a deferred gain of \$165 million. This is a significant improvement and offsets the losses that would otherwise have been recognized over the next two years.



## SECTION 1 – EXECUTIVE SUMMARY

A summary of the key results from the July 1, 2011 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, 2012 through July 1, 2014. After the scheduled contribution increases are fully phased in, the statutory contribution rates will be 3% of payroll higher than they are in the current year.

	July 1, 2011 Valuation Results	July 1, 2010 Valuation Results
Total Required Contribution Rate (Chapter 356)	16.57%	15.71%
Statutory Contribution Rate (Chapter 354)	12.69%	11.71%
Sufficiency/(Deficiency)	(3.88%)	(4.00%)
Unfunded Actuarial Accrued Liability (\$M)	\$5,039	\$4,758
Funded Ratio (Actuarial Assets)	77.27%	78.45%

The contribution deficiency decreased from 4.00% of payroll in last year's valuation to 3.88% of payroll in the 2011 valuation. The reduction in the deficiency was due to the increase in employee and employer contribution rates; although this was partially offset by the increase in the UAAL from recognized investment losses and contributions below the full actuarial rate. However, the investment return in FY11 mitigated the impact of the deferred investment loss and the market value of assets is now slightly higher than the actuarial value of assets.

### ***EXPERIENCE FOR THE LAST PLAN YEAR***

Numerous factors contributed to the change in the Systems' assets, liabilities and actuarial contribution rate between July 1, 2010 and July 1, 2011. The components are examined in the following discussion.

### **ASSETS**

As of June 30, 2011, TRA had net assets of \$17.3 billion, when measured on a market value basis. This was an increase of \$2.4 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, 2011 was \$17.1 billion, a decrease of \$200 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)
<b>Net Assets, June 30, 2010</b>	\$ 14,917	\$ 17,323
• Employer and Member Contributions	+ 463	+ 463
• Benefit Payments and Administrative Expenses	- 1,493	- 1,493
• Investment Income	+ 3,410	+ 839
<b>Net Assets, June 30, 2011</b>	\$ 17,297	\$ 17,132

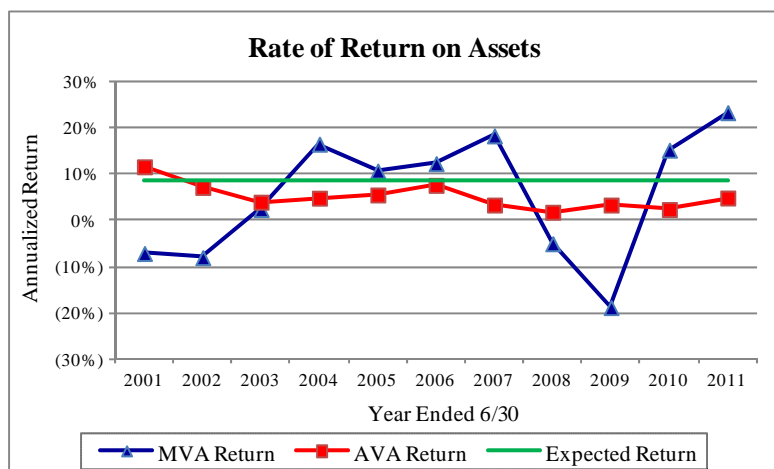




## SECTION 1 – EXECUTIVE SUMMARY

On a market value basis, the rate of return was 23.3% 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 4.9%.

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 smoother than the return on market value.*

In last year's valuation, there was \$2.4 billion in deferred (unrecognized) investment loss. With the favorable investment experience during FY11 the deferred loss has been eliminated and a small deferred gain of about \$165 million now exists. The deferred investment experience will be recognized in the asset smoothing method over the next four years.

## LIABILITIES

The actuarial 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, 2011 in the following table:

	Actuarial Value of Assets	Market Value of Assets
<i>(\$Millions)</i>		
Actuarial Accrued Liability	\$ 22,171	\$ 22,171
Value of Assets	17,132	17,297
Unfunded Actuarial Accrued Liability	5,039	4,874
Funded Ratio	77.27%	78.02%

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



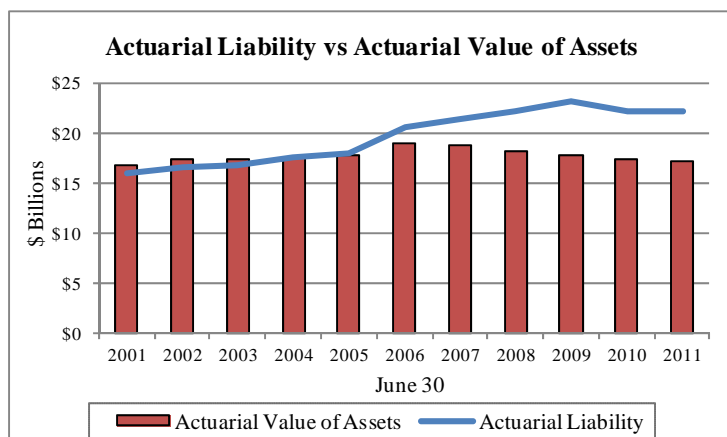
## SECTION 1 – EXECUTIVE SUMMARY

Changes in the UAAL occur for various reasons. The net change in the UAAL from July 1, 2010 to July 1, 2011 was \$281 million. The components of this net change are shown in the table below (in millions):

<b>Unfunded Actuarial Accrued Liability, July 1, 2010 (\$M)</b>	<b>\$ 4,758</b>
• Expected increase from amortization method	105
• Expected increase from contributions below Required Rate	179
• Investment experience	601
• Liability experience	(51)
• Change in actuarial valuation software	(238)
• Change in assumptions	(315)
<b>Unfunded Actuarial Accrued Liability, July 1, 2011</b>	<b>\$ 5,039</b>

As shown above, various components impacted the UAAL. The two most significant factors were: (1) the increase in the UAAL due to the loss on the actuarial value of assets (\$601 million), and (2) the decrease due to changes in the salary increase assumption and decrement timing (\$315 million). Without the strong investment return in FY11, the UAAL would have increased even more due to the deferred investment loss that still existed in the 2010 valuation.

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, different valuation software or benefit provision changes. Overall, the System experienced a net actuarial loss of \$550 million. The net actuarial loss may be explained by considering the separate experience of assets and liabilities. As noted earlier, there was a \$601 million loss, measured on the actuarial value of assets. There was a liability gain of \$51 million which arises from demographic experience more favorable than anticipated by the actuarial assumptions. The liability gain was largely the result of 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 UAAL.*

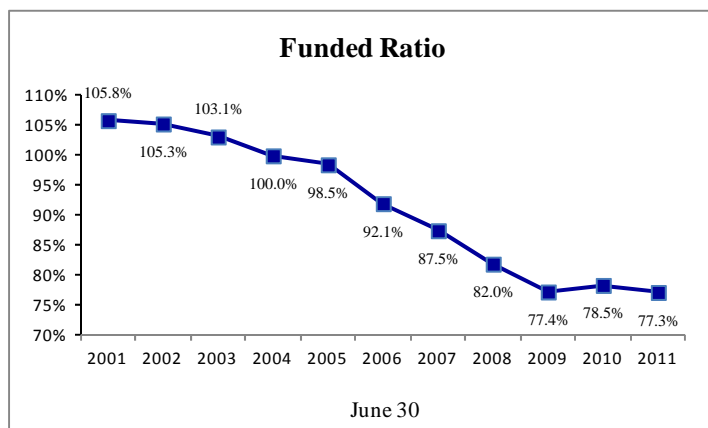
An evaluation of the unfunded actuarial accrued liability on a pure dollar basis may not provide a complete analysis since only the difference between the assets and liabilities (which are both very large numbers) is reflected. Another way to evaluate the unfunded actuarial accrued liability and the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



## SECTION 1 – EXECUTIVE SUMMARY

to track the funded ratio, the ratio of the actuarial value of assets to the actuarial liability. The funded status information is shown below (in millions).

	7/1/07	7/1/08	7/1/09	7/1/10	7/1/11
Funded Ratio	87.5%	82.0%	77.4%	78.5%	77.3%
Unfunded Actuarial Liability (\$M)	\$2,676	\$4,004	\$5,232	\$4,758	\$5,039



*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 have helped stabilize the funded ratio.*

### 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, 2011	July 1, 2010
1. Statutory Contribution Rate	12.69%	11.71%
2. Normal Cost Rate	8.17%	8.36%
3. UAAL Contribution Rate	8.16%	7.11%
4. Expenses	0.24%	0.24%
5. Total Required Contribution	16.57%	15.71%
6. Deficiency (1) - (5)	(3.88%)	(4.00%)

As discussed earlier, there were two assumption changes first reflected in this valuation: (1) the salary increase assumption was changed to a service based assumption and (2) the payroll growth assumption was lowered from 4.50% to 3.75%. The change in decrement timing from beginning of year to mid year is also included with the

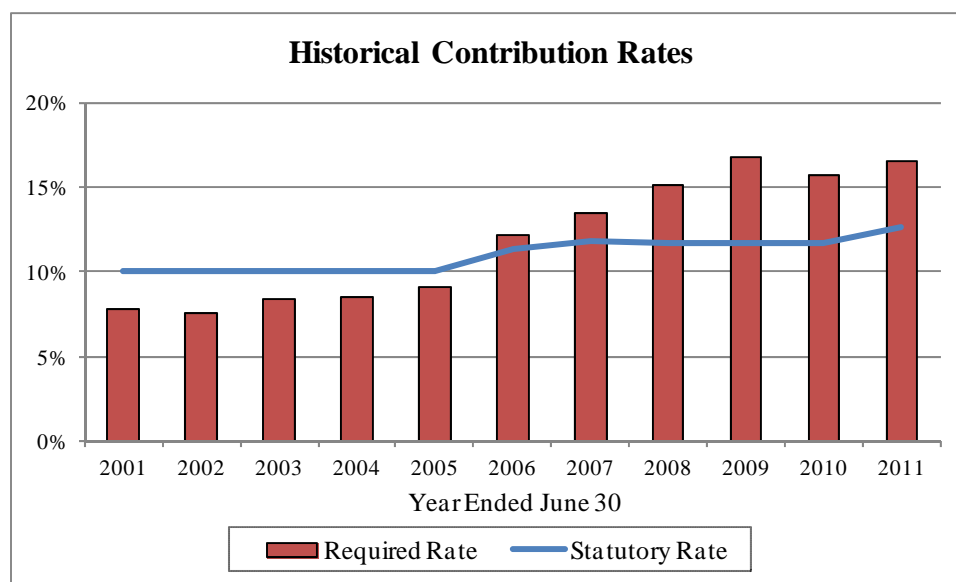


## SECTION 1 – EXECUTIVE SUMMARY

assumption change. The impact on the valuation results is summarized in the table below. All calculations are based on the actuarial value of assets.

	<b>Before Assumption Changes</b>	<b>After Assumption Changes</b>
Projected Benefit Funding Ratio	89.9%	90.4%
Accrued Liability Funding Ratio (AVA)	76.2%	77.3%
Actuarial Value of Assets (AVA)	\$ 17.13B	\$ 17.13B
Unfunded Actuarial Accrued Liability (UAAL)	\$ 5.35B	\$ 5.04B
Normal Cost Rate (% of pay)	8.41%	8.17%
Amortization of UAAL (% of pay)	8.26%	8.16%
Expenses (% of pay)	0.24%	0.24%
Total Required Contribution (% of pay)	16.91%	16.57%
Contribution Deficiency (% of pay)	(4.22%)	(3.88%)

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, 2011 the contribution deficiency increased the UAAL by \$179 million.

The actuarial contribution rate (Required Contribution Rate) is determined based on the snapshot of the System taken on the valuation date, July 1, 2011. 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) each year from July 1, 2012 to July 1, 2014, an increase of 3% of payroll from the current contribution rate. Even when these increases



## SECTION 1 – EXECUTIVE SUMMARY

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 FY2011 was 23.3% as reported by SBI, but due to the deferred investment loss from FY09, the return on the actuarial value of assets was only 4.9%. However, because of the strong return in FY11, the actuarial value of assets is now slightly less than the market value of assets, compared to last year when the actuarial value exceeded the market value by \$2.4 billion. With the lower return on the actuarial value of assets, the funded ratio decreased slightly from 78.45% in last year’s valuation to 77.27% 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. Despite a return of 23% on the market value of assets, the return on the actuarial value of assets was only 5%. This is due to the impact of the remaining deferred investment experience from FY09. However, the elimination of \$2 billion in deferred investment losses represents a significant improvement in the outlook for the System’s long term funding. There is not a significant difference in the actuarial and market value of assets in this year’s valuation.

The key valuation results from the July 1, 2011 actuarial valuation are shown below, using both actuarial and market value of assets.

	\$(M)	
	<u>Actuarial Value</u>	<u>Market Value</u>
<b><u>Total System</u></b>		
<b>Statutory Rate</b>	12.69%	12.69%
<b>Required Contribution</b>		
Normal Cost	8.17%	8.17%
UAAL Contribution	8.16%	7.89%
Expenses	<u>0.24%</u>	<u>0.24%</u>
Total Required Contribution	16.57%	16.30%
Deficiency	(3.88%)	(3.61%)
UAAL	\$5,039	\$4,874
Funded Ratio	77.27%	78.02%

The long-term financial health of this retirement System, as with 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 the last two fiscal years, have significantly improved the projected long term funding of the System. 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 improve over the long term,



## **SECTION 1 – EXECUTIVE SUMMARY**

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provided all actuarial assumptions are met. While the funded ratio is expected to improve, it is not projected to reach 100% by June 30, 2037 in the absence of contribution increases or some other unanticipated changes or favorable experience.

We conclude this executive summary by presenting comparative statistics and actuarial information on both the July 1, 2011 and July 1, 2010 valuations.



## SECTION I - EXECUTIVE SUMMARY

### Principal Valuation Results

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

	Actuarial Valuation as of	
	July 1, 2011	July 1, 2010
<b>1. PARTICIPANT DATA</b>		
A. Active members		
1. Number	76,755	77,356
2. Projected annual earnings for fiscal year (000s)	4,106,922	4,047,547
3. Average projected annual earnings for fiscal year 2012	53,507	52,324
4. Average age	43.5	43.5
5. Average service	12.0	11.9
B. Service retirements	49,079	47,517
C. Survivors	3,856	3,682
D. Disability retirements	602	654
E. Deferred retirements	13,237	12,756
F. Terminated other non-vested	25,196	23,651
<b>G. Total</b>	<b>168,725</b>	<b>165,616</b>
<b>2. LIABILITIES AND FUNDING RATIOS (dollars in thousands)</b>		
A. Accrued Benefit Funding Ratio		
1. Current assets (AVA)	\$ 17,132,383	\$ 17,323,146
2. Current benefit obligations	21,054,036	21,159,773
3. Funding ratio	81.37%	81.87%
B. Accrued Liability Funding Ratio		
1. Current assets (AVA)	\$ 17,132,383	\$ 17,323,146
2. Market value of assets (MVA)	17,297,392	14,917,240
3. Actuarial accrued liability	22,171,493	22,081,634
4. Unfunded actuarial accrued liability (B.3. - B.1.)	5,039,110	4,758,488
5. Funding ratio (AVA) (B.1. / B.3.)	77.27%	78.45%
6. Funding ratio (MVA) (B.2. / B.3.)	78.02%	67.55%
C. Projected Benefit Funding Ratio		
1. Current and expected future assets	\$ 22,686,711	\$ 22,305,013
2. Current and expected future benefit obligations	25,083,218	24,981,006
3. Funding ratio	90.45%	89.29%
<b>3. CONTRIBUTIONS (% of Payroll)</b>		
A. Normal Cost Rate	8.17%	8.36%
B. UAAL Amortization Payment	8.16%	7.11%
C. Expenses	0.24%	0.24%
D. Total Required Contribution (Chapter 356)	16.57%	15.71%
E. Statutory Contribution (Chapter 354)	12.69%	11.71%
F. Contribution (Deficiency)/Sufficiency (3.E. - 3.D.)	(3.88%)	(4.00%)



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**SECTION II**  
**PLAN ASSETS**



**SECTION II - PLAN ASSETS**

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## SECTION II - PLAN ASSETS

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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.



## SECTION II - PLAN ASSETS

TABLE 1

**STATEMENT OF PLAN NET ASSETS AT MARKET VALUE**

*(Dollars in Thousands)*

	<u>June 30, 2011</u>	<u>June 30, 2010</u>
	<u>Amount</u>	<u>Amount</u>
Cash and short-term investments		
Cash	\$ 4,277	\$ 4,185
Building account cash	59	2
Short term investments	464,404	334,912
Total cash and short term investments	\$ 468,740	\$ 339,099
Receivables	15,624	13,961
Investments (at fair value)		
Fixed income pool	\$ 3,821,522	\$ 3,670,822
Minneapolis pool	196	153
Alternative investments pool	2,530,478	2,327,655
Indexed equity pool	3,076,747	2,383,658
Domestic equity pool	4,675,143	3,914,537
Global equity pool	2,723,272	2,301,526
Total investments	\$ 16,827,358	\$ 14,598,351
Securities lending collateral	1,185,570	1,343,468
Building		
Land	\$ 171	\$ 171
Building and equipment	11,279	11,279
- Reserve for building depreciation	(2,821)	(2,532)
Deferred bond charge	146	146
- Reserve for deferred bond charge amortization	(50)	(45)
Total building	\$ 8,725	\$ 9,019
Fixed assets net of accumulation depreciation	2,815	1,324
<b>Total Assets</b>	<b>\$ 18,508,832</b>	<b>\$ 16,305,222</b>



## SECTION II - PLAN ASSETS

TABLE 1 (continued)

**STATEMENT OF PLAN NET ASSETS AT MARKET VALUE**  
*(Dollars in Thousands)*

	<u>June 30, 2011</u>	<u>June 30, 2010</u>
<b>Liabilities</b>	<u>Amount</u>	<u>Amount</u>
Current		
Accounts payable	\$ 9,863	\$ 12,180
Accrued compensated absences	68	62
Accrued expenses - building	61	1
Bonds payable	265	255
Bonds interest payable	43	45
Securities lending collateral	1,185,570	1,343,468
Total current liabilities	\$ 1,195,870	\$ 1,356,011
Long term		
Accrued compensated absences	\$ 673	\$ 707
Accrued OPEB liability*	57	43
Bonds payable	8,656	8,921
Total long term liabilities	\$ 9,386	\$ 9,671
<b>Total Liabilities</b>	<b>\$ 1,205,256</b>	<b>\$ 1,365,682</b>
<b>Net assets held in trust for pension benefits</b>	<b>\$ 17,303,576</b>	<b>\$ 14,939,540</b>
Earnings Limitation Savings Account (ELSA) accounts payable	(6,184)	(22,300)
<b>Net assets held in trust, after adjustment for ELSA accounts</b>	<b>\$ 17,297,392</b>	<b>\$ 14,917,240</b>

\* Not calculated by Cavanaugh Macdonald



## SECTION II - PLAN ASSETS

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, 2011 and 2010.

	For Year Ended	
	June 30, 2011	June 30, 2010
<b>1. Market Value of Fund Balance at Beginning of Year</b>	<b>\$ 14,917,240</b>	<b>\$ 13,813,826</b>
2. Contributions		
a. Member	\$ 218,024	\$ 214,909
b. Employer	222,723	220,538
c. Direct aid (state/city/county)	21,510	21,550
d. Earnings Limitation Savings Account (ELSA)	1,291	1,257
e. Total contributions	<u>\$ 463,548</u>	<u>\$ 458,254</u>
3. Investment Income		
a. Investment income/(loss)	\$ 3,414,280	\$ 2,109,356
b. Investment expenses	(24,150)	(21,716)
c. Total investment income/(loss)	<u>\$ 3,390,130</u>	<u>\$ 2,087,640</u>
4. Other	<u>4,271</u>	<u>3,593</u>
<b>5. Total Income (2.e. + 3.c. + 4)</b>	<b>\$ 3,857,949</b>	<b>\$ 2,549,487</b>
6. Benefits Paid		
a. Annuity benefits	\$ (1,459,550)	\$ (1,421,382)
b. Refunds	(23,813)	(12,804)
c. Total benefits paid	<u>\$ (1,483,363)</u>	<u>\$ (1,434,186)</u>
7. Administrative Expenses	(9,264)	(9,587)
<b>8. Total Disbursements (6.c. + 7.)</b>	<b>\$ (1,492,627)</b>	<b>\$ (1,443,773)</b>
9. Increase/(Decrease) in ELSA Account Value	14,830	(2,300)
<b>10. Market Value of Fund Balance at End of Year</b>	<b>\$ 17,297,392</b>	<b>\$ 14,917,240</b>



## SECTION II - PLAN ASSETS

### TABLE 3

#### ACTUARIAL VALUE OF ASSETS AS OF JUNE 30, 2011

(Dollars in Thousands)

<b>1. Market value of assets available for benefits</b>				<b>\$</b>	<b>17,297,392</b>
2. Determination of average balance					
a. Assets available at July 1, 2010*				\$	14,939,540
b. Assets available at June 30, 2011*					17,303,576
c. Net investment income for fiscal year ending June 30, 2011					3,390,130
d. Average balance $(a. + b. - c.) / 2$				\$	14,426,493
3. Expected return $(8.5\% * 2.d.)$					1,226,252
4. Actual return					3,390,130
5. Current year unrecognized asset return					2,163,878
6. Unrecognized asset returns**					
		<b>Original</b>	<b>% Not</b>		
		<b>Amount</b>	<b>Recognized</b>		
a. Year ended June 30, 2011	\$	2,163,878	80%	\$	1,731,102
b. Year ended June 30, 2010		953,497	60%		572,098
c. Year ended June 30, 2009		(4,812,478)	40%		(1,924,991)
d. Year ended June 30, 2008		(1,066,002)	20%		(213,200)
e. Total return not yet recognized				\$	<u>165,009</u>
7. Actuarial value of assets at June 30, 2011 (1. - 6.e.)				<b>\$</b>	<b>17,132,383</b>

\* Before recognition of ELSA accounts payable.

\*\* Prior to the year ending June 30, 2009, unrecognized asset returns do not include MPRIF gains or losses.



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**SECTION III**  
**PLAN LIABILITIES**



**SECTION III - PLAN LIABILITIES**

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## **SECTION III - PLAN LIABILITIES**

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In the previous section, an analysis was given of the assets of the System as of the valuation date, July 1, 2011. 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, 2011. The scheduled increases in the employee and employer contribution rates on July 1, 2012 through July 1, 2014 are not reflected in this valuation.

### **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 do 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.



## SECTION III - PLAN LIABILITIES

### TABLE 4

#### ACTUARIAL VALUATION BALANCE SHEET AS OF JULY 1, 2011

(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 rate of contribution is determined as that amount which will make the total present and potential assets balance with the total present value of future benefits. The members' rate of contribution is fixed at the current schedule of compensation. The employer's rate of contribution is the balance required to cover the total rate of contribution.

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.

<b>A. Actuarial Value of Assets</b>	\$ 17,132,383
<b>B. Expected future assets</b>	
1. Present value of expected future statutory supplemental contributions*	\$ 2,642,603
2. Present value of expected future normal cost contributions	2,911,725
3. Total expected future assets (1. + 2.)	\$ 5,554,328
<b>C. Total current and expected future assets**</b>	\$ 22,686,711

	<u>Non-Vested</u> <u>Benefits</u>	<u>Vested</u> <u>Benefits</u>	<u>Total</u>
<b>D. Current benefit obligations</b>			
1. Benefit recipients			
a. Service retirements	\$ 0	\$ 13,024,543	\$ 13,024,543
b. Disability	0	149,341	149,341
c. Survivors	0	790,668	790,668
2. Deferred retirements with augmentation to Normal Retirement Date	0	540,453	540,453
3. Former members without vested rights***	47,550	0	47,550
4. Active members	33,270	6,468,211	6,501,481
5. Total Current Benefit Obligations	\$ 80,820	\$ 20,973,216	\$ 21,054,036
<b>E. Expected Future Benefit Obligations</b>			4,029,182
<b>F. Total Current and Expected Future Benefit Obligations</b>			25,083,218
<b>G. Unfunded Current Benefit Obligations (D.5. - A.)</b>			3,921,653
<b>H. Unfunded Current and Future Benefit Obligations (F. - C.)</b>			2,396,507

\* Under LCPR guidelines, this amount does not include supplemental payments which could occur after the expiration of the remaining 26 year amortization period.

\*\* Does not reflect deferred investment experience in the asset smoothing method. Total expected future assets on a market value basis is \$ 22,851,720

\*\*\* Former members with less than three years of service that have not collected a refund of member contributions as of the valuation date.



## SECTION III - PLAN LIABILITIES

TABLE 5

**DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY**  
**AS OF JULY 1, 2011**  
*(Dollars in Thousands)*

	<b>Actuarial Present Value of Projected Benefits</b>	<b>Actuarial Present Value of Future Normal Costs</b>	<b>Actuarial Accrued Liability</b>
1. Active Members			
a. Retirement annuities	\$ 9,660,829	\$ (2,241,978)	\$ 7,418,851
b. Disability Benefits	178,246	(69,199)	109,047
c. Survivor benefits	83,243	(25,248)	57,995
d. Deferred retirements	602,516	(469,997)	132,519
e. Refunds	5,829	(105,303)	(99,474)
f. Total	<u>\$ 10,530,663</u>	<u>\$ (2,911,725)</u>	<u>\$ 7,618,938</u>
2. Deferred Retirements with Future Augmentation to Normal Retirement Date	540,453	0	540,453
3. Former Members Without Vested Rights	47,550	0	47,550
4. Benefit Recipients	<u>13,964,552</u>	<u>0</u>	<u>13,964,552</u>
5. Total Actuarial Accrued Liability	\$ 25,083,218	\$ (2,911,725)	\$ 22,171,493
6. Actuarial Value of Assets			\$ 17,132,383
7. Unfunded Actuarial Accrued Liability (UAAL)			\$ 5,039,110

\* On a market value of assets basis, the unfunded actuarial accrued liability is \$4,874,101.



## SECTION III - PLAN LIABILITIES

TABLE 6

### CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)

(Dollars in Thousands)

A. Unfunded actuarial accrued liability at beginning of year	\$	4,758,488
B. Changes due to interest requirements and current rate of funding*		
1. Normal cost and actual administrative expenses	\$	347,738
2. Contributions		(463,548)
3. Interest on A., B.1., and B.2.		399,650
4. Total (B.1. + B.2. + B.3.)	\$	<u>283,840</u>
C. Expected unfunded actuarial accrued liability at end of year (A. + B.4.)	\$	5,042,328
D. Increase (decrease) due to actuarial losses (gains) because of experience deviations from expected		
1. Salary increases	\$	(173,337)
2. Investment return (AVA)		600,957
3. Mortality of benefit recipients		(74,936)
4. Other items		197,024
5. Total	\$	<u>549,708</u>
E. Unfunded actuarial accrued liability at end of year before plan amendments and changes in actuarial assumptions (C. + D.5.)	\$	5,592,036
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**	\$	(315,414)
H. Change in unfunded actuarial accrued liability due to change in actuarial software	\$	(237,512)
I. Unfunded actuarial accrued liability at end of year (E. + F. + G. + H.)	\$	5,039,110

\* 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 changes in the salary increase assumption and decrement timing.



**SECTION IV**  
**SYSTEM CONTRIBUTIONS**



**SECTION IV – SYSTEM CONTRIBUTIONS**

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## **SECTION IV - CONTRIBUTIONS**

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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 deal with 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. 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.



## SECTION IV - CONTRIBUTIONS

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TABLE 7

**NORMAL COST AT JULY 1, 2011**

*(Dollars in Thousands)*

	<b><u>Percent of Pay</u></b>	<b><u>Dollar Amount</u></b>
1. Normal Cost Rate		
a. Retirement benefits	6.44%	\$ 264,572
b. Disability benefits	0.18%	7,398
c. Survivor benefits	0.07%	2,881
d. Deferred retirement benefits*	1.18%	48,473
e. Refunds	0.30%	12,325
f. Total	8.17%	\$ 335,649

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



## SECTION IV - CONTRIBUTIONS

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TABLE 8

### DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE

*(Dollars in Thousands)*

	<u>Amount</u>
A. Determination of Unfunded Actuarial Accrued Liability (UAAL)*	
1. Actuarial accrued liability	\$ 22,171,493
2. Actuarial value of assets	17,132,383
3. Unfunded actuarial accrued liability	\$ <u>5,039,110</u>
B. Determination of Supplemental Contribution Rate*	
1. Present value of future payrolls through the amortization date of June 30, 2037	\$ 61,743,070
2. Supplemental contribution rate (A.3. / B.1.)**	8.16%

\* *On a market value of assets basis, the unfunded actuarial accrued liability is \$4,874,101 and the supplemental contribution rate is 7.89% of payroll.*

\*\* *The amortization factor as of July 1, 2011 is 15.0339.*



## SECTION IV - CONTRIBUTIONS

### 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, 2012 through July 1, 2014.

	<u>Percent of Payroll</u>	<u>Dollar Amount</u>
<b>A. Statutory contributions - Chapter 354</b>		
1. Employee contributions	6.00%	\$ 246,490
2. Employer contributions*	6.16%	252,854
3. Supplemental contributions**		
a. 1993 Legislation	0.12%	4,984
b. 1996 Legislation	0.09%	3,572
c. 1997 Legislation	0.32%	12,954
	12.69%	\$ 520,854
<b>B. Required contributions - Chapter 356</b>		
1. Normal cost		
a. Retirement benefits	6.44%	\$ 264,572
b. Disability benefits	0.18%	7,398
c. Survivors	0.07%	2,881
d. Deferred retirement benefits	1.18%	48,473
e. Refunds	0.30%	12,325
f. Total	8.17%	\$ 335,649
2. Supplemental contribution for the amortization of the Unfunded Actuarial Accrued Liability by June 30, 2037	8.16%	335,125
3. Allowance for expenses	0.24%	\$ 9,857
4. Total annual contribution for fiscal year ending June 30, 2012***	16.57%	\$ 680,631
<b>C. Contribution Sufficiency / (Deficiency) (A.4. - B.4.)***</b>	(3.88%)	\$ (159,777)

Note: Projected annual payroll for fiscal year beginning on the valuation date: \$4,106,922

\* Employer contribution rate is blended to reflect rates of 13.14% of pay for Basic members, 6.00% of pay for Coordinated members not employed by Special School District #1, and 9.64% 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 16.30% of payroll and the contribution deficiency is (3.61%) of payroll.



**SECTION IV - CONTRIBUTIONS**

**TABLE 10**

**STATUTORY AND REQUIRED CONTRIBUTION AMOUNTS**

*(Dollars in Thousands)*

**Basic Members**

	<u>Percent of Payroll</u>		<u>Dollar Amount</u>
A. Statutory contributions - Chapter 354			
1. Employee contributions	9.50%	\$	204
2. Employer contributions*			
	13.64%		293
3. Supplemental contributions**			
a. 1993 Legislation	0.12%		3
b. 1996 Legislation	0.09%		2
c. 1997 Legislation	0.32%		7
4. Total	23.67%	\$	509
B. Required contributions - Chapter 356			
1. Normal cost			
a. Retirement benefits	10.46%	\$	225
b. Disability benefits	0.44%		9
c. Survivors	0.39%		8
d. Deferred retirement benefits	1.74%		37
e. Refunds	0.49%		11
f. Total	13.52%	\$	290

Note: Projected annual payroll for fiscal year beginning on the valuation date: \$2,150 for 24 members.

\* All Basic active members are teachers employed by Special School District #1; employer contribution rate of 13.64% of pay applies.

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



**SECTION IV - CONTRIBUTIONS**

**TABLE 11**

**STATUTORY AND REQUIRED CONTRIBUTION AMOUNTS**

*(Dollars in Thousands)*

**Coordinated Members**

	<u>Percent of Payroll</u>		<u>Dollar Amount</u>
A. Statutory contributions - Chapter 354			
1. Employee contributions	6.00%	\$	246,286
2. Employer contributions*	6.16%		252,854
3. Supplemental contributions**			
a. 1993 Legislation	0.12%		4,926
b. 1996 Legislation	0.09%		3,694
c. 1997 Legislation	0.32%		13,135
4. Total	12.69%	\$	520,895
B. Required contributions - Chapter 356			
1. Normal cost			
a. Retirement benefits	6.44%	\$	264,347
b. Disability benefits	0.18%		7,389
c. Survivors	0.07%		2,873
d. Deferred retirement benefits	1.18%		48,436
e. Refunds	0.30%		12,314
f. Total	8.17%	\$	335,359

Note: Projected annual payroll for fiscal year beginning on the valuation date: \$4,104,772. This includes \$3,919,058 for 72,679 Coordinated members who are not employed by Special School District #1 and \$185,714 for 4,052 members who are employed by Special School District #1.

\* Employer contribution rate is blended to reflect rates of 6.0% of pay for Coordinated members not employed by Special School District #1, and 9.64% 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**



**SECTION V - PLAN ACCOUNTING**

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## SECTION V - PLAN ACCOUNTING

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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.



**SECTION V - PLAN ACCOUNTING**

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**TABLE 12**  
**SUMMARY OF MEMBERSHIP DATA**

	<u>June 30, 2011</u>	<u>June 30, 2010</u>
Active members:		
Vested	62,121	62,121
Non-vested	<u>14,634</u>	<u>15,235</u>
Total	76,755	77,356
Pensioners and Beneficiaries	53,537	51,853
Terminated vested members entitled to, but not yet receiving, benefits:	13,237	12,756
Other terminated, non-vested members entitled to a refund of contributions	<u>25,196</u>	<u>23,651</u>
<b>Total</b>	<b>168,725</b>	<b>165,616</b>



SECTION V - PLAN ACCOUNTING

TABLE 13

SCHEDULE OF FUNDING PROGRESS\*

(Dollars in Thousands)

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

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%

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



**SECTION V - PLAN ACCOUNTING**

**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:

<b>Plan Year Ended June 30</b>	<b>Actuarially Required Contribution Rate (a)</b>	<b>Actual Covered Payroll (b)</b>	<b>Actual Member Contributions (c)</b>	<b>Annual Required Contributions [(a)*(b)] - (c)</b>	<b>Actual Employer Contributions<sup>2</sup></b>	<b>Percentage Contributed</b>
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 <sup>3</sup>	9.55%	2,422,957	124,096	107,296	151,323	141.03%
1999 <sup>2</sup>	8.39%	2,625,254	132,040	88,219	130,526	147.96%
2000 <sup>2</sup>	8.36%	2,704,575	138,696	87,406	134,419	153.79%
2001 <sup>2,4</sup>	7.92%	2,812,000	145,075	77,635	139,799	180.07%
2002 <sup>2</sup>	7.85%	2,873,771	152,331	73,260	142,222	194.13%
2003 <sup>2,5</sup>	7.57%	2,952,887	155,577	67,957	149,481	219.96%
2004 <sup>2</sup>	8.37%	3,032,483	159,140	94,679	151,029	159.52%
2005 <sup>2</sup>	8.46%	3,121,571	160,982	103,103	157,693	152.95%
2006 <sup>6</sup>	9.05%	3,430,645	177,085	133,389	200,286	150.15%
2007 <sup>7</sup>	12.16%	3,532,159	199,869	229,642	209,219	91.11%
2008 <sup>8</sup>	13.44%	3,645,230	209,592	280,327	231,562	82.60%
2009 <sup>9</sup>	15.08%	3,761,484	212,043	355,189	240,718	67.72%
2010 <sup>10</sup>	16.81%	3,787,757	214,909	421,813	242,088	57.39%
2011 <sup>11</sup>	15.71%	3,838,111	218,024	384,943	244,233	63.45%
2012 <sup>12</sup>	16.57%					

<sup>1</sup> Information prior to 2004 provided by Milliman USA; 2004 to 2008 information provided by The Segal Company; 2009 and 2010 information provided by Mercer.

<sup>2</sup> Includes contributions from other sources (if applicable)

<sup>3</sup> Actuarially Required Contributions calculated according to parameters of GASB 25 using a 30-year amortization method of the negative unfunded actuarial accrued liability.

<sup>4</sup> Actuarially Required Contribution Rate prior to change in Actuarial Assumptions and Asset Valuation Method is 7.31%.

<sup>5</sup> Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 8.11%.

<sup>6</sup> Actuarially Required Contribution Rate shown is the contribution rate stated in the TRA July 1, 2005 actuarial valuation.

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

<sup>8</sup> Actuarially Required Contribution Rate prior to change in Asset Valuation Method is 11.58%.

<sup>9</sup> Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 15.36%.

<sup>10</sup> Actuarially Required Contribution Rate prior to change in Asset Valuation Method is 19.98%.

<sup>11</sup> Actuarially Required Contribution Rate prior to change in Actuarial Assumptions and Plan Provisions is 18.91%.

<sup>12</sup> Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 16.91%.



**SECTION V - PLAN ACCOUNTING**

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**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, 2011. The “Retirees” column shows benefits expected to be paid to all other members. This includes those who, as of July 1, 2011, are receiving benefit payments or who terminated employment and are entitled to a deferred benefit.

<b>Year Ending</b>				
<b>June 30</b>	<b>Actives</b>	<b>Retirees</b>	<b>Total</b>	
2012	\$ 105,124	\$ 1,411,355	\$ 1,516,479	
2013	170,152	1,392,416	1,562,567	
2014	234,841	1,372,125	1,606,967	
2015	298,817	1,355,996	1,654,814	
2016	361,714	1,340,146	1,701,859	
2017	424,633	1,325,695	1,750,328	
2018	489,301	1,310,421	1,799,722	
2019	556,116	1,293,386	1,849,502	
2020	623,520	1,274,792	1,898,312	
2021	690,434	1,253,819	1,944,253	
2022	756,323	1,230,705	1,987,029	
2023	820,424	1,205,310	2,025,734	
2024	884,669	1,177,575	2,062,244	
2025	951,876	1,147,024	2,098,900	
2026	1,023,864	1,114,295	2,138,158	
2027	1,101,191	1,079,866	2,181,057	
2028	1,184,530	1,043,090	2,227,620	
2029	1,273,902	1,004,157	2,278,059	
2030	1,370,262	963,068	2,333,330	
2031	1,473,248	920,093	2,393,341	
2032	1,582,422	875,307	2,457,729	
2033	1,697,141	828,754	2,525,894	
2034	1,816,774	780,630	2,597,405	
2035	1,940,636	731,174	2,671,810	
2036	2,065,571	680,668	2,746,239	
2037	2,188,324	629,435	2,817,759	



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**APPENDIX A**

**SUMMARY STATISTICS**  
**ON MEMBERSHIP DATA**



**APPENDIX A – MEMBERSHIP DATA**

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**APPENDIX A – MEMBERSHIP DATA**

**TABLE 16**

**RECONCILIATION OF MEMBERS\***

	Active Members**	Former Members***	Benefit Recipients****			Total
			Service Retirements	Disability Retirements	Survivors	
<b>Members on 7/1/2010</b>	<b>77,919</b>	<b>36,407</b>	<b>47,556</b>	<b>615</b>	<b>3,682</b>	<b>166,179</b>
New hires	4,302	-	-	-	-	4,302
Return from inactive	1,419	(1,419)	-	-	-	0
Return from zero balance	376	-	-	-	-	376
Transfer to inactive	(4,410)	4,410	-	-	-	0
Refunded	(256)	(700)	-	-	-	(956)
Restored write-off	-	128	-	-	-	128
Repay refunds	-	50	-	-	-	50
Transfer from non-status	-	19	-	-	-	19
Retirements	(1,945)	(594)	2,544	(51)	-	(46)
Benefits began	-	-	-	63	368	431
Benefits ended	-	-	-	(3)	(61)	(64)
Deaths	(47)	(26)	(1,018)	(17)	(133)	(1,241)
Adjustments for Disablitants	(602)	-	-	-	-	(602)
Adjustments (Other)	(1)	135	(3)	(5)	-	126
Net changes	(1,164)	2,003	1,523	(13)	174	2,523
<b>Members on 6/30/2011</b>	<b>76,755</b>	<b>38,410</b>	<b>49,079</b>	<b>602</b>	<b>3,856</b>	<b>168,702</b>

\* 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 24 Basic and 77,308 Coordinated members.

\*\*\* Former members include 34 Basic and 38,376 Coordinated members.

\*\*\*\* Benefit recipients include 5,131 Basic members and 47,398 Coordinated members.

<b>Former Member Statistics</b>	<b>Vested</b>	<b>Non-vested</b>	<b>Total</b>
Number	13,237	25,196	38,433
Average Age	48.7	43.2	45.1
Average Service (years)	7.4	0.8	3.1
Average annual benefits, with augmentation to Normal Retirement Date and 4% Combined Service Annuity load	\$9,280	N/A	N/A
Average refund value, with 4% Combined Service Annuity load	\$27,399	\$1,887	\$10,674



## APPENDIX A – MEMBERSHIP DATA

### TABLE 17

#### DISTRIBUTION OF ACTIVE MEMBERS\*

Age	Years of Service as of June 30, 2011										Total	
	<3**	3-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 +		
<25	2,182	27	1									2,210
Avg. Earnings	20,162	38,248	43,755									20,394
25-29	4,250	2,805	1,780	1								8,836
Avg. Earnings	23,532	39,008	45,593	39,491								32,891
30-34	1,860	1,587	5,444	1,500								10,391
Avg. Earnings	21,636	38,669	48,065	58,985								43,475
35-39	1,347	714	2,312	4,632	841							9,846
Avg. Earnings	19,647	37,631	47,632	60,557	67,999							50,898
40-44	1,343	701	1,688	2,750	3,768	664						10,914
Avg. Earnings	16,902	35,968	45,032	59,578	67,301	70,778						53,908
45-49	1,088	585	1,310	1,641	2,036	2,432	646	1				9,739
Avg. Earnings	15,008	32,496	44,968	57,943	65,863	70,458	72,626	48,019				55,627
50-54	949	435	1,082	1,423	1,463	1,693	1,893	801	1			9,740
Avg. Earnings	15,105	30,312	43,282	56,927	64,463	68,877	71,314	70,382	49,593			57,259
55-59	694	299	751	1,096	1,320	1,373	1,278	1,962	450			9,223
Avg. Earnings	11,220	28,109	40,436	55,938	63,079	68,886	71,642	72,822	74,123			60,013
60-64	547	180	448	558	724	754	609	425	457	101		4,803
Avg. Earnings	7,166	22,653	37,394	52,458	61,367	68,369	73,062	77,862	76,273	74,336		56,205
65-69	252	45	88	90	81	96	59	36	31	45		823
Avg. Earnings	4,068	13,213	24,820	48,930	62,332	68,058	77,277	82,673	95,714	83,857		41,393
70 +	122	21	23	8	8	11	7	8	5	17		230
Avg. Earnings	4,552	7,021	22,660	39,893	63,043	67,900	88,791	75,459	106,428	84,959		26,070
<b>Total</b>	<b>14,634</b>	<b>7,399</b>	<b>14,927</b>	<b>13,699</b>	<b>10,241</b>	<b>7,023</b>	<b>4,492</b>	<b>3,233</b>	<b>944</b>	<b>163</b>		<b>76,755</b>
<b>Avg. Earnings</b>	<b>18,953</b>	<b>36,400</b>	<b>45,861</b>	<b>58,709</b>	<b>65,661</b>	<b>69,539</b>	<b>71,939</b>	<b>72,988</b>	<b>76,018</b>	<b>78,073</b>		<b>50,028</b>

\* Active members include 24 Basic and 76,731 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, 2011 as reported by the Teachers Retirement Association of Minnesota.



**APPENDIX A – MEMBERSHIP DATA**

**TABLE 18**

**DISTRIBUTION OF SERVICE RETIREMENTS\***

Age	Years Since Retirement as of June 30, 2011							Total
	<1	1-4	5-9	10-14	15-19	20-24	25 +	
<55	2	3						5
Avg. Benefit	38,945	23,978						29,965
55-59	678	1,619	31				1*	2,329
Avg. Benefit	35,372	33,996	34,906				1,501	34,395
60-64	1,042	4,947	4,427	361			3	10,780
Avg. Benefit	27,166	29,892	25,426	32,135		2,519		27,862
65-69	344	2,301	4,212	4,967	100		3	11,927
Avg. Benefit	21,122	20,779	22,006	23,298	31,048	2,616		22,353
70-74	32	330	1,577	4,810	2,262	63	8	9,082
Avg. Benefit	11,813	17,452	18,750	26,487	29,062	20,991	4,505	25,347
75-79	1	49	194	1,623	3,431	1,219	32	6,549
Avg. Benefit	560	13,094	15,887	26,928	34,956	30,295	24,554	31,314
80-84	1	7	40	152	1,384	1,876	1,108	4,568
Avg. Benefit	2,584	25,582	16,428	26,903	32,498	32,592	32,576	32,211
85-89		2	9	19	114	838	1,430	2,412
Avg. Benefit		55,918	11,888	24,953	37,471	29,637	34,161	32,608
90 +			2		3	75	1,347	1,427
Avg. Benefit			2,247		999	30,842	27,489	27,574
<b>Total</b>	<b>2,100</b>	<b>9,258</b>	<b>10,492</b>	<b>11,932</b>	<b>7,294</b>	<b>4,077</b>	<b>3,926</b>	<b>49,079</b>
<b>Avg. Benefit</b>	<b>28,579</b>	<b>27,813</b>	<b>22,851</b>	<b>25,393</b>	<b>32,633</b>	<b>31,042</b>	<b>31,278</b>	<b>27,458</b>

\* Pertaining to the account of a former participant 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.



**APPENDIX A – MEMBERSHIP DATA**

**TABLE 19**  
**DISTRIBUTION OF SURVIVORS**

Age	Years Since Death as of June 30, 2011							Total
	<1	1-4	5-9	10-14	15-19	20-24	25 +	
<45	24	63	34	19	3			<b>143</b>
Avg. Benefit	17,626	17,879	13,742	14,370	31,718			<b>16,677</b>
45-49	3	27	13	8	1	1	1	<b>54</b>
Avg. Benefit	10,138	19,805	12,773	24,870	37,902	33,084	39,526	<b>19,271</b>
50-54	12	43	20	10	3	1	1	<b>90</b>
Avg. Benefit	13,174	16,264	13,652	11,825	2,888	8,187	23,805	<b>14,327</b>
55-59	11	63	40	12	6	2		<b>134</b>
Avg. Benefit	20,656	18,016	18,937	16,603	21,851	9,681		<b>18,428</b>
60-64	33	128	95	43	20	3	1	<b>323</b>
Avg. Benefit	26,345	20,040	20,260	20,792	16,420	8,323	5,502	<b>20,471</b>
65-69	28	181	142	65	25	11	2	<b>454</b>
Avg. Benefit	17,423	22,807	19,857	17,743	21,407	17,094	8,616	<b>20,549</b>
70-74	46	190	163	103	67	30	5	<b>604</b>
Avg. Benefit	23,124	25,754	26,677	24,587	25,855	17,589	23,695	<b>25,192</b>
75-79	62	188	179	137	78	47	20	<b>711</b>
Avg. Benefit	31,863	32,458	31,198	32,225	31,139	26,391	29,726	<b>31,422</b>
80-84	52	187	172	125	78	56	54	<b>724</b>
Avg. Benefit	34,303	32,550	32,510	30,062	32,231	28,437	30,911	<b>31,762</b>
85-89	18	129	97	63	44	37	42	<b>430</b>
Avg. Benefit	19,962	31,702	33,388	30,996	35,609	37,582	31,231	<b>32,347</b>
90 +	7	42	44	37	23	14	22	<b>189</b>
Avg. Benefit	44,425	32,138	31,193	31,139	24,496	36,843	29,725	<b>31,315</b>
<b>Total</b>	<b>296</b>	<b>1,241</b>	<b>999</b>	<b>622</b>	<b>348</b>	<b>202</b>	<b>148</b>	<b>3,856</b>
<b>Avg. Benefit</b>	<b>25,977</b>	<b>26,358</b>	<b>26,570</b>	<b>26,763</b>	<b>28,568</b>	<b>27,428</b>	<b>29,959</b>	<b>26,843</b>

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.



**APPENDIX A – MEMBERSHIP DATA**

**TABLE 20**

**DISTRIBUTION OF DISABILITY RETIREMENTS\***

<b>Age</b>	<b>Years Disabled as of June 30, 2011</b>							<b>Total</b>
	<b>&lt;1</b>	<b>1-4</b>	<b>5-9</b>	<b>10-14</b>	<b>15-19</b>	<b>20-24</b>	<b>25 +</b>	
<b>&lt;45</b>	3	14	10		1			<b>28</b>
<b>Avg. Benefit</b>	9,954	7,831	5,600		4,493			<b>7,143</b>
<b>45-49</b>	1	14	10	4	1			<b>30</b>
<b>Avg. Benefit</b>	32,268	13,299	10,421	7,202	2,629			<b>11,804</b>
<b>50-54</b>	5	23	14	6	3			<b>51</b>
<b>Avg. Benefit</b>	27,924	17,568	15,005	10,804	13,245			<b>16,829</b>
<b>55-59</b>	7	60	48	24	11	2		<b>152</b>
<b>Avg. Benefit</b>	29,310	21,628	17,884	14,035	17,023	7,507		<b>19,081</b>
<b>60-64</b>	4	66	133	81	27	8	3	<b>322</b>
<b>Avg. Benefit</b>	23,455	23,177	21,243	22,982	27,719	16,820	19,847	<b>22,525</b>
<b>65-69</b>	1	11	3	2	1	1		<b>19</b>
<b>Avg. Benefit</b>	21,074	18,359	19,627	15,066	38,570	15,509		<b>19,269</b>
<b>Total</b>	<b>21</b>	<b>188</b>	<b>218</b>	<b>117</b>	<b>44</b>	<b>11</b>	<b>3</b>	<b>602</b>
<b>Avg. Benefit</b>	<b>24,848</b>	<b>19,836</b>	<b>18,867</b>	<b>19,847</b>	<b>23,207</b>	<b>15,008</b>	<b>19,847</b>	<b>19,820</b>

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.



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**APPENDIX B**

**SUMMARY OF  
PLAN PROVISIONS**



**APPENDIX B - SUMMARY OF PLAN PROVISIONS**

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## 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:

<u>Date of Increase</u>	<u>Member</u>	<u>Employer</u>
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:

<u>Contribution Deficiency</u>	<u>Allowable Increase in Member and Employer Contribution Rates</u>
<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

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### 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 will receive 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

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### 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:

<u>Date of Increase</u>	<u>Member</u>	<u>Employer</u>
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:

<u>Contribution Deficiency</u>	<u>Allowable Increase in Member and Employer Contribution Rates</u>
<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

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### 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.



## APPENDIX B - SUMMARY OF PLAN PROVISIONS

---

### 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.



## APPENDIX B - SUMMARY OF PLAN PROVISIONS

---

### COORDINATED MEMBERS

#### *Retirement(continued)*

##### *Benefit increases*

Benefit recipients will receive 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.





## APPENDIX B - SUMMARY OF PLAN PROVISIONS

---

### 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.



## APPENDIX B - SUMMARY OF PLAN PROVISIONS

---

### 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**



**APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS**

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## APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS

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### 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 precisely accurate. The difference between this liability and the assets (if any) which are held in the fund is the unfunded liability. The unfunded 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 accrued liability is the excess of the present value of projected benefits over the present value of future normal costs.
- The unfunded liability is the excess of the accrued liability over the assets of the fund, and represents that part of the accrued liability which has not been funded by accumulated past contributions.

### Amortization Method

The unfunded 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 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 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 accrued liability, no change is made to the amortization period.



## APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS

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### Asset Valuation Method

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 FY12:

<i>1993 Legislation:</i>	Supplemental contributions of \$4,984,135 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.
<i>1996 Legislation:</i>	Supplemental contributions of \$3,571,685 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.
<i>1997 Legislation:</i>	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 decreased from \$4,990,295 to \$4,984,135 since the prior valuation and the 1996 Legislation amount decreased from \$3,605,204 to \$3,571,685 since the prior valuation.



## **APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS**

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### **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 2011, the limit is \$195,000.

**IRC Section 401(a)17:** The limitations of Internal Revenue Code Section 401(a)(17) 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 2011, the limit is \$245,000. Certain members first hired before July 1, 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.

<b><i>Investment Return</i></b>	8.5% compounded annually post-retirement for 2011 6.5% compounded annually post-retirement thereafter 8.5% compounded annually pre-retirement												
<b><i>Benefit Increases after Retirement</i></b>	Payment of 2.0% annual benefit increases after retirement are accounted for by using a 6.5% post-retirement assumption, as required by statute.												
<b><i>Salary Increases</i></b>	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.												
<b><i>Payroll Growth</i></b>	3.75% per year												
<b><i>Future Service</i></b>	Members are assumed to earn future service at a full-time rate.												
<b><i>Mortality: Pre-retirement</i></b>	RP 2000 non-annuitant generational mortality, white collar adjustment, male rates set back 5 years and female rates set back 7 years.												
<b><i>Post-retirement</i></b>	RP 2000 annuitant generational mortality, white collar adjustment, male rates set back 2 years and female rates set back 3 years.												
<b><i>Post-disability</i></b>	RP 2000 disabled retiree mortality, without adjustment												
<b><i>Disability</i></b>	Age-related rates based on experience; see table of sample rates.												
<b><i>Withdrawal</i></b>	Select and ultimate rates based on actual plan experience. Ultimate rates after the third year are shown in the rate table. Select rates are as follows:												
	<table> <thead> <tr> <th></th> <th><u>First Year</u></th> <th><u>Second Year</u></th> <th><u>Third Year</u></th> </tr> </thead> <tbody> <tr> <td>Male</td> <td>45%</td> <td>12%</td> <td>6%</td> </tr> <tr> <td>Female</td> <td>40%</td> <td>10%</td> <td>8%</td> </tr> </tbody> </table>		<u>First Year</u>	<u>Second Year</u>	<u>Third Year</u>	Male	45%	12%	6%	Female	40%	10%	8%
	<u>First Year</u>	<u>Second Year</u>	<u>Third Year</u>										
Male	45%	12%	6%										
Female	40%	10%	8%										
<b><i>Expenses</i></b>	Prior year administrative expenses expressed as percentage of prior year payroll.												
<b><i>Retirement Age</i></b>	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.												
<b><i>Percentage Married</i></b>	85% of male members and 65% of female members are assumed to be married. Members are assumed to have no children.												
<b><i>Age Difference</i></b>	Females two years younger than males.												





## APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS

### Summary of Actuarial Assumptions *(continued)*

<i>Allowance for Combined Service Annuity</i>	Liabilities for active members are increased by 1.40% and liabilities for former members are increased by 4.00% to account for the effect of some Participants being eligible for a Combined Service Annuity.																
<i>Refund of Contributions</i>	All employees withdrawing after becoming eligible for a deferred benefit are assumed to take the larger of their contributions accumulated with interest or the value of their deferred benefit.																
<i>Interest on member contributions</i>	Members and former members who are eligible for the money purchase annuity are assumed to receive interest credits equal to the Pre-Retirement interest rate. All other members and former members receive the interest crediting rate as specified in statutes.																
<i>Commencement of deferred benefits</i>	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at unreduced retirement age.																
<i>Form of payment</i>	<p>Married members are assumed to elect subsidized joint and survivor form of annuity as follows:</p> <table border="0"> <tr> <td style="padding-right: 20px;">Males:</td> <td>10% elect 50% J&amp;S option 15% elect 75% J&amp;S option 70% elect 100% J&amp;S option</td> </tr> <tr> <td>Females:</td> <td>20% elect 50% J&amp;S option 10% elect 75% J&amp;S option 50% elect 100% J&amp;S option</td> </tr> </table>	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												
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																
<i>Missing data for members</i>	<p>Members eligible for deferred annuities (including current terminated deferred members) are assumed to elect a life annuity.</p> <p>Membership data was supplied by TRA as of July 1, 2011. 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:</p> <table border="0"> <tr> <td colspan="2">Data for active members:</td> </tr> <tr> <td style="padding-right: 20px;">Salary</td> <td>\$50,600</td> </tr> <tr> <td>Date of Birth</td> <td>July 1, 1967</td> </tr> <tr> <td>Gender</td> <td>Female</td> </tr> <tr> <td colspan="2">Data for terminated members:</td> </tr> <tr> <td style="padding-right: 20px;">Date of birth</td> <td>July 1, 1962</td> </tr> <tr> <td>Average salary</td> <td>\$29,000</td> </tr> <tr> <td>Age at termination</td> <td>Age 40, or current age if younger than 40</td> </tr> </table>	Data for active members:		Salary	\$50,600	Date of Birth	July 1, 1967	Gender	Female	Data for terminated members:		Date of birth	July 1, 1962	Average salary	\$29,000	Age at termination	Age 40, or current age if younger than 40
Data for active members:																	
Salary	\$50,600																
Date of Birth	July 1, 1967																
Gender	Female																
Data for terminated members:																	
Date of birth	July 1, 1962																
Average salary	\$29,000																
Age at termination	Age 40, or current age if younger than 40																



## APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS

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### 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

### *Changes in actuarial assumptions since the previous valuation*

The salary increase assumption was changed to a service based assumption and the payroll growth assumption was lowered from 4.50% to 3.75%. Also, the decrement timing was changed from beginning of year to mid-year.



## APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS

### Summary of Actuarial Assumptions *(continued)*

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

Age	Mortality Rates (%)					
	Pre-Retirement*		Post-Retirement**		Post-Disability	
	Male	Female	Male	Female	Male	Female
20	0.0269	0.0155	0.0316	0.0184	2.2571	0.7450
25	0.0345	0.0188	0.0373	0.0194	2.2571	0.7450
30	0.0376	0.0197	0.0393	0.0223	2.2571	0.7450
35	0.0353	0.0235	0.0481	0.0363	2.2571	0.7450
40	0.0588	0.0401	0.0766	0.0527	2.2571	0.7450
45	0.0874	0.0562	0.1124	0.0763	2.2571	0.7450
50	0.1323	0.0837	0.1711	0.1229	2.8975	1.1535
55	0.1976	0.1344	0.5716	0.2681	3.5442	1.6544
60	0.2759	0.2015	0.5688	0.4253	4.2042	2.1839
65	0.4293	0.3107	0.9232	0.6736	5.0174	2.8026
70	0.6642	0.4979	1.5834	1.1211	6.2583	3.7635
75	0.9565	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.



## APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS

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### 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%



## APPENDIX C – ACTUARIAL METHODS AND ASSUMPTIONS

### Summary of Actuarial Assumptions *(continued)*

<b>Retirement Rate (%)</b>					
	<b>Coordinated Members Eligible for Rule of 90</b>	<b>Coordinated Members Not Eligible for Rule of 90</b>	<b>Age</b>	<b>Basic Members Eligible for 30 and Out Provision</b>	<b>Basic Members Not Eligible for 30 and Out Provision</b>
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

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**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 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.