Presentation of Actuarial Review of 2011 Valuations to Minnesota Legislative Commission on Pensions and Retirement

Presented by:

Bill Hogan, F.S.A.

Tim Herman, F.S.A.

July 30, 2012

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

Actuarial Review of July 1, 2011 Actuarial Valuation Reports

Minnesota State Retirement System (MSRS)	Public Employees Retirement Association (PERA)	Teachers Retirement Association (TRA)	Duluth Teachers Retirement Fund Association (DTRFA)	St. Paul Teachers Retirement Fund Association (St.PTRFA)
Funds Included:				
• General • State Patrol	• General • Police and Fire • MERF Division	• TRA	• DTRFA	• St.PTRFA
Funds Excluded:				
• Correctional • Elective State Officials • Legislature • Judges	• Correctional			

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

Purpose and Scope of Review

- Types of actuarial audits
  - Replication
  - Limited scope or Peer Review
- Both address the key components in the valuation process, but in different ways
  - Membership data
  - Financial data
  - Benefits valued
  - Actuarial assumptions
  - Actuarial methods

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Replication vs. Limited Scope Audit

- Replication:
  - Commission actuary reproduces all of the steps in the valuation and attempts to reconcile the total valuation results to that of the fund actuary

7/01/2011
Replication Audit:
TRA

- Limited Scope:
  - Detailed review of a small group of test lives which are specifically selected to address key valuation calculations
  - Cannot quantify the cost impact of any issues raised other than in general terms
- Goal of either type of audit is to provide assurance that the liabilities and costs are reasonable
  - Replication gives higher degree of confidence

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Audit Guidelines

- No formal or published guidance
- Differences are generally analyzed as percentages
  - Small percentages of very large numbers can be large numbers
- Reasonable differences exist
  - Valuation software have inherent differences
  - Different approaches may be reasonable and acceptable
- Variability in process exists and small percentage differences between actuaries do not change the overall financial results

Example of a small percentage difference for TRA:

0.5% difference on $25 B of TRA accrued liability is $125 M

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

Key Findings

- Actuarial calculations generally accurate, appropriate and consistent with LCPR standards of work
- Any exceptions noted are not expected to substantively alter the valuation results
- Focus on year-to-year consistency of reporting results
- Challenge to maintain consistency going forward with new plan provisions, new assumptions and new actuaries

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Key Findings

- Expect mortality improvements in the funds which have not had experience studies
- Future valuation and consistency issues with Post Retirement Cost of Living Adjustments (COLA)
- All funds should consistently apply mid-year decrements for July 1, 2012 actuarial valuation
- Consistency in reporting fund ratios, disclosure of assumptions and disclosure of plan provisions
- Application of legislative changes to July 1, 2012 actuarial valuation

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Highlights of Changes Reflected in 7/1/2011 Valuations: Plan Provisions

- **Plan Provisions**
  - MSRS-State Patrol, DTRFA, St.PTRFA
  - Post-retirement increase reduced until specified funded ratio reached
  - Contribution rate increases
  - Reduced augmentation on deferred benefits
  - Lowered interest rate on refund of member contributions to future terminated members
  - Specific changes vary on a fund-by-fund basis

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Highlights of Changes Reflected in 7/1/2011 Valuations: Actuarial Assumptions and Methods

- **Actuarial assumptions**
  - MSRS-General, PERA-General, and TRA
    - Future salary increases and payroll growth assumption
  - PERA Police & Fire
    - Future salary increases and payroll growth assumption
    - Mortality tables updated
    - Fine tuning of other demographic assumptions
- **Actuarial Methods**
  - No changes

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

General Comments

- Most funds experienced decreases in funded ratio and increase in contribution deficiency
- Modest difference in actuarial and market value of assets
  - Most around 1-2% difference
  - Net unrecognized investment losses approximately equal to unrecognized investment gains.
- Evaluate long-term funding of the plans
  - Recent changes have helped
  - Monitor results and trends

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

General Comments

- Cost of Living Adjustment (COLA) after the 2010 Omnibus Pension Legislation
  - Fund pays a lower COLA until "financial stability" is restored for fund
  - "Financial Stability": $\dfrac{\text{Market Value of Assets}}{\text{Actuarial Accrued Liabilities}} \geq 90\%$
  - Based on fund actuaries' analysis, 2011 actuarial valuation for most funds assume lower COLA paid for all future years
  - Issues
    - Technical issues
      - How much COLA should be paid if the full COLA reduces "financial stability" measure below 90%?
      - How should an actuarial valuation model a fund where "financial stability" is projected in future years?

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

General Comments

- Experience Study/Actuarial Assumptions
  - Revised actuarial assumptions used at July 1, 2011 for 4 funds
  - Experience studies/reviews completed for remaining funds
  - Recommended new assumptions expected in July 1, 2012 valuations
    - Revised edition of Actuarial Standards of Practice governing selection of demographic assumptions
      - Adopted by Actuarial Standards Board of American Academy of Actuaries in Sept. 2010
      - First applies to July 1, 2011 actuarial valuations
    - Requirements for "Mortality Improvement" assumption with revised edition:
      - Adjust mortality rates for mortality improvement prior to measurement date
      - Include assumption for expected mortality improvement after measurement date

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

Specific Comments: MERF Division of PERA

2010 Omnibus Pension Bill

CURRENT STATE

7/01/2011 Valuation Results

DOLLARS IN THOUSANDS

A. Unfunded Accrued Liability	$ 327,716
B. Statutory Contributions	
1. Member contributions	658
2. Regular employer contributions	658
3. Additional employer contributions	4,081
4. Employer supplemental contribution	27,000
5. State contributions	22,750
6. TOTAL	$ 55,147
C. Actuarially required contribution	
1. Normal cost	377
2. Amortize unfunded accrued liability by July 1, 2031	34,630
3. Expenses	450
4. TOTAL	$ 35,457
D. Contribution Sufficiency/(Deficiency)	$ 19,690

7/01/2011 VALUATION CHANGES

Additional Statutory Funding after 6/30/2012

- Increased state contributions
- Increased additional employer contributions
- Added layer of employer contributions if needed to pay benefits

FUTURE CHANGES

MERF Division merged into PERA General

- Trigger:
  MERF reaches 80% funding
- Minneapolis employing units make fixed payments to retire any remaining unfunded accrued liability at date of merger

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

Fund Specific Findings

Minnesota State Retirement System (MSRS)

In general, we believe the July 1, 2011 actuarial valuation has been prepared in accordance with Sections 356.215 and 352 of the Minnesota Statutes except as noted below.

Fund	General Employees	State Patrol
Audit Type	Limited Scope	Limited Scope
Finding	• Decrement timing: Beginning of year rather than mid-year as required by Standards* • Form of payment assumption for former members with deferred vested benefits • Possible report enhancement: Add mortality gain/loss analysis for pre-retirement experience in addition to currently reported post-retirement experience	• Decrement timing: Beginning of year rather than mid-year as required by Standards • Mortality assumption – Update in progress • Form of payment assumption for former members with deferred vested benefits • Possible report enhancement: Add mortality gain/loss analysis for pre-retirement experience in addition to currently reported post-retirement experience

Funds excluded: Correctional, Elective State Officials, Legislature, Judges

*See page 19 for additional commentary on decrement timing

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

Fund Specific Findings

Public Employees Retirement Association (PERA)

In general, we believe the July 1, 2011 actuarial valuation has been prepared in accordance with Sections 356.215 and 353 of the Minnesota Statutes except as noted below.

Fund	General Employees	Police and Fire	MERF Division
Audit Type	Limited Scope	Limited Scope	Limited Scope
Finding	• Decrement timing: Beginning of year rather than mid-year as required by Standards* • Termination benefit for members: Differences exist between Fund Actuary and Milliman in the split between refund and deferred retirement components • Possible report enhancement: Add mortality gain/loss analysis for pre-retirement experience in addition to currently reported post-retirement experience	• Decrement timing: Beginning of year rather than mid-year as required by Standards • Possible report enhancement: Add mortality gain/loss analysis for pre-retirement experience in addition to currently reported post-retirement experience	• Decrement timing: Beginning of year rather than mid-year as required by Standards • Members remaining active beyond the age at which the retirement rate becomes 100% • Possible report enhancement: Add mortality gain/loss analysis for pre-retirement experience in addition to currently reported post-retirement experience

Funds excluded: Correctional

*See page 19 for additional commentary on decrement timing

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

Fund Specific Findings

Teachers Retirement Fund (MTRA)

In general, we believe the July 1, 2011 actuarial valuation has been prepared in accordance with Sections 356.215 and 354 of the Minnesota Statutes except as noted below.

Fund	Minnesota Teachers Retirement Association
Audit Type	Replication

Finding	• Valuation of death benefits for disabled, in-pay member
	  - Implicit 100% marriage assumption
	  - Recommend Fund Actuary review implications of conversion from disability to regular retirement at Normal Retirement Age
	• Termination benefit for members: Differences exist between Fund Actuary and Milliman in the split between refund and deferred retirement components
	• Status of inactive members who are not currently in-pay determined under current law rather than law in effect at termination
	• Additional detail regarding missing data assumptions is recommended
	• Report enhancement: Include analysis that was performed to substantiate the assumption that 2.0% COLA applies for all future years

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

Fund Specific Findings

Duluth Teachers Retirement Fund (DTRFA)

In general, we believe the July 1, 2011 actuarial valuation has been prepared in accordance with Sections 356.215 and 354A of the Minnesota Statutes except as noted below.

Fund	Duluth Teachers Retirement Fund Association
Audit Type	Limited Scope

Finding	• Projected benefit funded ratio includes scheduled contribution rate increase (not consistent with other Fund Actuaries)
	• Mortality assumption – Update in progress
	• Salary increase assumption may be off one year during the select period
	• Additional detail regarding missing data assumptions is recommended
	• Report does not disclose required funding measures on a Market Value of Assets basis
	• Active member termination benefit not split between refund and deferred retirement
	• Mature fund with over 60% of Actuarial Accrued Liability for in-pay members
	  - Cash flow solvency test included in valuation process
	  - Test results: Sufficient resources to pay benefits plus expenses over 10-year projection period.
	• Significant asset losses yet to be recognized
	  - Contribution rate deficiency expected to increase when these losses are recognized in future valuations
	• Covered payroll has declined since 2008

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

Fund Specific Findings

St. Paul Teachers Retirement Fund (St. PTRFA)

In general, we believe the July 1, 2011 actuarial valuation has been prepared in accordance with Sections 356.215 and 354A of the Minnesota Statutes except as noted below.

Fund	St. Paul Teachers Retirement Fund Association
Audit Type	Limited Scope
Finding	• Projected benefit funded ratio includes scheduled contribution rate increase (not consistent with other Fund Actuaries) • Calculation difference noted for one deferred vested coordinated member. Due to this member's circumstances, there is no impact on valuation • Mortality assumption – Update in progress • Report enhancement: Expand description of early retirement benefit payable to members hired after July 1, 1989 • Report enhancement: Include analysis that was performed to substantiate the assumption that 1% COLA applies for all future years • Active member termination benefit not split between refund and deferred retirement

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

LCPR Standards for Actuarial Work

- Assumed timing of demographic events

	MSRS General		PERA General	
	Fund Actuary	Milliman Mid-Year Estimate	Fund Actuary	Milliman Mid-Year Estimate
Accrued Liability Funding Ratio	86.32%	87.24%	75.18%	75.63%
Contribution Sufficiency/(Deficiency)				
– Statutory Contribution Rate	10.00%	10.00%	13.50%	13.50%
– Required Contribution Rate	11.03%	10.91%	13.47%	13.54%
– Contribution Sufficiency/(Deficiency)	(1.03)%	(0.91)%	0.03%	(0.04)%

Both MSRS and PERA will have a new fund actuary for the July 1, 2012 actuarial valuations

The results from MERF Division of PERA have been intentionally omitted. The decrement timing issue is not expected to significantly impact the actuarial valuation of the MERF Division because the remaining 107 active members are expected to retire in the next few years.

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman

2012 Omnibus Pension Legislation

Technical Issues

- **Select and ultimate interest rate approaches by Fund Actuary**
  - Present Value of Future Benefits – we do not expect significant variation
    - Discounted payments at 8.0% for first 5 years for all durations
  - Actuarial Accrued Liability and Normal Cost
    - Approach used by Milliman in cost estimates provided to LCPR
    - Calculate Present Value of Future Benefits under select and ultimate interest rate
    - Estimate single equivalent interest rate that produces similar Present Value of Future Benefits
    - Use single equivalent interest rate to calculate Entry Age Accrued Liability and Normal Cost
    - This process will result in annual changes in Normal Cost rates during the select period
  - Revisions to LCPR's standards of practice may be warranted

This work product was prepared solely for LCPR for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

Milliman