CORRESPONDENCE MEMORANDUM

DATE: June 10, 2014

TO: Employee Trust Funds Board

FROM: Robert C. Willett, CPA
Chief Trust Finance Officer

SUBJECT: WRS Active Lives Valuation & Gain / Loss Analysis

Staff requests the Employee Trust Funds Board (Board) approve the Thirty-Third Annual Actuarial Valuation and Gain/Loss Analysis as of December 31, 2013.

Gabriel Roeder Smith & Company (GRS) has completed the actuarial valuation of non-retired members of the Wisconsin Retirement System. The results of the study are summarized below (millions $):

	December 31,	
	2013	2012
Actuarial Accrued Liability	$ 85,328.7	$78,682.7
Actuarial Value of Assets	85,276.1	78,613.0
Unfunded Actuarial Accrued Liability	52.6	69.7
Funded Ratio	99.94%	99.91%

Based on positive investment experience and lower than anticipated wage inflation, GRS is recommending the following reductions in contribution rates for all employment categories.

Reviewed and approved by Robert J. Conlin, Secretary

Electronically Signed 6/12/14

Board	Mtg Date	Item #
JM	6.26.14	3A
ETF	6.26.14	4A

	General Employees and Teachers		Executives & Elected Officials		Protective Occupations			
					With Social Security		Without Social Security	
	2015	2014	2015	2014	2015	2014	2015	2014
Employer Normal Cost	6.8%	7.0%	7.7%	7.75%	9.5%	10.1%	13.1%	13.7%
Participant Normal Cost	6.8%	7.0%	7.7%	7.75%	6.8%	7.0%	6.8%	7.0%
Total Normal Cost	13.6%	14.0%	15.4%	15.5%	16.3%	17.1%	19.9%	20.7%

Brian Murphy, Mark Buis and Jim Anderson from Gabriel Roeder Smith & Company will be at the Board meeting to present their report and to answer any questions.

Attachment A: Thirty-Third Annual Actuarial Valuation and Gain/Loss Analysis

GRS **Gabriel Roeder Smith & Company**
Consultants & Actuaries

WISCONSIN RETIREMENT SYSTEM

THIRTY-THIRD ANNUAL ACTUARIAL VALUATION AND GAIN/LOSS ANALYSIS

DECEMBER 31, 2013

OUTLINE OF CONTENTS

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June 10, 2014

Employee Trust Funds Board
Wisconsin Department of Employee
    Trust Funds
801 West Badger Road
Madison, Wisconsin 53713

Ladies and Gentlemen:

The results of the **December 31, 2013 annual actuarial valuations of non-retired members covered by the Wisconsin Retirement System** are presented in this report. The valuations establish contribution rates for the 2015 calendar year in conformance with Chapter 40 of the Wisconsin Statutes. This report should not be relied upon for any other purpose. The change in the normal cost rates from last year are shown below:

General	**Executive**	**Protective with SS**	**Protective without SS**
(0.4)%	(0.1)%	(0.8)%	(0.8)%

The valuations are based upon our understanding of the main plan provisions related to General, Executive and Elected, and Protective Occupation employment with and without Social Security coverage. The plan provisions evaluated are summarized in Section H of this report. Please advise us if any material misstatements in the summary and do not rely on this report until such are resolved.

The individual member statistical data required for the valuations was furnished by the Department of Employee Trust Funds (DETF), together with pertinent data on financial operations. The cooperation of DETF staff in furnishing these materials is acknowledged with appreciation.

Actuarial valuations are based upon assumptions regarding future activity in specific risk areas including the rates of investment return and payroll growth, eligibility for the various classes of benefits, and longevity among retired lives. The Board adopts these assumptions after considering the advice of the actuary and other professionals. The assumptions and the methods comply with the requirements of Statement No. 25 of the Governmental Accounting Standards Board. Each actuarial valuation takes into account all prior differences between actual and assumed experience in each risk area and adjusts the contribution rates as needed. The December 31, 2013 valuations were based upon assumptions that were recommended in connection with a study of experience during 2009-2011 and benefit provisions in effect on December 31, 2013.

Future actuarial measurements may differ significantly from those presented in this report due to such factors as experience differing from that anticipated by actuarial assumptions, changes in plan provisions, actuarial assumptions/methods or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements.

To the best of our knowledge, this report is complete and accurate and was made in accordance with generally recognized actuarial methods. Brian B. Murphy, Mark Buis, and James D. Anderson are Members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

The valuations were completed by qualified actuaries in accordance with accepted actuarial procedures as prescribed by the Actuarial Standards Board. It is our opinion that the Wisconsin Retirement System is operating in accordance with actuarial principles of level percent-of-payroll financing.

Respectfully submitted,
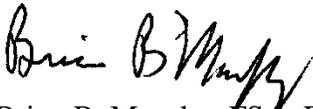
Brian B. Murphy, FSA, EA, MAAA

Mark Buis, FSA, EA, MAAA

James D. Anderson, FSA, EA, MAAA

BBM/MB/JDA:sc

SECTION A

EXECUTIVE SUMMARY

1. Required Employer Contributions to Support Retirement Benefits

| | General Participants | | Executives & Elected Officials | | Protective Occupation | | | |
| | | | | | With Soc. Sec. | | Without Soc. Sec. | |
	2015	2014	2015	2014	2015	2014	2015	2014
Employer Normal Cost	6.80%	7.00%	7.70%	7.75%	9.50%	10.10%	13.10%	13.70%
Participant Normal Cost	6.80%	7.00%	7.70%	7.75%	6.80%	7.00%	6.80%	7.00%
Total Normal Cost	13.6%	14.0%	15.4%	15.5%	16.3%	17.1%	19.9%	20.7%
Unfunded Actuarial Accrued Liability (UAAL)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%
WRS Average Total	**13.6%**	**14.0%**	**15.4%**	**15.5%**	**16.3%**	**17.1%**	**20.2%**	**21.0%**

Under Section 40.05 of the Wisconsin statutes updated for Act 10 and 32 of 2011, contribution rates are split evenly between the employer normal cost and the participant normal cost for both General Participants and Executive and Elected Officials. For protective occupations, the participant normal cost is set equal to the participant normal cost for General Participants. Act 10 of 2011 eliminated the benefit adjustment contribution.

Rates shown for UAAL are weighted averages of rates that vary by employer units. Contributions to support the Section 40.65 Duty Disability Program and the Accumulated Sick Leave Conversion Credit Program are in addition to the WRS rates shown above.

2. Reasons for change

There are three general reasons why contribution rates change from one valuation to the next. The first is a change in the benefits or eligibility conditions of the plan. The second is a change in the valuation assumptions used to predict future occurrences. The third is the difference during the year between the plan's actual experience and what the assumptions predicted.

There were no benefit changes reported to the actuary for the year ended December 31, 2013. However, now that the member contribution rate is set equal to half of the total contribution rate, any increase in the member rate will result in an increased benefit amount (and vice-versa). This is due to the fact that when the member rate increases, the money purchase benefit will also increase (and vice-versa). There were no assumption changes for the year ended December 31, 2013.

In total, changes in the contribution rate are illustrated on the following chart. Additional detail on gains and losses can be found in Section D of this report.

	General	Executive & Elected	Protective with Soc. Sec.	Protective without Soc. Sec.
2014 Normal Cost Rate	14.0%	15.5%	17.1%	21.0%
Effect of Asset Performance	(0.3)%	(0.2)%	(0.5)%	(0.8)%
Effect of Assumption Change	0.0%	0.0%	0.0%	0.0%
Effect of Member Rate Change	(0.05)%	0.0%	(0.05)%	0.0%
Demographic and Other Experience	(0.05)%	0.1%	(0.25)%	(0.0)%
2015 Normal Cost Rate	13.6%	15.4%	16.3%	20.2%

Please note that although the investment income is allocated proportionately for each group, the effect on the contribution rate will be different because the ratio of assets to payroll is different for each group.

3. General Comments

Based upon this valuation, normal cost contribution rates decreased for most groups mostly due to investment favorable investment performance.

In total, during 2013, investment return was above the assumed 2013 level of 7.2% on a market value basis. Under the asset valuation method, gains and losses are phased-in over a five year period, resulting in a 10.5% return on an Actuarial Value of Assets basis in the Core Fund. The Market Value of Assets exceeds the Actuarial Value of Assets by approximately 6% as of the valuation date. The statutory asset valuation method will recognize all of the differences between actuarial value and market value of $4.7 billion over four future years.

This valuation includes liabilities for future claims under the Long Term Disability Insurance (LTDI) program that became operational late in 1992. Inter-fund transfers between WRS and the LTDI program to support claims currently payable are addressed in a separate report to the Group Insurance and Employee Trust Funds Boards.

Conclusion. Based upon the results of the December 31, 2013 regular annual actuarial valuation, it is our opinion that *the Wisconsin Retirement System continues to operate in accordance with actuarial principles of level percent-of-payroll financing.*

SECTION B
FUNDING RESULTS

DEVELOPMENT OF CONTRIBUTION RATES
FOR CALENDAR YEAR 2015

	General	Executive & Elected Officials	Protective Occupation With Soc. Sec	Protective Occupation Without Soc. Sec.	Average/ Total
			$ Millions		
Total Reported Earnings	$ 11,270.1	$ 106.3	$ 1,121.3	$ 196.9	$ 12,694.6
Present Value of Future Earnings	111,000.9	780.3	11,724.4	1,965.1	125,470.7
Present Value of Future Benefits	47,082.1	377.5	5,660.1	1,300.2	54,419.9
Non-Retired Assets	31,800.7	231.2	3,723.4	908.8	36,664.1
Unfunded Liability	40.5	0.5	4.5	7.2	52.7
Present Value of Future Normal Costs					
Future Service Portion	14,601.9	97.2	1,877.8	400.0	16,976.9
Exp. Amort. Res. Portion	639.0	48.6	54.4	(15.8)	726.2
Total	15,240.9	145.8	1,932.2	384.2	17,703.1
Normal Cost Amortization Years					
Future Service Portion	12.6	8.8	13.6	12.8	12.6
Exp. Amort. Res. Portion	25.0	25.0	25.0	25.0	
Unfunded Liability Amortization Years	15.0	15.0	15.0	15.0	15.0
			% 's of Active Member Payroll		
Normal Cost					
Future Service Portion	13.2 %	12.5 %	16.0 %	20.4 %	13.5 %
Exp. Amort. Res. Portion	0.4 %	2.9 %	0.3 %	(0.5)%	0.4 %
Total	13.6 %	15.4 %	16.3 %	19.9 %	13.9 %
2015 Normal Cost Rates					
Employer Normal Cost	**6.80 %**	**7.70 %**	**9.50 %**	**13.10 %**	**7.10 %**
Participant Normal Cost	**6.80 %**	**7.70 %**	**6.80 %**	**6.80 %**	**6.80 %**
Total Normal Cost	**13.60 %**	**15.40 %**	**16.30 %**	**19.90 %**	**13.90 %**
Average Unfunded Liability Amortization	0.0 %	0.0 %	0.0 %	0.3 %	0.0 %
Average Total Rate	**13.6 %**	**15.4 %**	**16.3 %**	**20.2 %**	**13.9 %**

FINANCING $103.0 BILLION* OF BENEFIT PROMISES FOR PRESENT ACTIVE AND RETIRED PARTICIPANTS DECEMBER 31, 2013

Sources of Funds

Employer Normal Cost - $9.2

Partic. Normal Cost - $8.4

UAAL Payments - $0.1

Present Assets - $85.3

Uses of Funds

Future retired based on service already rendered - $37.6

Future retired based on service yet to be rendered - $16.9

Present Retired - $48.5
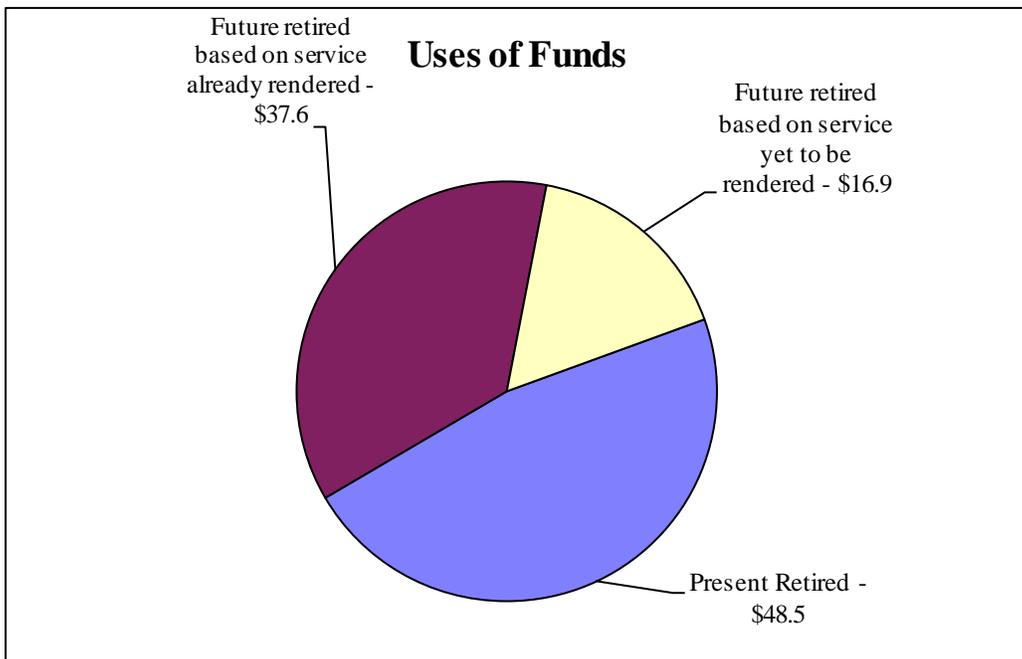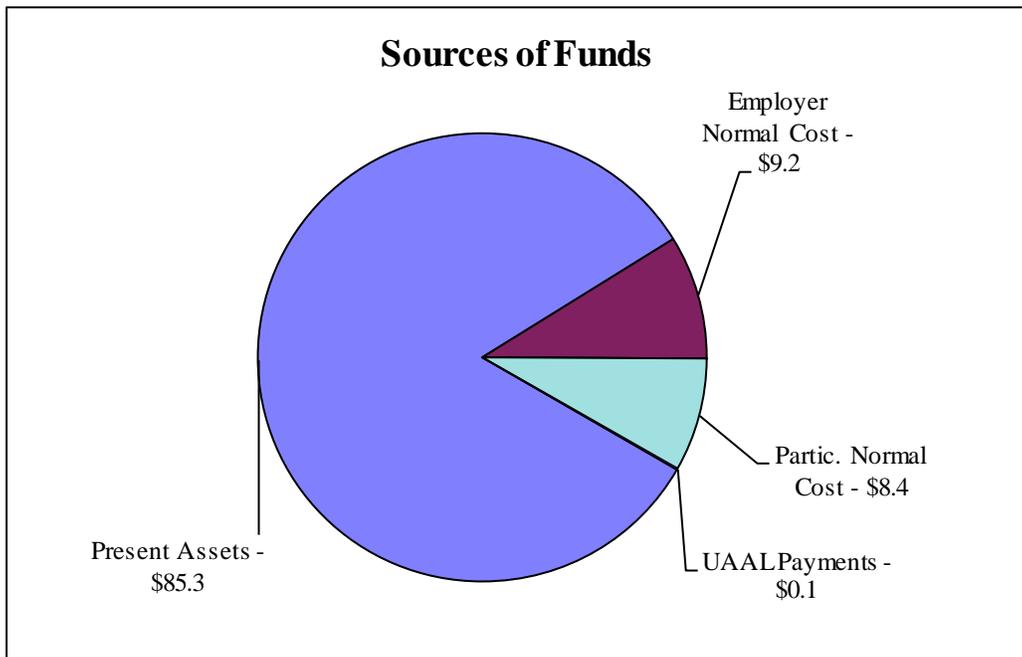
* Present value of future benefits; all divisions combined.

DEVELOPMENT OF ACTUARIAL PRESENT VALUES
DECEMBER 31, 2013
($ MILLIONS)

Present Value of Future Benefits for	General	Executives & Elected Officials	Protectives With Soc. Sec.	Protectives Without Soc. Sec.	Total
Active Participants					
Service Retirement	$38,421.7	$300.2	$4,936.1	$ 1,187.2	$ 44,845.2
Withdrawal	2,214.5	14.2	206.4	20.8	2,455.9
Death-in-Service	526.8	6.7	58.9	11.7	604.1
Disability	745.7	1.6	64.1	28.0	839.4
Total Active	41,908.7	322.7	5,265.5	1,247.7	48,744.6
Inactive Participants	4,716.1	59.0	348.5	43.8	5,167.4
Variable Adjustment	457.2	3.9	46.2	8.6	515.9
Active and Inactive	47,082.0	385.6	5,660.2	1,300.1	54,427.9
Additional Contributions					151.5
Present Retired					48,460.5
Actuarial Present Value of Future Benefits					**$103,039.9**

Computing the actuarial present value of future benefits is the first step in the actuarial valuation process. If the WRS had assets equal to that value, and if future experience were exactly in accordance with assumptions, then the present assets together with future investment income on those assets would be sufficient to pay promised benefits to all present participants, retirees and beneficiaries. *There is no need for the Retirement System to have $103,039.9 million immediately. What is needed, however, is a plan for obtaining the money in an orderly fashion. That is the purpose of the remainder of the actuarial valuation.*

EXPERIENCE AMORTIZATION RESERVE (EAR)

Actuarial gains or losses arising from the difference between actual and assumed experience are reflected in the determination of the normal cost. The computed normal cost is made up of two parts: (i) the pure entry-age normal cost (EANC) determined without regard to past gains or losses, and (ii) an experience amortization component. Section 40.04(1) of the Wisconsin Statutes provides authority to maintain accounts and reserves determined to be "useful in achieving the funds' purposes..." A fundamental WRS objective is stable contribution rates. Accordingly, the experience portion of the normal cost is separately calculated each year and the amortization period is varied upward or downward in order to minimize short-term rate fluctuations. A positive EAR indicates amortization of gains. A negative EAR indicates amortization of losses.

Development of EAR as of December 31, 2013

	General	Executives & Elected Officials	Protective Occupation With Soc. Sec	Protective Occupation Without Soc. Sec.	Total
			$ Millions		
1. Present Value of Future Benefits for Non-Retired	$47,082.0	$385.6	$5,660.2	$1,300.1	$54,427.9
2. Present Value of Future Entry Age Normal Costs	14,601.8	105.3	1,877.9	399.9	16,984.9
3. Entry Age Accrued Liability: (1)-(2)	32,480.2	280.3	3,782.3	900.2	37,443.0
4. Non-Retired Assets-WRS	31,786.5	230.9	3,719.3	908.1	36,644.8
-LTDI	14.2	0.3	4.1	0.7	19.3
-Total	31,800.7	231.2	3,723.4	908.8	36,664.1
5. Entry Age Unfunded Accrued Liability: (3)-(4)	679.5	49.1	58.9	(8.6)	778.9
6. WRS Frozen Unfunded Accrued Liability	40.5	0.5	4.5	7.2	52.6
7. EAR: (6)-(5)	$(639.0)	$ (48.6)	$(54.4)	$ 15.8	$(726.3)
8. Prior Year EAR	$ (1,305.3)	$ (48.3)	$ (180.8)	$(8.2)	$ (1,542.6)

UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)
DECEMBER 31, 2013

	General	Executives & Elected Officials	Protective Occupation With Soc. Sec	Protective Occupation Without Soc. Sec	Totals
Balance January 1, 2013	$57,465,890	$ 442,124	$4,732,103	$ 7,082,487	$69,722,604
Plus: New Employers	4,307	0	0	0	4,307
Less: Adjustments	0	0	0	0	0
Less: Payments	(19,689,924)	7,913	(580,445)	(393,070)	(20,655,526)
Plus: Interest	2,720,180	32,403	298,919	481,638	3,533,140
Balance December 31, 2013	**$40,500,453**	**$ 482,440**	**$4,450,577**	**$ 7,171,055**	**$52,604,525**

The UAAL is affected year to year by new employers entering the Wisconsin Retirement System, amortization payments, interest assessments, and statutory changes in benefits provided by the Retirement System. The UAAL is being amortized as a level percent of payroll. Since the payroll is assumed to increase with inflation, UAAL payments will also increase. During the first several years of such an amortization program, the payments are less than the interest assessment and the UAAL balance, expressed in terms of nominal dollars, increases from year to year. However, it increases at a lower rate than the payroll. After several years the payments exceed the interest assessment and the outstanding dollar balance will begin to decline.

COMPARATIVE STATEMENT OF COMPUTED CONTRIBUTION RATES

Valuation 12/31	Rate Effective 1/1	General				Executive and Elected			
		Participant	Benefit Adj. Contr.	Employer [1]	Total	Participant	Benefit Adj. Contr.	Employer [1]	Total
1989 [2]	1991	5.0 %	1.1 %	6.1 %	12.2 %	5.5 %	0.1 %	12.0 %	17.6 %
1990	1992	5.0 %	1.2 %	6.2 %	12.4 %	5.5 %	0.1 %	12.0 %	17.6 %
1991	1993	5.0 %	1.2 %	6.2 %	12.4 %	5.5 %	0.1 %	12.0 %	17.6 %
1992	1994	5.0 %	1.2 %	6.1 %	12.3 %	5.5 %	0.1 %	12.0 %	17.6 %
1993	1995	5.0 %	1.2 %	6.1 %	12.3 %	5.5 %	0.1 %	12.0 %	17.6 %
1994	1996	5.0 %	1.5 %	6.4 %	12.9 %	4.6 %	0.0 %	11.1 %	15.7 %
1995	1997	5.0 %	1.4 %	6.3 %	12.7 %	4.7 %	0.0 %	11.2 %	15.9 %
1996	1998	5.0 %	1.2 %	6.1 %	12.3 %	4.7 %	0.0 %	11.2 %	15.9 %
1997	1999	5.0 %	0.8 %	5.8 %	11.6 %	4.3 %	0.0 %	10.8 %	15.1 %
1998	2000	5.0 %	0.5 %	5.5 %	11.0 %	4.1 %	0.0 %	10.6 %	14.7 %
1999	2001	5.0 %	0.2 %	5.1 %	10.3 %	3.9 %	0.0 %	10.4 %	14.3 %
2000	2002	5.0 %	0.2 %	5.1 %	10.3 %	3.1 %	0.0 %	9.6 %	12.7 %
2001 [3]	2003	5.0 %	0.4 %	5.2 %	10.6 %	2.6 %	0.0 %	9.1 %	11.7 %
2002	2004	5.0 %	0.6 %	5.2 %	10.8 %	2.6 %	0.0 %	8.9 %	11.5 %
2003	2005	5.0 %	0.8 %	4.7 %	10.5 %	2.8 %	0.0 %	8.4 %	11.2 %
2004	2006	5.0 %	0.9 %	4.7 %	10.6 %	2.9 %	0.0 %	8.5 %	11.4 %
2005	2007	5.0 %	1.0 %	4.8 %	10.8 %	3.0 %	0.0 %	8.6 %	11.6 %
2006	2008	5.0 %	1.0 %	4.8 %	10.8 %	3.0 %	0.0 %	8.6 %	11.6 %
2007	2009	5.0 %	0.9 %	4.7 %	10.6 %	3.0 %	0.0 %	8.5 %	11.5 %
2008	2010	5.0 %	1.2 %	5.0 %	11.2 %	3.2 %	0.0 %	8.7 %	11.9 %
2009	2011	5.0 %	1.5 %	5.2 %	11.7 %	3.9 %	0.0 %	9.4 %	13.3 %
2010	2012	5.0 %	1.6 %	5.3 %	11.9 %	4.3 %	0.0 %	9.8 %	14.1 %
2011 [4]	2013	6.7 %	N/A	6.8 %	13.4 %	7.0 %	N/A	7.0 %	14.0 %
2012	2014	7.00 %	N/A	7.00 %	14.0 %	7.75 %	N/A	7.75 %	15.5 %
2013	2015	6.80 %	N/A	6.80 %	13.6 %	7.70 %	N/A	7.70 %	15.4 %

1   Employer normal cost plus weighted average of unfunded actuarial accrued liability contribution rates.
2   Benefit change.
3   Act 11 of 1999 was implemented in 2001.
4   Act 10 and Act 32 were implemented in 2011.

COMPARATIVE STATEMENT OF COMPUTED CONTRIBUTION RATES

Valuation 12/31	Rate Effective 1/1	Protective With Social Security				Protective Without Social Security			
		Participant	Benefit Adj. Contr.	Employer [1]	Total	Participant	Benefit Adj. Contr.	Employer [1]	Total
1989 [2]	1991	6.0 %	0.7 %	10.9 %	17.6 %	7.5 %		16.4 %	23.9 %
1990	1992	6.0 %	0.7 %	10.9 %	17.6 %	7.5 %		16.4 %	23.9 %
1991	1993	6.0 %	0.6 %	10.7 %	17.3 %	7.5 %		16.4 %	23.9 %
1992	1994	6.0 %	0.6 %	10.7 %	17.3 %	7.5 %		16.3 %	23.8 %
1993	1995	6.0 %	0.5 %	10.6 %	17.1 %	7.2 %		16.0 %	23.2 %
1994	1996	6.0 %	0.1 %	10.2 %	16.3 %	6.8 %		15.7 %	22.5 %
1995	1997	5.8 %	0.0 %	9.8 %	15.6 %	6.2 %		15.1 %	21.3 %
1996	1998	5.4 %	0.0 %	9.4 %	14.8 %	5.8 %		14.6 %	20.4 %
1997	1999	4.9 %	0.0 %	8.9 %	13.8 %	5.4 %		14.3 %	19.7 %
1998	2000	4.1 %	0.0 %	8.0 %	12.1 %	4.4 %		13.3 %	17.7 %
1999	2001	3.8 %	0.0 %	7.6 %	11.4 %	3.3 %		12.2 %	15.5 %
2000	2002	4.0 %	0.0 %	7.8 %	11.8 %	3.0 %		11.9 %	14.9 %
2001 [3]	2003	4.0 %	0.0 %	7.7 %	11.7 %	2.4 %		11.3 %	13.7 %
2002	2004	4.5 %	0.0 %	8.0 %	12.5 %	3.2 %		11.8 %	15.0 %
2003	2005	4.9 %	0.0 %	8.1 %	13.0 %	3.3 %		11.3 %	14.6 %
2004	2006	5.0 %	0.0 %	8.2 %	13.2 %	3.3 %		11.1 %	14.4 %
2005	2007	5.1 %	0.0 %	8.3 %	13.4 %	3.4 %		11.2 %	14.6 %
2006	2008	5.1 %	0.0 %	8.3 %	13.4 %	3.4 %		11.2 %	14.6 %
2007	2009	5.0 %	0.0 %	8.2 %	13.2 %	3.2 %		10.9 %	14.1 %
2008	2010	5.5 %	0.0 %	8.6 %	14.1 %	3.9 %		11.6 %	15.5 %
2009	2011	5.8 %	0.0 %	8.9 %	14.7 %	4.8 %		12.5 %	17.3 %
2010	2012	5.9 %	0.0 %	9.0 %	14.9 %	4.9 %		12.6 %	17.5 %
2011 [4]	2013	6.7 %	N/A	9.8 %	16.4 %	6.7 %		12.7 %	19.3 %
2012	2014	7.00 %	N/A	10.10 %	17.1 %	7.00 %		14.00 %	21.0 %
2013	2015	6.80 %	N/A	9.50 %	16.3 %	6.80 %		13.40 %	20.2 %

1   *Employer normal cost plus weighted average of unfunded actuarial accrued liability contribution rates.*
2   *Benefit change.*
3   *Act 11 of 1999 was implemented in 2001.*
4   *Act 10 and Act 32 were implemented in 2011.*

SECTION C
FUND ASSETS

DEVELOPMENT OF PARTICIPANT AND EMPLOYER RESERVES DURING THE YEAR

| | Participant Accumulation | | | Employer Accumulation | | | |
	Core	Variable	Total	Core	Variable	Total	Grand Total
Ending Balance December 31, 2012	$13,112,343,270	$1,147,341,251	$14,259,684,521	$18,994,562,573	$1,142,501,418	$20,137,063,991	$34,396,748,512
Closing Adjustments	-	-	-	(41,273,466)	4,839,834	(36,433,632)	(36,433,632)
Beginning Balance January 1, 2013	13,112,343,270	1,147,341,251	14,259,684,521	18,953,289,107	1,147,341,252	20,100,630,359	34,360,314,880
Revenues:							
Employer Contributions	-	-	-	828,174,803	100,125,060	928,299,864	928,299,864
Participant Contributions	762,738,212	101,004,908	863,743,121	-	-	-	863,743,121
Total Revenues	762,738,212	101,004,908	863,743,121	828,174,803	100,125,060	928,299,864	1,792,042,984
Expenses:							
Separations	31,467,465	1,768,947	33,236,412	-	-	-	33,236,412
Retirement Single Sums	21,969,537	616,457	22,585,994	24,461,099	616,589	25,077,688	47,663,683
Death Benefits	20,151,106	1,595,957	21,747,063	14,400,719	1,275,437	15,676,156	37,423,219
Disability Insurance	-	-	-	-	-	-	-
	73,588,108	3,981,361	77,569,469	38,861,818	1,892,026	40,753,845	118,323,313
Transfers:							
Earnings Allocation	1,320,310,479	317,199,848	1,637,510,327	2,009,839,012	313,011,999	2,322,851,010	3,960,361,337
Annuities Awarded	(1,211,957,564)	(69,050,991)	(1,281,008,556)	(1,987,525,512)	(80,325,591)	(2,067,851,102)	(3,348,859,658)
Intra-Fund Transfers	4,521,658	798,316	5,319,975	(6,002,013)	(37,397)	(6,039,410)	(719,436)
Inter-Fund Transfers	60,809,861	(60,809,861)	-	60,809,856	(60,809,856)	-	-
	173,684,434	188,137,311	361,821,746	77,121,343	171,839,154	248,960,498	610,782,243
Ending December 31, 2013	**$13,975,177,809**	**$1,432,502,110**	**$15,407,679,919**	**$19,819,723,436**	**$1,417,413,440**	**$21,237,136,876**	**$36,644,816,794**
Internal Rate of Return	10.2%	28.0%	11.7%	10.9%	27.8%	11.9%	11.8%

RESERVES FOR NON-RETIRED PARTICIPANTS
BALANCES BY VALUATION GROUP

| | Reserve for Year Ended | | | |
| | December 31, 2013 | | | December 31, 2012 |
	Participant	Employer	Total *	(Total in $ Millions)
General	$13,840,957,428	$17,945,581,299	$31,786,538,727	$29,852.3
Executives & Elected	60,648,325	170,203,770	230,852,095	233.1
Protective with Soc. Sec.	1,222,374,183	2,496,959,003	3,719,333,186	3,437.0
Protective w/o Soc. Sec.	283,699,984	624,392,805	908,092,789	874.4
Total	**$15,407,679,920**	**$21,237,136,877**	**$36,644,816,797**	**$34,396.8**

* Totals differ slightly from page C-1 due to rounding.

The above schedule shows the distribution of Participant and Employer reserves among the valuation groups according to WRS accounting records. This separation of assets is needed because the valuation groups are separately experience rated. The assets are pooled for investment purposes.

CORE INVESTMENT TRUST: MARKET RECOGNITION ACCOUNT

	For the Year Ended December 31						
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Beginning of year							
a. Funding value	$78,243,619,565	$76,984,779,225	$76,040,596,900	$81,647,239,715	$82,857,011,290	$83,667,285,031	$85,413,644,168
b. Market value	73,176,488,762	71,644,332,757	78,491,553,933	86,366,856,946	86,366,856,946	86,366,856,946	86,366,856,946
End of year							
c. Market value	71,644,332,757	78,491,553,933	86,366,856,946				
d. Non-investment cash flow							
(contributions minus benefits)	(2,398,908,914)	(2,568,933,130)	(2,283,478,623)				
e. Investment income							
e1. Total investment income	866,752,909	9,416,154,306	10,158,781,637				
e2. Assumed rate	7.2%	7.2%	7.2%				
e3. Amount for immediate recognition	5,547,179,888	5,450,422,511	5,392,717,746	-	-	-	-
e4. Amount for phased-in recognition: e1-e3	(4,680,426,979)	3,965,731,795	4,766,063,891	-	-	-	-
f. Phased-in recognition of investment income							
f1. Current year: 2 x e4	(936,085,396)	793,146,359	953,212,778	-	-	-	-
f2. First prior year	399,497,833	(936,085,396)	793,146,359	953,212,778	-	-	-
f3. Second prior year	1,287,632,117	399,497,833	(936,085,396)	793,146,359	953,212,778	-	-
f4. Third prior year	(5,369,862,619)	1,287,632,117	399,497,833	(936,085,396)	793,146,359	953,212,778	-
f5. Fourth prior year	211,706,750	(5,369,862,619)	1,287,632,117	399,497,833	(936,085,396)	793,146,359	953,212,778
f6. Total MRA recognition	(4,407,111,314)	(3,825,671,706)	2,497,403,692	1,209,771,575	810,273,741	1,746,359,137	953,212,778
f7. Amount for MRA recognition	-	-	-	-	-	-	-
f8. Total recognized gain (loss)	(4,407,111,314)	(3,825,671,706)	2,497,403,692	1,209,771,575	810,273,741	1,746,359,137	953,212,778
g. Total recognized investment income: e3 + f8	1,140,068,574	1,624,750,806	7,890,121,438	1,209,771,575	810,273,741	1,746,359,137	953,212,778
h. Funding value end of year: a + d + e3 + f8	76,984,779,225	76,040,596,900	81,647,239,715	82,857,011,290	83,667,285,031	85,413,644,168	86,366,856,946
i. Difference between market and funding values	(5,340,446,468)	2,450,957,032	4,719,617,231	3,509,845,656	2,699,571,915	953,212,778	-
j. Recognized rate of return	1.5%	2.1%	10.5%				
k. Market rate of return	1.2%	13.4%	13.1%				

RECONCILIATION OF RESERVE ACCOUNTS

The following table reconciles the Market Recognition Account Assets shown on page C-3.

| | Reserve for Year Ended December 31, 2013 | | |
	Core	Variable	Total
Non-Retired	$33,794,901,245	$2,849,915,550	$36,644,816,795
Retired	44,273,076,571	4,187,415,450	48,460,492,021
Sick Leave	2,252,076,645		2,252,076,645
Other:			
Duty Disability	571,179,403		571,179,403
Health Insurance	160,265,318		160,265,318
LTDI	215,938,543		215,938,543
ICI	84,777,548		84,777,548
Milwaukee Retirement	162,467,301	21,664,055	184,131,356
WRS Additional Accounts	135,256,518	16,246,643	151,503,161
Other	(2,699,378)		(2,699,378)
Reserves at Funding Value	81,647,239,715	7,075,241,698	88,722,481,412
Deferred Market Gains (MRA)	4,719,617,231		4,719,617,231
Reserves at Fair Value	**$86,366,856,946**	**$7,075,241,698**	**$93,442,098,643**

The following table reconciles the Net Assets at Fair Value for the WRS shown on Page F-2.

| | Reserve for Year Ended December 31, 2013 | | |
	Core	Variable	Total
Non-Retired	$33,794,901,245	$2,849,915,550	$36,644,816,795
Retired	44,273,076,571	4,187,415,450	48,460,492,021
WRS Additional Accounts	135,256,518	16,246,643	151,503,161
Deferred Market Gains (MRA)	4,719,617,231		4,719,617,231
Prior Service Receivables	62,516,009		62,516,009
Capital Assets			2,790,657
Administration Reserves			7,857,264
Other			(196,442,489)
Net Assets Held in Trust	$82,985,367,574	$7,053,577,643	**$89,853,150,649**

SECTION D
GAIN/LOSS

Purpose of Gain/Loss Analysis. Regular actuarial valuations provide information about the composite change in computed contribution rates and total liabilities -- whether or not the rates and related liabilities are increasing or decreasing, and by how much. However, valuations do not show the portion of the change attributable to each risk area within the Retirement System financial mechanism: the rate of recognized investment income on plan assets; the rates of withdrawal of active participants who leave covered employment; the rates of mortality; the rates of disability; the rates of salary increases; and the assumed ages at actual retirement. In an actuarial valuation, assumptions are made as to what these rates will be for the next year and for decades in the future.

The objective of a gain and loss analysis is to determine the portion of the change that is attributable to each risk area.

The fact that actual experience differs from assumed experience should be expected. The future cannot be predicted with complete precision. Further, year-to-year statistical fluctuations occur, even in very large groups. This year's report reflects just a single year's experience. Changes in the valuation assumed experience for a risk area should be made only when the differences between assumed and actual experience have been observed to be sizable and persistent. One year's gain and loss analysis may or may not be indicative of *long-term trends, which are the basis of actuarial assumptions.* However, a persistent series of gains and losses can indicate a need for an assumption change or a method change, even if on a demographic basis, the assumptions appear to model reality well. In the Wisconsin Retirement System, longer term trends are reviewed in connection with the regular 3-year investigation of experience (the most recent 3-year investigation covered the period January 1, 2009 to December 31, 2011). It is the results of the 3-year investigation that lead to recommendations for changes in the actuarial assumptions.

Overall Experience

Overall experience resulted in a net actuarial gain of $935 million for the 2013 calendar year. The gain was primarily attributable to favorable investment performance. The net result was a decrease in the overall 2015 contribution rate of 0.5% of payroll.

POPULATION DEVELOPMENT DURING CALENDAR YEAR 2013

	General	Executive & Elected	Protective With S.S.	Protective Without S.S.	Total	Expected
Beginning Census	231,765	1,408	19,353	2,727	255,253	
(-) Normal Retirement	3,059	77	401	84	3,621	3,841
(-) Early Retirement	3,817	10	72	8	3,907	3,901
(-) Death	227	5	20	2	254	279
(-) Disability Retirement						
-Total disabilities approved	150	0	9	3	162	248
-Less pending at beginning of year	54	0	1	0	55	
-Net new from active status	96	0	8	3	107	
(-) Other Separations	12,474	69	573	27	13,143	10,848
(-) Transfers Out	1,188	17	286	8	1,499	
(+) Transfers In	1,192	73	197	37	1,499	
(+) New Entrants	19,877	94	1,100	104	21,175	
Ending Census	231,973	1,397	19,290	2,736	255,396	

This schedule reconciles the active member populations reported in connection with the December 31, 2013 and the prior year valuations on an actual and expected basis. Assumptions related to population development are a primary focus of the gain/loss analysis. They generally tend to be more stable than economic assumptions, and therefore, measurements have more meaning. Please note also that the table above represents changes in actual and expected counts of members. Beginning with the 2009 valuations, some of the actuarial assumptions (retirement, turnover, etc.) are based on liability weighted rates. Therefore, comparing actual to expected number counts alone may not form the basis for our conclusions.

Population Results

Normal Retirements varied by group and gender. Overall, there were fewer normal retirements than expected. In general, fewer normal retirements than assumed often creates a gain. However, looking at counts alone is not always an accurate predictor of whether a gain or loss occurs. If there are fewer retirements in shorter service, lower paid groups and more retirements than expected in longer service, higher paid groups, there will be a net loss to the System even if the actual total counts might be equal to or less than expected. In order to account for this, retirement rates are now developed partially on a liability weighted methodology. The net result for this past year was a small loss.

Early Retirements were very close to expected, overall producing a small loss.

Deaths among active participants were slightly lower than expected. The net result for the past year was a small loss.

Disabilities were less than expected and produced a gain. This means that the reserves needed for the disability benefit were slightly smaller than the reserves that had been held for retirement benefits.

Other Separations varied by group, gender, and service but were overall higher than expected. The net result for the past year was a small gain.

In total, the population risk areas (retirement, death, disability, and other separations) produced gains and losses that almost entirely offset each other, producing a small net loss during 2013.

Economic Results

On a market value basis **investment return** was 13.2% and investment activity produced a gain for all groups due to continuous recognition of past activity in the MRA. The recognized investment gain of $1.5 billion was partially absorbed by a $783 million gain in the combined value of variable excess benefits and money purchase benefits (as shown on page D-10), resulting in a net investment gain of about $764 million.

Pay Increases were less than expected in most groups, producing a gain.

Other Analysis

The schedule on page D-8 analyzes gains or losses due to sources other than the demographic and economic areas. The **Reserve difference** produced a loss of about $73 million. This is primarily attributable to adjustments related to estimated annuities for which final computations have now been made. The **Re-established liability** represents the liability for new or rehired active members who were not active in the prior year. Typically, it is expected that a new hire will have very little liability. However, often new members appear with more than one year of service or with liability greater than contributions made on their behalf. Although this amount is difficult to determine accurately due to the timing of contribution amounts, we estimate the Re-established liability loss at about $50 million.

ACTUAL VS. EXPECTED CHANGES IN EXPERIENCE AMORTIZATION RESERVE (EAR) - CALENDAR YEAR DECEMBER 31, 2013
($ MILLIONS)

| | December 31, 2013 | | | | |
	General	Executive & Elected	Protective With S.S.	Protective Without S.S.	Total
(1) Entry Age UAAL at start of year	$ 1,362.8	$ 48.7	$ 185.5	$ 15.3	$ 1,612.3
(2) Normal cost from last valuation (Total)	1,534.8	14.7	187.8	41.3	1,778.6
(3) Actual contributions	1,552.8	15.5	185.9	37.8	1,792.0
(4) Interest	97.5	3.5	13.4	1.2	115.6
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	1,442.3	51.4	200.8	20.0	1,714.5
(6) Change in actuarial assumptions	0.0	0.0	0.0	0.0	0.0
(7) Other changes	(55.8)	(0.4)	(3.6)	(0.3)	(60.1)
(8) Expected UAAL after changes: (5) + (6) + (7)	1,386.5	51.0	197.2	19.7	1,654.4
(9) Actual Entry Age UAAL at end of year	624.7	49.7	52.4	(8.0)	718.8
(10) Gain (loss): (8) - (9)	**$ 761.8**	**$ 1.3**	**$ 144.8**	**$ 27.7**	**$ 935.6**

The gain/loss analysis is intended to explain the financial effect of differences between actual and assumed experience in basic risk areas: Investment income, pay increases, retirement rates, turnover rates, etc. In order for the gain/loss analysis to proceed, the change in the Entry Age Unfunded Actuarial Accrued Liabilities from one year to the next is analyzed to remove the effect of expected changes. The table above develops this year's gain or loss (line 10) which is added to the Experience Amortization Reserve (EAR). When the EAR increases "unexpectedly," this is favorable experience and downward pressure is exerted on contribution rates. Similarly, an unexpected decrease in the EAR is unfavorable experience and upward pressure is exerted on contribution rates. In addition to the gain or loss described in line 10, non-recurring changes in lines 6 and 7 also may affect contribution rates.

By measuring gains and losses each year and, to the extent possible, determining the "responsible" assumptions, insight is gained into how well the actuarial assumptions estimate WRS liabilities. Such information aids in understanding financial effects of emerging trends and is particularly useful during preparation of the WRS experience study.

GAIN/LOSS ANALYSIS
2013 EXPERIENCE
DIVISIONS COMBINED

Amount of Gain (Loss)
as $ Millions

Salary Increases	$	308
Investment Return	$	764
Service Retirement	$	(45)
Disability Retirement	$	19
Death in Service	$	(5)
Other Separations	$	32

ACTUARIAL GAINS & LOSSES DURING CALENDAR YEAR 2013
($ MILLIONS)

Type of Activity	General	Executive & Elected	Protective With S.S.	Protective Without S.S.	Total
Decrement Risk Areas					
Normal Retirement	$ 0.6	$(1.5)	$ (8.8)	$ (2.3)	$ (12.0)
Early Retirement	(32.8)	0.4	0.2	(0.3)	(32.5)
Disability Retirement	16.8	0.1	1.6	0.6	19.1
Death with Benefit	(5.1)	0.0	(0.2)	0.0	(5.3)
Other Separations	32.3	0.0	1.2	(1.7)	31.8
Economic Risk Areas					
Salary Increases	250.8	1.6	52.2	3.6	308.2
Investment Return	624.2	2.1	106.1	31.5	763.9
Other Activity	(125.0)	(1.4)	(7.5)	(3.7)	(137.6)
Total Gain (Loss)	**$ 761.8**	**$ 1.3**	**$ 144.8**	**$ 27.7**	**$ 935.6**
-% of Accrued Liability	**2.4%**	**0.6%**	**3.9%**	**3.1%**	**2.6%**

ANALYSIS OF OTHER ACTIVITY
($ MILLIONS)

	General	Executive & Elected	Protective With S.S.	Protective Without S.S.	Total
Expected Reserve Transfers					
Normal Retirement	$1,332	$34	$ 215	$78	$1,659
Early Retirement	1,121	2	40	8	1,171
Death	33	0	5	0	38
Disability Retirement	36	0	3	2	41
Deferred Retirement	335	4	26	11	376
Expected Total Reserve Transfers	2,857	40	289	99	3,285
Actual Reserve Transfer (From Retiree Report)	2,929	41	288	100	3,358
Reserve Difference	(72)	(1)	1	(1)	(73)
Expected Refunds	38	0	1	0	39
Actual Refunds	30	0	3	1	34
Refund Difference	8	0	(2)	(1)	5
Re-established Liability	(47)	0	(3)	(1)	(51)
Total Explained Difference	(111)	(1)	(4)	(3)	(119)
Unknown Difference	(14)	0	(4)	(1)	(19)
Total Other Activity	(125)	(1)	(8)	(4)	(138)
Other Activity as % of Liabilities	(0.39)%	(0.43)%	(0.21)%	(0.44)%	(0.38)%

This schedule analyzes reserve transfers and contribution refunds and shows the portion of "other" activity that can be explained by those sources. Amounts may not sum due to rounding.

COMPARATIVE SCHEDULE OF EXPERIENCE
5-YEAR HISTORY OF GAINS AND LOSSES
($ MILLIONS)

Year	Normal & Early Retmt.	Disability Retmt.	Other Separations*	Salary Increases	Investment Return	Other	Total
GENERAL							
2009	$ 20.2	$ 18.7	$ (60.6)	$ 360.5	$ (762.1)	$ (47.0)	$ (470.3)
2010	9.6	19.8	(48.3)	628.8	(739.1)	(82.3)	(210.5)
2011	(126.8)	16.9	(2.0)	270.1	(1,247.5)	(125.6)	(1,214.9)
2012	(35.6)	15.2	20.7	610.0	(1,058.3)	(82.8)	(530.8)
2013	**(32.2)**	**16.8**	**27.2**	**250.8**	**624.2**	**(125.0)**	**761.8**
EXECUTIVE & ELECTED							
2009	$ (0.1)	$ 0.1	$ (1.2)	$ 7.9	$ (10.4)	$ (5.0)	$ (8.7)
2010	(0.5)	0.1	(1.0)	6.7	(8.3)	(1.8)	(4.8)
2011	(2.0)	0.1	1.4	5.2	(10.2)	(7.2)	(12.7)
2012	2.0	0.1	(1.9)	1.4	(13.0)	4.3	(7.1)
2013	**(1.1)**	**0.1**	**-**	**1.6**	**2.1**	**(1.4)**	**1.3**
PROTECTIVE WITH SOCIAL SECURITY							
2009	$ 9.1	$ 1.9	$ (9.1)	$ 74.6	$ (110.9)	$ (4.2)	$ (38.6)
2010	6.3	1.5	(7.2)	106.8	(101.9)	(11.0)	(5.5)
2011	(21.7)	1.4	(3.5)	30.6	(183.5)	(20.4)	(197.1)
2012	(14.6)	1.5	(0.8)	100.8	(154.4)	(10.0)	(77.5)
2013	**(8.6)**	**1.6**	**1.0**	**52.2**	**106.1**	**(7.5)**	**144.8**
PROTECTIVE WITHOUT SOCIAL SECURITY							
2009	$ 3.4	$ 0.8	$ (1.3)	$ 5.7	$ (28.6)	$ (2.6)	$ (22.6)
2010	3.4	0.6	(0.5)	30.0	(26.4)	(3.7)	3.4
2011	1.0	0.6	(1.3)	7.9	(50.9)	(5.9)	(48.6)
2012	(0.6)	0.6	(1.3)	6.2	(40.3)	(3.7)	(39.1)
2013	**(2.6)**	**0.6**	**(1.7)**	**3.6**	**31.5**	**(3.7)**	**27.7**

* *Includes separation due to death.*

GAIN (LOSS) FROM INVESTMENT INCOME DURING CALENDAR YEAR
($ MILLIONS)

	General	Executive & Elected	Protective With SS	Protective Without SS	Total
(1) Beginning of Year Active Participant Assets					
(a) Participant Accumulation Reserve (PAR)	$12,790.1	$62.7	$1,129.0	$278.0	$14,259.8
(b) PAR Closing Adjustment	0.0	0.0	0.0	0.0	0.0
(c) Employer Accumulation Reserve (EAR)	17,062.2	170.4	2,308.0	596.4	20,137.0
(d) EAR Closing Adjustment	(30.6)	(0.4)	(4.3)	(1.1)	(36.4)
(e) Total	29,821.7	232.7	3,432.7	873.3	34,360.4
(2) End of Year Active Participant Assets					
(a) Participant Accumulation Reserve	13,841.0	60.6	1,222.4	283.7	15,407.7
(b) Employer Accumulation Reserve	17,945.6	170.2	2,497.0	624.4	21,237.2
(c) Total	31,786.6	230.8	3,719.4	908.1	36,644.9
(3) Investment Earnings Credited					
(a) Participant Accumulation Reserve	1,466.0	6.1	133.4	31.9	1,637.4
(b) Employer Accumulation Reserve	1,970.4	17.9	266.5	68.0	2,322.8
(c) Total	3,436.4	24.0	399.9	99.9	3,960.2
(4) Average Balance: .5 x {(1e)+(2c)-(3c)}	29,086.0	219.8	3,376.1	840.8	33,522.7
(5) Expected Earnings: .072 x (4)	2,094.2	15.8	243.1	60.5	2,413.6
(6) Gain (Loss) for Year from Investment Experience: (3c)-(5)	1,342.2	8.2	156.8	39.4	1,546.6
(7) Portion applied to Change in Variable Excess Reserve and Money Purchase Minimum Benefit	718.0	6.1	50.7	7.9	782.7
(8) Remaining Gain (Loss): (6)-(7)	$ 624.2	$ 2.1	$ 106.1	$ 31.5	$ 763.9

SECTION E

CENSUS DATA

ACTIVE PARTICIPANTS INCLUDED IN VALUATIONS
DECEMBER 31, 2013

Active participants included in the valuations totaled 255,396 with an annual payroll totaling $12,694.6 million, as follows:

Valuation Group	Number	Annual Earnings ($Millions)	Group Averages			
			Earnings	Age	Years of Service	Contribs.
General	231,973	$11,270.1	$48,584	46.0	11.6	$49,994
Executive Group & Elected Officials	1,397	106.3	76,125	54.8	13.4	90,323
Protective Occupation with Social Security	19,290	1,121.3	58,127	40.7	12.9	58,102
Protective Occupation without Social Security	2,736	196.9	71,960	41.3	14.3	73,857
Total Active Participants	**255,396**	**$12,694.6**	**$49,706**	**45.6**	**11.8**	**$51,082**
Prior Year	255,253	$12,443.7	$48,751	45.7	11.8	$47,903

Group averages are not used in the valuation, but are shown here for their general interest.

Inactive participants included in the valuations totaled 151,648 as follows:

Valuation Group	Number	Group Averages		
		Age	Service	Money Purchase Balance
General	145,854	47.2	3.0	$12,674
Executive Group & Elected Officials	640	54.0	4.2	25,852
Protective Occupation with Social Security	4,949	41.8	4.0	15,999
Protective Occupation without Social Security	205	42.8	6.8	37,845
Total Inactive Participants	**151,648**	**47.0**	**3.0**	**$12,872**
Prior Year	150,007	46.9	3.0	$12,258

The valuations also included 3,952 QDRO cases whose average age was 51.7 years. These accounts for divorced spouses of WRS participants have been established in accordance with Wisconsin Domestic Relations Law.

GENERAL PARTICIPANTS AS OF DECEMBER 31, 2013
BY ATTAINED AGE AND YEARS OF SERVICE

| Attained Ages | Years of Service to Valuation Date | | | | | | | Totals | |
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
15-19	81							81	$ 1,736,302
20-24	4,439	24						4,463	125,975,725
25-29	16,003	2,106	18					18,127	665,660,693
30-34	11,089	10,512	1,775	8				23,384	1,020,354,608
35-39	8,019	7,017	9,197	1,339	7			25,579	1,261,730,725
40-44	7,657	5,768	6,854	7,471	1,139	10		28,899	1,502,715,410
45-49	7,232	5,794	6,153	6,097	6,468	1,088	11	32,843	1,705,152,990
50-54	6,560	6,014	6,687	5,578	5,907	5,313	1,479	37,538	1,915,336,065
55	1,071	1,151	1,297	1,168	1,156	1,035	940	7,818	409,372,746
56	992	975	1,252	1,096	1,010	880	931	7,136	369,969,245
57	987	899	1,218	1,043	996	844	932	6,919	351,731,832
58	862	809	1,085	915	848	755	814	6,088	309,264,804
59	802	783	1,100	934	859	610	815	5,903	302,422,588
60	775	702	878	839	755	600	690	5,239	266,923,318
61	652	587	833	772	690	518	661	4,713	237,978,037
62	555	523	736	687	601	461	552	4,115	208,232,008
63	486	432	534	505	448	365	427	3,197	157,560,410
64	356	348	425	414	355	252	369	2,519	127,701,268
65	309	305	327	306	271	200	265	1,983	98,204,806
66	271	196	209	192	167	129	178	1,342	65,783,416
67	241	170	182	134	120	86	138	1,071	52,071,681
68	151	90	107	60	63	46	82	599	27,099,658
69	141	75	88	58	51	37	62	512	21,585,786
70	120	71	46	37	30	22	55	381	15,655,624
71	120	58	45	38	24	25	48	358	14,877,277
72	96	42	23	18	18	12	19	228	7,645,794
73	77	30	21	28	11	5	18	190	6,320,777
74	73	19	18	12	15	5	21	163	5,555,647
75 & Up	263	129	53	37	29	17	57	585	15,512,099
Totals	**70,480**	**45,629**	**41,161**	**29,786**	**22,038**	**13,315**	**9,564**	**231,973**	**$11,270,131,339**

EXECUTIVE GROUP AND ELECTED OFFICIALS
AS OF DECEMBER 31, 2013
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24									
25-29	16	1						17	$ 917,168
30-34	23	8						31	1,700,944
35-39	37	18	21	2				78	5,589,149
40-44	36	28	22	26	4			116	9,172,922
45-49	59	25	24	27	28	2		165	12,050,076
50-54	68	32	32	34	31	33	8	238	18,527,796
55	10	6	5	10	6	7	7	51	4,089,637
56	17	7	11	8	5	4	10	62	4,741,493
57	7	3	5	4	7	6	13	45	3,390,548
58	10	5	3	10	5	9	7	49	4,590,131
59	14	6	1	6	6	4	11	48	3,123,851
60	17	11	4	9	7	6	13	67	5,278,810
61	8	4	5	3	9	5	4	38	3,435,286
62	20	4	6	7	4	13	12	66	5,491,722
63	5	6		10	5	10	11	47	4,215,867
64	12	5	4	10	4	7	3	45	3,600,853
65	12	4	4	2		3	9	34	3,295,232
66	10	8	4	2	2	4	5	35	3,072,397
67	5	7	5	5	2	4	5	33	2,657,389
68	8	2		1	2	2	4	19	1,347,028
69	7	2		2	1		2	14	1,215,430
70	2	5	2		4		3	16	1,416,961
71	9	5	1	1	1	2	1	20	1,013,391
72	2	1		1	1			5	230,555
73	8	3		1	2	1	3	18	1,006,889
74	3			1			2	6	253,498
75 & Up	22	6		2	1	1	2	34	921,645
Totals	**447**	**212**	**159**	**184**	**137**	**123**	**135**	**1,397**	**$106,346,668**

PROTECTIVE OCCUPATION PARTICIPANTS WITH SOCIAL SECURITY
AS OF DECEMBER 31, 2013
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
15-19	2							2	$ 50,419
20-24	583	8						591	21,361,286
25-29	1,567	692	10					2,269	107,878,288
30-34	741	1,518	625	12				2,896	156,280,583
35-39	356	677	1,480	541	4			3,058	177,421,725
40-44	231	357	887	1,611	389			3,475	213,798,888
45-49	144	229	496	831	1,139	286		3,125	200,450,479
50	20	36	67	100	167	142	5	537	34,851,834
51	21	25	68	90	149	156	19	528	35,014,664
52	25	31	60	68	119	146	31	480	31,339,909
53	13	30	62	61	83	132	49	430	28,676,029
54	13	16	53	52	73	79	41	327	21,552,379
55	11	29	53	48	51	56	40	288	18,313,052
56	13	23	40	28	56	40	44	244	15,433,302
57	11	19	45	26	33	24	44	202	11,963,860
58	13	21	30	40	23	32	29	188	10,729,421
59	9	18	26	33	27	19	34	166	9,780,466
60	7	8	22	17	19	16	16	105	5,998,587
61	8	9	19	28	15	13	18	110	6,174,735
62	4	6	17	12	15	16	13	83	4,746,557
63	4	6	17	11	8	5	14	65	3,558,516
64	3	5	9	4	5		9	35	1,829,406
65	5	3	9	5	5	4	5	36	1,865,762
66	2	2	3	1	2	1	4	15	754,475
67	2	2	2			2	1	9	440,057
68		1		2			1	4	237,732
69	1		2	2		1	1	7	364,443
70 & Up	6	3	4	1	1			15	401,241
Totals	**3,815**	**3,774**	**4,106**	**3,624**	**2,383**	**1,170**	**418**	**19,290**	**$1,121,268,095**

PROTECTIVE OCCUPATION PARTICIPANTS WITHOUT SOCIAL SECURITY
AS OF DECEMBER 31, 2013
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	50							50	$ 2,187,742
25-29	206	87						293	16,690,257
30-34	126	204	56					386	24,632,860
35-39	41	103	206	69				419	29,441,713
40-44	18	54	152	233	71			528	39,377,563
45-49	7	14	78	154	170	35		458	35,402,547
50	2		5	16	39	34	2	98	7,700,624
51	4	1	4	14	33	32	3	91	7,187,589
52		2	6	16	18	44	8	94	8,008,596
53	2	3	2	8	21	28	15	79	6,474,665
54	1		4	15	18	19	11	68	5,630,823
55		2	2	5	18	12	8	47	3,868,245
56		1		4	12	9	7	33	2,674,801
57	3		1	4	9	10	4	31	2,515,093
58					6	4	1	11	890,220
59				3	7	8	5	23	1,911,181
60		1	1	1	8	3	2	16	1,315,750
61					1	1	2	4	346,599
62				1	1	1	1	4	328,853
63				1			2	3	296,824
Totals	**460**	**472**	**517**	**544**	**432**	**240**	**71**	**2,736**	**$196,882,545**

ACTIVE PARTICIPANTS
AS OF DECEMBER 31, 2013
BY YEARS OF SERVICE AND GENDER

Completed Years of Service	Males	Females	Totals	Valuation Payroll Total	Valuation Payroll Average
0	6,968	13,705	20,673	$ 566,587,426	$27,407
1	6,544	11,698	18,242	619,625,074	33,967
2	5,271	9,294	14,565	546,938,030	37,552
3	4,096	7,478	11,574	450,993,929	38,966
4	3,322	6,826	10,148	411,182,795	40,519
5	3,909	7,391	11,300	489,471,315	43,316
6	3,888	6,973	10,861	493,514,844	45,439
7	3,481	6,371	9,852	461,909,446	46,885
8	3,129	6,061	9,190	434,355,612	47,264
9	3,068	5,816	8,884	437,328,885	49,227
10	2,828	5,530	8,358	415,263,864	49,685
11	3,069	5,824	8,893	461,583,409	51,904
12	3,827	6,084	9,911	529,582,523	53,434
13	3,920	5,927	9,847	543,145,383	55,158
14	3,448	5,486	8,934	506,852,847	56,733
15 & Up	35,966	48,198	84,164	5,326,293,265	63,285
Totals	**96,734**	**158,662**	**255,396**	**$12,694,628,647**	**$49,706**

Average
Age	45.6	45.5	45.6		
Service	12.6	11.2	11.8		

COMPARATIVE STATEMENT OF ACTIVE PARTICIPANTS IN VALUATIONS

| Valuation 12/31 | General | | | | Executive and Elected | | | |
	No.	$ Millions	Average	% Incr.	No.	$ Millions	Average	% Incr.
			Earnings				Earnings	
1989	187,925	$ 4,579	$ 24,365	2.5%	1,492	50	33,450	4.8 %
1990	196,101	4,948	25,234	3.6%	1,502	63	35,193	5.2 %
1991	202,048	5,357	26,517	5.1%	1,496	56	37,535	6.7 %
1992	207,882	5,747	27,643	4.2%	1,463	58	39,598	5.5 %
1993	210,627	6,084	28,886	4.5%	1,452	60	41,476	4.7 %
1994	214,280	6,342	29,595	2.5%	1,450	63	43,528	4.9 %
1995	216,434	6,597	30,479	3.0%	1,475	67	45,135	3.7 %
1996	219,265	6,832	31,160	2.2%	1,459	67	45,967	1.8 %
1997	222,888	7,128	31,980	2.6%	1,455	71	48,881	6.3 %
1998	227,017	7,457	32,847	2.7%	1,450	73	50,664	3.6 %
1999*	229,657	7,704	34,445	4.9%	1,468	77	53,263	5.1 %
2000	234,076	8,335	35,610	3.4%	1,486	83	55,582	4.4 %
2001	238,944	8,746	36,605	2.8%	1,486	85	57,060	2.7 %
2002	240,990	9,007	37,377	2.1%	1,476	87	58,865	3.2 %
2003	239,696	9,273	38,686	3.5%	1,468	86	58,336	(0.9)%
2004	238,943	9,501	39,764	2.8%	1,469	89	60,379	3.5 %
2005	237,501	9,661	40,678	2.3%	1,452	90	61,788	2.3 %
2006	236,877	9,933	41,935	3.1%	1,436	93	64,480	4.4 %
2007	237,124	10,278	43,344	3.4%	1,427	95	66,320	2.9 %
2008**	238,994	10,806	45,216	4.3%	1,430	101	70,316	6.0 %
2009	240,401	11,098	46,165	2.1%	1,427	101	70,786	0.7 %
2010	239,959	11,195	46,655	1.1%	1,418	101	71,394	0.9 %
2011	232,518	10,947	47,080	0.9%	1,393	99	70,802	(0.8)%
2012	231,765	11,041	47,639	1.2%	1,408	104	73,968	4.5 %
2013	231,973	11,270	48,584	2.0%	1,397	106	76,125	2.9 %

*   After change in method of calculating average pay.
** Some groups had a 27 period payroll during 2008.

COMPARATIVE STATEMENT OF ACTIVE PARTICIPANTS IN VALUATIONS

| Valuation 12/31 | Protective with Social Security | | | | Protective without Social Security | | | |
| | | Earnings | | | | | Earnings | | |
	No.	$ Millions	Average	% Incr.	No.	$ Millions	Average	% Incr.
1989	10,551	$ 300	$ 28,414	3.1%	2,582	83	32,267	1.9 %
1990	11,167	332	29,738	4.7%	2,603	88	33,806	4.8 %
1991	11,666	357	30,606	2.9%	2,585	92	35,650	5.5 %
1992	12,160	390	32,049	4.7%	2,622	100	38,007	6.6 %
1993	12,388	408	32,928	2.7%	2,611	103	39,371	3.6 %
1994	12,825	436	34,005	3.3%	2,612	106	40,633	3.2 %
1995	13,434	467	34,747	2.2%	2,630	112	42,478	4.5 %
1996	13,820	495	35,807	3.1%	2,625	116	44,063	3.7 %
1997	14,232	536	37,625	5.1%	2,654	121	45,568	3.4 %
1998	14,810	570	38,509	2.3%	2,658	127	47,733	4.8 %
1999*	16,483	649	39,864	3.5%	2,691	131	48,947	2.5 %
2000	16,970	717	42,263	6.0%	2,685	135	50,423	3.0 %
2001	17,981	772	42,914	1.5%	2,715	142	52,339	3.8 %
2002	18,325	804	43,871	2.2%	2,709	148	54,603	4.3 %
2003	18,660	856	45,891	4.6%	2,714	154	56,673	3.8 %
2004	18,964	896	47,266	3.0%	2,709	159	58,546	3.3 %
2005	19,036	920	48,330	2.3%	2,689	162	60,241	2.9 %
2006	19,297	977	50,622	4.7%	2,692	167	62,153	3.2 %
2007	19,757	1,036	52,419	3.5%	2,695	174	64,449	3.7 %
2008**	20,038	1,099	54,859	4.7%	2,724	181	66,502	3.2 %
2009	20,205	1,124	55,636	1.4%	2,733	189	69,149	4.0 %
2010	20,019	1,125	56,184	1.0%	2,754	189	68,559	(0.9)%
2011	19,610	1,119	57,065	1.6%	2,711	189	69,898	2.0 %
2012	19,353	1,105	57,104	0.1%	2,727	193	70,949	1.5 %
2013	19,290	1,121	58,127	1.8%	2,736	197	71,960	1.4 %

*   *After change in method of calculating average pay.*
** *Some groups had a 27 period payroll during 2008.*

SECTION F

FINANCIAL REPORTING

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Valuation Date	December 31, 2013
Actuarial Cost Method	Frozen Entry Age
Amortization Method	Level Percent -- Closed Period
Amortization Period	30 Year closed from date of participation in WRS
Asset Valuation Method	5-Year Smoothed Market (Closed)

Actuarial Assumptions

Net Investment Rate of Return	5.5%
Weighted based on assumed rate for:	
Retired participants	5.0%
Post-retirement active participants	5.0%
Pre-retirement active participants	7.2%
Projected Salary Increases*	3.3% to 8.8%
Payroll Growth Rate	3.2%
Population Growth Rate	0.0%

* *Includes merit and seniority increases that vary by service plus wage inflation of 3.2%/year.*

STATEMENT OF NET PLAN ASSETS ($ THOUSANDS)

	2013	2012
Assets		
Cash and Cash Equivalents	$ 4,113,862	$ 3,651,833
Securities Lending Collateral	1,002,722	1,243,643
Prepaid Expenses	26,363	23,947
Total Short Term Assets	5,142,947	4,919,423
Receivables		
Contributions	130,521	112,247
Prior Service Contributions	62,516	86,685
Benefits Overpayment	2,975	3,273
Due from other Trust Funds	141,137	33,339
Miscellaneous	1,893	2,160
Interest and Dividends	236,577	238,681
Investment Sales	773,650	408,823
Total Receivables	1,349,269	885,208
Investments at Fair Value		
Fixed Income	26,372,170	24,984,157
Financial Futures Contracts	48,785	8,548
Preferred Securities	231,255	146,332
Convertible Securities	52,398	45,831
Stocks	48,960,143	43,097,203
Options	5,070	(930)
Limited Partnerships	10,381,478	9,692,096
Real Estate	739,443	618,926
Foreign Currency Contracts	(12,130)	(11,569)
Multi Asset Investments	3,544,183	2,942,024
Total Investments	90,322,795	81,522,618
Capital Assets	2,791	2,791
Total Assets	**96,817,802**	**87,330,040**
Liabilities:		
Fixed Investment Due Other Programs	3,886,713	3,414,425
Variable Investment Due Other Programs	19,168	19,168
Obligation Under Reverse Repo Agreement	862,948	996,024
Short Sell Obligations	136,915	40,097
Securities Lending Collateral Liability	1,002,722	1,243,643
Collateral Due to Counterparty	1,180	1,340
Benefits Payable	288,194	287,236
Unearned Revenue	146	146
Due To Other Trust Funds	140,241	1,253
Miscellaneous Payables	109,359	107,723
Investment Payables	517,065	146,663
Total Liabilities	**6,964,651**	**6,257,718**
Net Assets in Trust for Pension Benefits	**$89,853,151**	**$81,072,322**

STATEMENT OF CHANGES IN ASSETS ($ THOUSANDS)

	Activity During Year	
	2013	**2012**
Additions:		
Contributions:		
Employer Contributions	$ 914,698	$ 799,350
Employee Contributions	871,260	757,151
Total Contributions	1,785,958	1,556,501
Investment Income:		
Net Appreciation (Depreciation)		
in Fair Value of Investments	10,110,203	8,556,541
Interest	645,745	682,029
Dividends	1,125,694	1,141,840
Securities Lending Income	26,091	26,836
Other	209,243	149,407
Less		
Current Income Distributed	(473,022)	(405,042)
SWIB Investment Expense	(362,011)	(290,608)
Investment Income Distributed to		
Securities Lending Rebates and Fees	(2,241)	(2,293)
Net Investment Income	12,954,250	11,254,596
Interest on Prior Service Receivable	3,533	4,683
Miscellaneous Income	220,624	678
Total Additions	14,964,365	12,816,458
Deductions:		
Benefits and Refunds:		
Retirement, Disability,		
and Beneficiary	4,223,718	4,208,150
Separation Benefits	33,262	26,563
Total Benefits and Refunds	4,256,980	4,234,713
ETF Administrative Expenses	31,556	21,542
Other Expenses	220,452	0
Total Deductions	4,508,988	4,256,255
Net Increase (Decrease)	10,455,377	8,560,203
Net Assets Held in Trust:		
Beginning of Year	$81,072,322	$73,908,005
End of Year	**$89,853,151**	**$81,072,322**

SCHEDULE OF FUNDING PROGRESS & ACCRUED LIABILITIES
$ MILLIONS

Valuation Date Dec. 31	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Frozen Entry Age (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio** (a)/(b)	Covered Payroll (c)	UAAL as a Percent of Covered Payroll [(b) - (a)] / (c)
2001	$ 58,024.3	$ 60,134.7	$ 2,110.4	96.5 %	$ 9,917.7	21.3 %
2002	57,861.9	59,618.8	1,756.9	97.1 %	10,126.6	17.4 %
2003*	62,685.3	63,211.7	526.4	99.2 %	10,502.4	5.0 %
2004	66,209.4	66,622.3	412.9	99.4 %	10,897.6	3.8 %
2005	68,615.1	68,987.5	372.5	99.5 %	10,973.4	3.4 %
2006	73,415.3	73,735.8	320.5	99.6 %	11,308.2	2.8 %
2007	79,791.9	80,079.7	287.8	99.6 %	11,720.2	2.5 %
2008	77,159.4	77,412.0	252.6	99.7 %	12,289.6	2.1 %
2009	78,911.3	79,104.6	193.3	99.8 %	12,622.2	1.5 %
2010	80,626.9	80,758.8	131.9	99.8 %	12,744.0	1.0 %
2011	78,940.0	79,039.3	99.3	99.9 %	12,855.6	0.8 %
2012	78,613.0	78,682.7	69.7	99.9 %	12,627.6	0.6 %
2013	85,276.1	85,328.7	52.6	99.9 %	12,884.8	0.4 %

* Affected by prepayment of UAAL in connection with Pension Obligation Bond issued by the state and various local government employers.

** The funded ratios shown above are based on the statutory Frozen Initial Liability Valuation Method and are not suitable for comparison with Plans using other valuation methods.

SOLVENCY TEST ($MILLIONS)

Valuation Date Dec. 31	Valuation Assets	Accrued Liability for				Percent Funded for			
		Annuitants and Beneficiaries	Member Contribs.	Active & Inactive Members	Total	Annuitants and Beneficiaries	Participant Contributions	Active & Inactive Members	Total
2000	$51,824.6	$22,918.0	$12,869.7	$18,205.9	$53,993.6	100.0%	100.0%	88.1%	96.0%
2001	58,024.3	25,881.5	14,275.3	19,977.9	60,134.7	100.0%	100.0%	89.4%	96.5%
2002	57,861.9	26,041.7	14,022.9	19,554.2	59,618.8	100.0%	100.0%	91.0%	97.1%
2003	62,685.3	28,707.8	14,503.1	20,000.8	63,211.7	100.0%	100.0%	97.4%	99.2%
2004	66,209.4	30,829.9	15,050.3	20,742.1	66,622.3	100.0%	100.0%	98.0%	99.4%
2005	68,615.1	32,668.0	15,155.3	21,164.2	68,987.5	100.0%	100.0%	98.2%	99.5%
2006	73,415.3	35,774.7	15,902.4	22,058.7	73,735.8	100.0%	100.0%	98.5%	99.6%
2007	79,791.9	39,675.1	16,795.4	23,609.2	80,079.7	100.0%	100.0%	98.8%	99.6%
2008	77,159.4	38,372.6	16,045.3	22,994.1	77,412.0	100.0%	100.0%	98.9%	99.7%
2009	78,911.3	39,734.2	16,156.6	23,213.8	79,104.6	100.0%	100.0%	99.2%	99.8%
2010	80,626.9	41,139.0	16,253.6	23,366.2	80,758.8	100.0%	100.0%	99.4%	99.8%
2011	78,940.0	43,609.4	14,434.4	20,995.5	79,039.3	100.0%	100.0%	99.5%	99.9%
2012	78,613.0	44,055.5	14,401.1	20,226.1	78,682.7	100.0%	100.0%	99.7%	99.9%
2013	85,276.1	48,460.5	15,559.2	21,309.0	85,328.7	100.0%	100.0%	99.8%	99.9%

CONTRIBUTIONS REQUIRED AND CONTRIBUTIONS MADE

Year Ended December 31	Annual Required Contribution	Percent Contributed *
2000	$422.1	96.3%
2001	412.9	99.6%
2002	426.9	99.8%
2003	462.7	334.0%
2004	497.6	121.0%
2005	535.6	108.0%
2006	569.0	104.0%
2007	614.0	105.0%
2008	644.8	105.0%
2009	699.3	108.0%
2010	686.7	108.0%
2011	784.1	104.0%
2012	826.1	100.0%
2013	912.4	100.0%

* Includes additional UAAL payments when amount is greater than 100%.

Employers did not make the full actuarially required contribution for 2000 through 2002. In lieu of the full contribution, employers were allowed to recognize a credit due to a distribution from the TAA in accordance with the provisions of Act 11 of 1999.

SECTION G
METHODS AND ASSUMPTIONS

ACTUARIAL VALUATION METHOD

The actuarial funding method prescribed in the statute for WRS is the **Frozen Initial Liability Method**. Under this method, the amount of remaining unfunded actuarial accrued liabilities at any valuation date is affected only by the monthly amortization payments, compound interest, the added liability created by new employer units, and any added liabilities caused by changes in benefit provisions.

Actuarial gains or losses arising from the difference between actual and assumed experience are reflected in the determination of the normal cost. In this manner, experience gains or losses in any year are amortized (spread) over the average future working lifetime of the active participant group - a period of approximately 20 years. Hence, the computed normal cost is made up of two parts:

- The pure entry-age normal cost (EANC) determined without regard to past gains or losses, and;
- an experience amortization component.

Section 40.04(1) of the Wisconsin Statutes provides authority to maintain accounts and reserves determined to be "useful in achieving the funds' purposes - - -". A fundamental WRS objective is stable contribution rates. Accordingly, based on the authority granted under Section 40.04, the experience portion of the normal cost is separately calculated each year and the amortization period is varied upward or downward in order to minimize short-term rate fluctuations. The policy regarding the EAR amortization period is described below:

- The standard period is set 20 years.
- The standard period is reconsidered as part of each triennial experience study (no changes were made with the most recent experience study).
- Temporary interim changes in the period are made only when there are large, but mostly offsetting market gains and losses known to be flowing through the MRA that would otherwise result in contribution rate volatility. Large changes would be defined as those which, over a 2-year period, were expected to result in contribution rate changes of at least 0.4% of payroll.
- The minimum and maximum EAR amortization periods are 10 years and 30 years respectively.
- The amortization policy will be applied in the same manner to market gains and losses flowing through the MRA.
- For 2012 and 2013, a 25-year period was used.

ASSET VALUATION METHOD

An essential step in the valuation process is comparing valuation assets with computed liabilities. Computed liabilities result from actuarial calculations involving the covered population, the benefits, and actuarial assumptions. Valuation assets are those assets that are recognized and available to fund the System's liabilities. WRS assets are invested in the Core Investment Trust, and in the Variable Investment Trust, both of which are managed by the State of Wisconsin Investment Board (SWIB). Assets in the Variable Investment Trust are marked to market each year. Assets in the Core Investment Trust (most of the assets) are valued (or recognized) using an "asset valuation method".

Asset valuation methods are distinguished by the timing of the recognition of investment return. Total investment return is the sum of ordinary income and capital value changes. Under a book value approach, ordinary income is recognized immediately and capital gains (or losses) are recognized only when securities are sold. Book value investment return is directly affected by the timing of sales activity and underlying experience may be distorted. Under a pure market value approach, ordinary investment income and all capital value changes are recognized immediately. Because of market volatility, use of pure market values in retirement funding can result in volatile contribution rates and unstable financial ratios, contrary to WRS objectives.

The asset valuation method used for WRS valuations is statutory, and is referred to as the "Market Recognition Account" or MRA. Act 11 of 1999 closed the former Transaction Amortization Account (TAA) and created the Market Recognition Account (MRA). The MRA recognizes assumed returns fully each year. Differences between actual and assumed returns are phased in over a closed 5-year period. The objective is to give recognition to long-term changes in asset values while minimizing the effect of short-term fluctuations in the capital markets. In accordance with its smoothing objective, the MRA will tend to exceed the market value when the markets are doing poorly, and will fall short of the market value when markets are doing well. Some retirement systems set limits on the amount by which the recognized value of assets can differ from the market value.

SUMMARY OF ASSUMPTIONS
USED FOR ANNUAL ACTUARIAL VALUATIONS
ASSUMPTIONS ADOPTED BY ETF BOARD AFTER
CONSULTING WITH ACTUARY

ECONOMIC ASSUMPTIONS

For determining plan liabilities, the discount rate is 5.0% for retired participants, 5.0% for active and inactive participants following retirement, and 7.2% for active participants prior to their retirement. A valuation performed assuming 5.5% discount rate for all participants at all stages of life, reproduces the results of an actuarial valuation using the 5% post-retirement and 7.2% pre-retirement assumptions. Thus, it can be said that **the net discount rate assumed in the valuations was 5.5% per year, compounded annually (net after administrative expenses).**

The **Wage Inflation Rate** assumed in this valuation was 3.20% per year. The wage inflation rate is defined to be the portion of total pay increases for an individual that are due to macro economic forces including productivity, price inflation, and labor market conditions. The wage inflation rate does not include pay changes rated to individual merit and seniority effects.

No specific **Price Inflation** assumption is required to perform this valuation, since there are no benefits that are linked to price increases. However, a price inflation assumption on the order of 2.0% to 2.7% would be consistent with the other economic assumptions.

The assumed **Real Rate of Return** over wage inflation is defined to be the portion of total investment return that is more than the assumed total wage growth rate. Considering other economic assumptions, the 7.2% pre-retirement investment return rate translates to an assumed real rate of return over wage inflation of 4.0%. The assumed real rate of return over price inflation would be higher – on the order of 4.5% to 5.2%, considering both an inflation assumption and an average expense provision.

Pay increase assumptions for individual active members are shown for sample services below. Part of the assumption for each age is for merit and/or seniority increase, and the other 3.2% recognizes wage inflation, including price inflation, productivity increases, and other macro economic forces.

% Merit and Longevity Increase Next Year						
		University	Public School	Protective		Exec. &
Service	Gen.	Teachers	Teachers	With S.S.	W/O S.S.	Elec.
1	3.5 %	3.2 %	5.8 %	4.8 %	5.5 %	2.0 %
2	3.5 %	3.2 %	5.8 %	4.8 %	5.5 %	2.0 %
3	3.1 %	3.1 %	5.4 %	4.1 %	4.7 %	2.0 %
4	2.8 %	3.0 %	5.1 %	3.5 %	3.8 %	1.9 %
5	2.5 %	2.9 %	4.7 %	2.8 %	3.0 %	1.9 %
10	1.5 %	2.4 %	3.2 %	1.1 %	0.9 %	1.6 %
15	1.1 %	1.7 %	1.8 %	0.8 %	0.5 %	1.2 %
20	0.9 %	1.1 %	0.8 %	0.7 %	0.4 %	0.7 %
25	0.6 %	0.8 %	0.4 %	0.6 %	0.3 %	0.4 %
30	0.4 %	0.6 %	0.2 %	0.5 %	0.2 %	0.3 %

DECREMENT PROBABILITIES

The Active Member Population is assumed to remain constant. For purposes of financing the unfunded liabilities and amortizing the EAR, total payroll is assumed to grow at the wage inflation rate – 3.20% per year.

The mortality table used to measure mortality for retired participants was the Wisconsin 2012 Mortality Table, as adopted by the Board in connection with the 2009-2011 Experience Study. The rates in this table were based on actual WRS experience projected to 2017 with scale BB to allow for future improvements (margin) in mortality. Sample retirement values from this table are shown below. This assumption is used to measure the probabilities of participants dying before retirement and the probabilities of each benefit payment being made after retirement.

Single Life Retirement Values
Wisconsin 2012 Mortality Table with 5% Interest

Sample Attained Ages	Present Value of $1 Monthly for Life		Future Life Expectancy (years)	
	Males	Females	Males	Females
40	$209.20	$214.70	42.9	46.1
45	200.43	207.06	38.1	41.3
50	189.60	197.69	33.3	36.5
55	176.75	186.37	28.7	31.8
60	162.35	172.92	24.4	27.2
65	145.13	156.75	20.1	22.7
70	125.71	137.76	16.1	18.4
75	104.34	116.43	12.4	14.3
80	82.05	93.57	9.0	10.7
85	61.28	70.89	6.3	7.6

The values shown above are for non-disabled participants. For disabled participants, the following table was used:

Sample Attained Ages	Present Value of $1 Monthly for Life		Future Life Expectancy (years)	
	Males	Females	Males	Females
40	$195.27	$204.53	35.7	39.9
45	183.23	194.56	30.9	35.1
50	169.52	182.61	26.4	30.4
55	153.66	168.39	22.1	25.8
60	135.14	151.44	18.0	21.4
65	114.76	131.73	14.1	17.2
70	92.83	109.91	10.6	13.2
75	71.03	86.92	7.6	9.7
80	52.06	64.92	5.2	6.8
85	36.73	47.23	3.5	4.7

ACTIVE PARTICIPANT MORTALITY RATES

Sample	Mortality Rates	
Attained Ages	Males	Females
20	0.000155	0.000089
25	0.000184	0.000097
30	0.000229	0.000129
35	0.000398	0.000230
40	0.000540	0.000329
45	0.000717	0.000519
50	0.000966	0.000765
55	0.002228	0.001345
60	0.003147	0.001935
65	0.004814	0.002974
70	0.007979	0.005057
75	0.013576	0.009155
80	0.024949	0.017103

This assumption is used to measure the probability of participants dying while in service.

RATES OF RETIREMENT FOR THOSE ELIGIBLE TO RETIRE

Normal Retirement

Age	General Male	General Female	Public School Male	Public School Female	University Male	University Female	Protective* With S.S.	Protective* W/O S.S.	Exec. & Elected
50							6%	4%	
51							7%	4%	
52							8%	5%	
53							23%	17%	
54							18%	25%	
55							17%	21%	
56							16%	27%	
57	20%	17%	40%	27%	13%	14%	16%	30%	15%
58	20%	17%	35%	27%	13%	14%	16%	30%	15%
59	20%	17%	25%	27%	13%	13%	16%	30%	15%
60	20%	20%	28%	27%	13%	13%	18%	26%	10%
61	20%	20%	25%	27%	13%	19%	18%	15%	13%
62	27%	27%	36%	34%	15%	19%	22%	20%	13%
63	32%	28%	32%	27%	15%	19%	29%	40%	12%
64	24%	25%	24%	23%	15%	18%	16%	40%	12%
65	24%	25%	24%	28%	15%	22%	30%	40%	12%
66	30%	29%	25%	30%	20%	23%	20%	40%	20%
67	24%	20%	24%	28%	18%	17%	15%	40%	17%
68	17%	18%	24%	26%	18%	17%	25%	40%	15%
69	17%	18%	24%	20%	18%	17%	20%	40%	15%
70	17%	18%	20%	20%	20%	20%	100%	100%	13%
71	17%	18%	20%	20%	20%	20%	100%	100%	13%
72	17%	15%	20%	20%	15%	20%	100%	100%	25%
73	17%	15%	20%	20%	15%	20%	100%	100%	10%
74	17%	15%	20%	20%	15%	20%	100%	100%	10%
75	100%	100%	100%	100%	100%	100%	100%	100%	100%

* Includes early retirements.

Early Retirement

		% Retiring Next Year						
	General Male	General Female	Public School Male	Public School Female	University Male	University Female	Exec. & Elected
Age	Male	Female	Male	Female	Male	Female	Elected
55	8.0%	6.1%	12.0%	11.0%	4.8%	5.5%	4.5%
56	8.0%	6.4%	12.0%	11.0%	3.0%	5.5%	4.5%
57	4.3%	4.2%	12.0%	11.0%	2.0%	4.0%	4.5%
58	5.3%	5.5%	12.0%	11.0%	2.5%	4.0%	4.5%
59	5.5%	5.3%	12.0%	11.0%	4.0%	6.5%	4.5%
60	7.5%	8.1%	12.0%	15.0%	4.0%	6.5%	4.5%
61	8.0%	7.0%	12.0%	15.0%	7.5%	7.5%	4.5%
62	14.0%	15.0%	20.0%	20.0%	7.0%	10.0%	
63	16.0%	15.0%	20.0%	20.0%	7.5%	10.0%	
64	17.0%	15.0%	20.0%	20.0%	8.0%	13.0%	

The assumed rates of separation from employment prior to service retirement due to disability and other causes are shown below for sample ages. For other terminations it was assumed that a percentage depending on age of participants terminating after age 35 with 5 or more years service will leave their contributions on deposit and be paid a benefit at normal retirement age and that the remaining participants would take a separation benefit. The percentage taking a separation benefit is 25% at age 35, grading downward to 0% at retirement eligibility. All participants terminating prior to normal retirement age with less than 5 years of service were assumed to take a separation benefit.

Assumed Termination Rates
by Attained Age and Years of Service

		% of Active Participants Terminating								
		Protective								
		With Soc. Sec.	Without Soc. Sec.	Public Schools		University		Exec. & Elected	General	
Age	Service			Males	Females	Males	Females		Males	Females
	0	15.0%	4.0%	17.7%	15.0%	18.3%	22.0%	20.0%	17.5%	19.5%
	1	7.0%	3.5%	11.4%	10.5%	15.0%	15.0%	14.0%	13.0%	13.5%
	2	4.3%	2.1%	7.3%	7.1%	11.3%	12.5%	14.0%	8.5%	10.0%
	3	3.8%	1.3%	5.2%	5.5%	9.6%	10.0%	10.0%	6.8%	8.0%
	4	3.4%	1.2%	3.9%	4.6%	8.5%	9.5%	10.0%	6.0%	7.4%
	5	2.6%	1.1%	3.0%	4.0%	7.5%	8.0%	9.0%	4.5%	6.0%
	6	2.5%	1.0%	2.8%	3.5%	7.0%	7.0%	8.5%	4.0%	5.0%
	7	2.3%	0.9%	2.5%	3.0%	5.5%	6.0%	8.0%	3.5%	4.5%
	8	2.0%	0.8%	2.0%	2.5%	4.3%	5.0%	7.5%	3.0%	4.0%
	9	1.7%	0.7%	1.8%	2.3%	3.2%	4.0%	7.0%	2.5%	3.8%
25	10 & Over	1.7%	0.7%	1.8%	2.2%	3.2%	5.0%	6.0%	2.5%	3.8%
30		1.6%	0.7%	1.4%	1.9%	3.2%	4.5%	5.1%	2.5%	3.3%
35		1.4%	0.7%	1.2%	1.4%	3.1%	4.0%	4.2%	2.1%	2.8%
40		1.2%	0.6%	1.1%	1.1%	2.7%	3.4%	3.7%	1.6%	2.2%
45		1.1%	0.6%	1.0%	0.9%	2.1%	2.6%	3.3%	1.3%	1.8%
50		1.0%	0.5%	1.0%	0.9%	1.6%	1.8%	3.1%	1.1%	1.6%
55		1.0%	0.5%	1.0%	0.9%	1.4%	1.5%	3.0%	1.1%	1.5%
60		1.0%	0.5%	1.0%	0.9%	1.4%	1.5%	3.0%	1.1%	1.5%

Disability Rates

	% of Active Participants Becoming Disabled									
	Protective		Public Schools		University		Exec. & Elected		General	
Age	With SS	W/O SS	Males	Females	Males	Females	Males	Females	Males	Females
20	0.01%	0.04%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.01%	0.01%
25	0.01%	0.04%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.01%	0.01%
30	0.01%	0.04%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.01%	0.03%
35	0.02%	0.04%	0.01%	0.01%	0.01%	0.03%	0.01%	0.01%	0.01%	0.04%
40	0.03%	0.07%	0.02%	0.02%	0.01%	0.04%	0.01%	0.01%	0.04%	0.05%
45	0.05%	0.13%	0.04%	0.06%	0.02%	0.04%	0.01%	0.01%	0.07%	0.07%
50	0.08%	0.74%	0.11%	0.12%	0.04%	0.07%	0.02%	0.02%	0.15%	0.11%
55	1.21%	0.54%	0.21%	0.17%	0.11%	0.10%	0.09%	0.09%	0.29%	0.20%
60	2.04%	0.16%	0.34%	0.25%	0.14%	0.15%	0.11%	0.11%	0.51%	0.29%

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Expenses:

Assumed investment return is net of administrative and investment expenses.

Marriage Assumption:

80% of males and 70% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.

Pay Increase Timing:

Beginning of (calendar) year for most people. Middle of calendar year for teachers.

Pay Annualization:

Reported pay for members with less than twelve contributing months was annualized by the ratio of 12 to the number of contributing months in the year.

Final Average Salary:

For present value of future benefit purposes, final average salary was calculated in accordance with pay increase assumptions, but was not permitted to fall below the final average salary reported in the data.

Decrement Timing:

Decrements of all types are assumed to occur mid-year.

Decrement Operation:

Disability and Turnover operate during the retirement pattern.

Decrement Relativity:

Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

Eligibility Testing:

Eligibility for benefits is determined based upon the age nearest birthday and total service (in all benefit groups) nearest whole year on the date the decrement is assumed to occur.

Benefit Service:

Exact fractional service on the decrement date is used to determine the amount of benefit payable.

Non-Benefit Service:

Liabilities for service in divisions other than the division in which the individual is currently active are calculated as indexed deferred vested benefits. Benefits are indexed in accordance with the salary adjustment factors for the division where the member was formerly employed. People are assumed to retire at the earliest age that full benefits will become available. The liabilities are assigned to the division in which the service was rendered.

Service Credit Accruals:

It is assumed that members accrue one year of service credit per year.

Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

Assumed Retirement for Deferred Members: Members with a deferred vested benefit were assumed to retire at age 65 for General members, age 54 for Protective members and age 62 for Executive and Elected members.

Normal Form of Benefit: The assumed normal form of benefit is a straight life benefit, except where otherwise noted.

Disability Valuation: The Post-10/15/92 Disability benefit consists of one benefit payable to age 65 (10% of FAE) plus another benefit payable on and after age 65 (WRS benefit accrued to date of disability plus 7% of FAE during disability). For valuation purposes, the 7% of FAE portion of the post 65 benefit was added to the 40% of FAE benefit prior to age 65.

Additionally, there are certain cases in which the disability benefit at the member's normal retirement age is larger than the member's benefit under the normal retirement benefit formula. To account for this, an adjustment is made to the member's normal retirement benefit present value calculation which is equal to 15% of the difference between the present values of the LTDI benefit and the normal retirement benefit.

Variable Excess Benefits: These benefits are valued by increasing the otherwise calculated liabilities by an amount equal to twice the value of the variable excess. (The variable excess is the difference between the variable account and the variable at core account, summed over all participants.)

Liability Adjustments: Final Average Salaries were increased 2.5% (3.0% for Executive and Elected and 3.5% for Protectives) to account for additional contingencies in actual benefit amount calculated at the time of retirement.

Amortization Payoff Reserve: Additional reserves in the amount of $58,888,448 (discounted from the year 2029 to the current valuation date) were added to general group liabilities to account for the possibility that some non-state employers may never be able to pay off their unfunded actuarial accrued liability.

SECTION H
PLAN PROVISIONS

Normal Retirement Eligibility

The age a participant becomes eligible for an unreduced age and service annuity is:

General		Protective		Executive & Elected	
Age	**Service**	**Age**	**Service**	**Age**	**Service**
65	Any*	54	Any*	62	Any*
57	30	53	25	57	30

> ** Participants first employed after 1989 and terminated before April 24, 1998 must have creditable service in 5 calendar years.*

Normal Retirement Annuity

The age and service annuity payable at Normal Retirement Age is based on Final Average Earnings (FAE) and Creditable Service (CS) as follows:

Multiplier for Service Rendered			
Before 2000	**Between 2000 and 2011**	**After 2011**	**Group**
2.165%	2.0%	1.6%	Executive group and elected officials
2.165%	2.0%	2.0%	Protective occupation participants covered by Social Security
2.665%	2.5%	2.5%	Protective occupation participants not covered by Social Security
1.765%	1.6%	1.6%	All other participants

FAE is generally the average of the 3 highest years of earnings (July 1 - June 30 for teachers, educational support staff, and judges; calendar year for others) preceding retirement. These years do not have to be consecutive. For legislators and state constitutional officers who are ineligible to receive pay increases during their term, FAE is the statutory rate of earnings at termination.

Maximum formula annuity is 85% of FAE for protective occupation participants not covered by Social Security, 65% of FAE for protectives covered by Social Security, and 70% for all other participants. If greater than the formula amount, an annuity equal to the actuarial equivalent of two times the required accumulated contributions is paid in lieu of the formula amount.

Early Retirement. Any participant who has attained age 55 and any Protective occupation participant who has attained age 50 may apply for an early retirement annuity. The benefit is reduced 0.4% for each month that the annuity effective date precedes the Normal Retirement Age. For Non-Protective participants terminating after 6/30/90, the 0.4% is reduced for months after the attainment of age 57 and before the annuity effective date by .001111% for each month of creditable service.

Voluntary Termination Before Immediate Benefit Eligibility. Participant may either (i) receive a refund of accumulated contributions, or (ii) leave contributions on deposit and apply for a retirement annuity on or after the minimum retirement age based upon age and accrued service at time of termination.

Post-Retirement Adjustments. Annuities are increased annually if the investment income credited to retired life funds is in excess of the assumed benefit rate (presently 5%), other plan experiences are within projected ranges, and the resulting adjustment would be at least 0.5%.

Disability Annuity. Eligibility: generally total and permanent incapacity to engage in gainful employment. Participant must have completed at least 6 months of creditable service (in at least 5 out of the last 7 calendar years) preceding application for disability. Service requirement is waived if disability is from service-related causes.

For protective occupations, eligibility also can be met if a member has 15 years of service, is between the ages of 50 and 55 and unable to safely and efficiently perform one's duties.

Disability Amounts. Amounts payable in case of disability depend upon the plan from which payment is made and are described below.

	Pre-10/16/1992 WRS Plan	Post-10/15/1992 LTDI Plan
Participants covered	Participants hired before 10/16/1992 who do not elect LTDI coverage.	Participants entering after 10/15/1992 and participants on 10/15/1992 who elect LTDI coverage.
Benefit to age 65*	WRS formula benefit based on service projected to normal retirement age.	40% of FAE for participants covered by Social Security; 50% of FAE for non-covered participants who cannot qualify for Social Security disability benefits.
Benefit at age 65*	Continuation of pre-65 amount.	WRS benefit accrued to date of disability plus 7% of FAE money purchase benefit during disability period, both of which are adjusted in accordance with dividend rate.

* Conversion age is later for participants becoming disabled after age 61.

Death-in-Service.

   (a) Prior to age 50 for Protective participants, age 55 for others, the benefit is the equivalent of twice the accumulated employee contributions required and all additional contributions and employer amounts contributed prior to 1974 for teachers, or 1966 for others.

   (b) After age 50 for Protective participants, age 55 for others, the benefit is the amount that would have been paid if participant had retired and elected 100% survivor option. Benefit is payable to any natural living person.

Interest Credits. For years after 1999, and for people with some active service after 1999, participant core accounts (including the variable at core accounts) are credited with interest at the full (core) effective rate. For others, accounts are credited with interest as follows:

| | Rate Credited For Purpose of | |
| | Money Purchase | |
Date of Participation	**Minimum**	**Refunds**
Prior to 1982	Actual	Actual
January 1, 1982 & Later	5%	3%

Participant variable accounts are credited with interest based on the earnings in the variable portfolio.

Contribution Rates. The financial objective of WRS is to establish and receive contributions that will remain level from year to year and decade to decade.

Statutory required participant contributions prior to July 1, 2011 were as follows:

General	5.0%
Executives & Elected Officials	5.5
Protectives	
- With Social Security	6.0
- Without Social Security	8.0

Statutory required participant contributions after July 1, 2011 are set equal to one-half of the actuarially determined rate for General participants and Executive and Elected Officials. Participant contributions for Protective participants are set equal to the participant contribution for General members.

Normal Form of Benefit. The normal form of benefit is a straight life annuity with no death benefits. Optional forms of benefit which are actuarially reduced are listed below:

- A life annuity with 60 or 180 monthly payments guaranteed.
- A joint survivorship annuity with 75% continued to beneficiary.
- A joint survivorship annuity with 100% continued to beneficiary.
- A joint survivorship annuity reduced 25% upon either your death or your beneficiary's death.
- A joint survivorship annuity with 100% continued to beneficiary combined with 180 monthly payments guaranteed.

For formula benefit calculations, optional forms are calculated at the lower of the current age or age 62 (Normal Retirement Age for Protective occupations).

Vesting. Participants hired prior to July 1, 2011 vest immediately. After July 1, 2011, participants vest after 5 years of service.

APPENDIX 1
GLOSSARY

GLOSSARY

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability".

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method".

Actuarial Equivalent. A series of payments is called an actuarial equivalent of another series of payments if the two series have the same actuarial present value.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience Gain (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

GLOSSARY
(CONCLUDED)

Normal Cost.   The annual cost assumed, under the actuarial funding method, for current and subsequent plan years.   Sometimes referred to as "current service cost".   Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Plan Termination Liability.   The actuarial present value of future plan benefits based on the assumption that there will be no future accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a "going-concern" basis and is not normally determined in a routine actuarial valuation.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability".

Valuation Assets. The value of current plan assets recognized for valuation purposes. Generally based on book value plus a portion of unrealized appreciation or depreciation.

APPENDIX 2
VALUATION PROCESS

FINANCIAL PRINCIPLES & OPERATIONAL TECHNIQUES
OF THE WISCONSIN RETIREMENT SYSTEM

Benefit Promises Made Which Must be Paid For. A retirement program is an orderly means of handing out, keeping track of, and financing contingent retirement promises. As each participant of the Retirement System acquires a unit of service credit he is, in effect, handed an "IOU" which reads: "The Wisconsin Retirement System promises to pay you one unit of annuity benefits, payments in cash commencing when you retire."

The principal related financial question is: *When shall the money required to cover the "IOU" be contributed?* This year, when the benefit of the participant's unit of service is received? Or, some future year, when the "IOU" becomes a cash demand?

The law governing the Wisconsin Retirement System financing intends that the money to cover an "IOU" is contributed in the year the "IOU" is handed out. In this way contribution rates expressed as percents of participant payroll can be determined so as to remain approximately level from year to year and decade to decade as long as the basic experience and make-up of the group of participants does not change significantly. This means that for equivalent benefits each generation of Wisconsin taxpayers will contribute at approximately the same payroll rates.

Translated into actuarial terminology, the level percent-of-payroll contribution objective means that the contribution rate must total at least:

> **Normal Cost** (the current discounted value of benefits likely to be paid on account of participants' service rendered in the current year)
> ... plus ...
> **Interest on Unfunded Actuarial Accrued Liabilities** (unfunded actuarial accrued liabilities are the difference between (i) the present value of future benefits and (ii) the present value of future normal costs, and reduced by the assets on hand at the valuation date).

If contributions to the system are less than the preceding amount, the difference, **plus investment earnings not realized thereon**, will have to be contributed at some later time, or benefits will have to be reduced, to satisfy the fundamental equation under which all retirement programs must operate; that is:

$$B = C + I - E$$

Benefit payments to any group of participants and their beneficiaries cannot exceed

> **C**ontributions received on behalf of the group
> ... plus ...
> **I**nvestment earnings on those contributions
> ... minus ...
> **E**xpenses incurred in operating the program.

There are retirement programs (Social Security is an example) designed to defer the bulk of contributions far into the future. The present contribution rate for such systems is artificially low, but is destined to increase relentlessly to a level which may be greatly in excess of the level percent-of-payroll rate.

A by-product of a level percent-of-payroll contribution objective is the accumulation of invested assets for varying periods of time. Investment income becomes the third and largest contributor to the retirement system and the amount is directly related to the amount of contributions and investment performance.

Computing Contribution Rates To Finance Benefits. From a given schedule of benefits and from the data furnished, the actuary calculates the contribution rates **by means of an actuarial valuation** - the technique of assigning monetary values to the risks assumed in operating a retirement program.

The principal areas of risk assumption are:

- long-term *rates of investment income* likely to be generated by system assets

- *rates of mortality* among participants, retirants and beneficiaries

- *rates of withdrawal* of active participants

- *rates of disability* among participants

- *patterns of salary increases* to be experienced by participants

- the age and service *distribution of actual retirements*

In an actuarial valuation, the actuary projects the monetary effect of each risk assumption for each distinct experience group, for the next year and for each year over the next half-century or longer.

Once actual risk experience has occurred and been observed, it will not coincide exactly with assumed risk experience, regardless of the skill of the actuary, the completeness of the data, and the precision of the calculations. Each valuation provides a complete recalculation of assumed future risk experience and takes into account all past differences between assumed and actual risk experience. The result is a continual series of small adjustments to the computed contribution rate. From time to time it becomes necessary to adjust the package of risk measurements to reflect basic experience trends -- but not random year-to-year fluctuations.

The Actuarial Valuation Process

	Unfunded actuarial accrued liabilities are amortized over a fixed period of years.
◉ UAAL:	
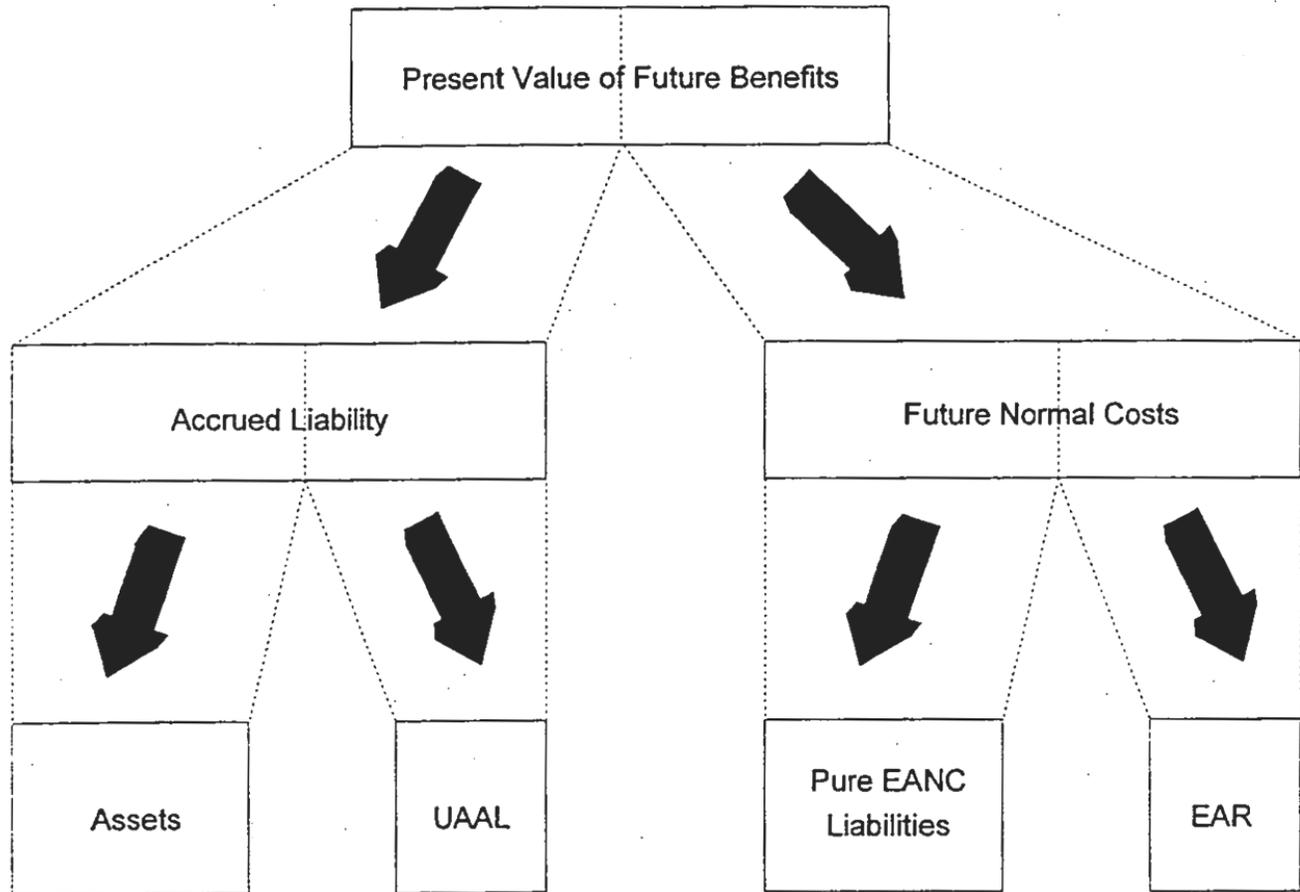
◉ UAAL: Unfunded actuarial accrued liabilities are amortized over a fixed period of years.

◉ Pure EANC: Entry age normal cost liabilities are financed over the working lifetimes of WRS participants.

◉ EAR: The Experience Amortization Reserve portion of future normal costs is financed over varying periods which are selected to optimize contribution rate stability.

% OF ACTIVE EMPLOYEE PAYS (vertical axis)

START   50 ±

YEARS OF TIME

Labels in figure: CASH BENEFITS, PAY-AS-YOU-GO CONTRIBUTIONS, LEVEL CONTRIBUTIONS, INVESTMENT INCOME, CONTRIBUTIONS: EMPLOYER AND EMPLOYEE COMBINED
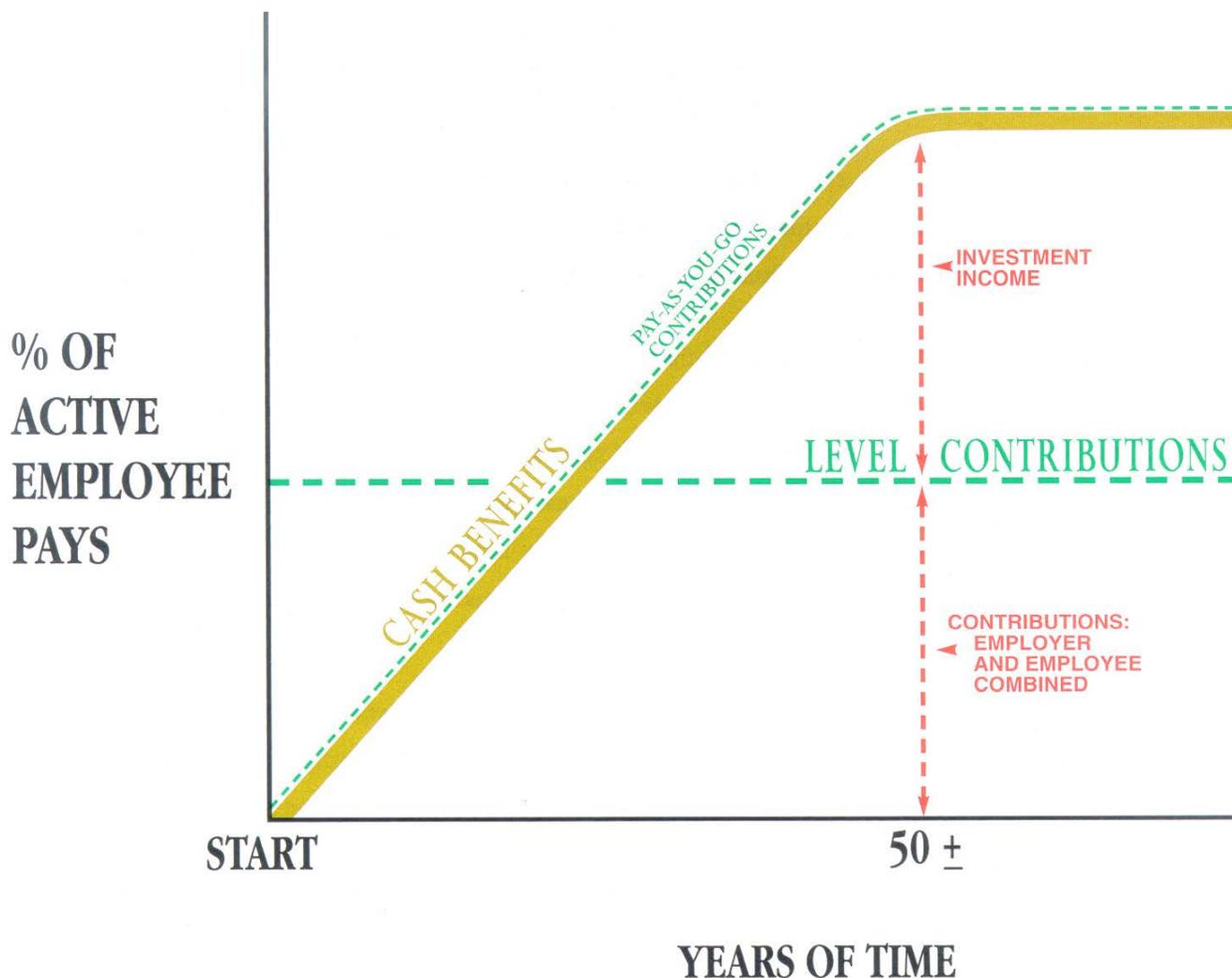
CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

        Economic Risk Areas

                Rates of investment return

                Rates of pay increase

                Changes in active member group size

        Non-Economic Risk Areas

                Ages at actual retirement

                Rates of mortality

                Rates of withdrawal of active members (turnover)

                Rates of disability

APPENDIX 3

GAIN/LOSS EXHIBITS

GENERAL MALES
WITHDRAWAL EXPERIENCE
DURING CALENDAR YEAR 2013

Male Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	384	2,087	0.1840	0.1750	365
2	541	4,097	0.1320	0.1300	533
3	319	2,772	0.1151	0.0850	236
4	186	2,019	0.0921	0.0680	137
5	188	2,013	0.0934	0.0600	121
6	130	2,195	0.0592	0.0450	99
7	111	1,848	0.0601	0.0400	74
8	81	1,593	0.0508	0.0350	56
9	60	1,482	0.0405	0.0300	44
10	45	1,263	0.0356	0.0250	32
Totals	2,045	21,369	0.0957	0.0794	1,697

Male Age-Based Withdrawals

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	6	0.0000	0.0250	-
30-34	14	352	0.0398	0.0250	9
35-39	44	1,401	0.0314	0.0180	25
40-44	69	2,557	0.0270	0.0150	38
45-49	85	3,792	0.0224	0.0120	46
50-54	122	5,848	0.0209	0.0110	64
Over 54	123	11,174	0.0110		123
Totals	457	25,130	0.0182	0.0121	305

GENERAL FEMALES
WITHDRAWAL EXPERIENCE
DURING CALENDAR YEAR 2013

Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	892	4,625	0.1929	0.1950	902
2	1,284	8,538	0.1504	0.1350	1,153
3	750	5,859	0.1280	0.1000	586
4	497	4,741	0.1048	0.0800	379
5	420	4,731	0.0888	0.0740	350
6	373	4,468	0.0835	0.0600	268
7	285	4,013	0.0710	0.0500	201
8	198	3,599	0.0550	0.0450	162
9	198	3,386	0.0585	0.0400	135
10	149	3,205	0.0465	0.0375	120
Totals	5,046	47,165	0.1070	0.0902	4,256

Female Age-Based Withdrawals

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	2	21	0.0952	0.0375	1
30-34	39	583	0.0669	0.0300	17
35-39	81	2,123	0.0382	0.0260	55
40-44	115	3,533	0.0326	0.0200	71
45-49	163	5,597	0.0291	0.0170	95
50-54	247	9,057	0.0273	0.0150	136
Over 54	245	18,746	0.0131		245
Totals	892	39,660	0.0225	0.0156	620

Male Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	69	612	0.1127	0.1770	108
2	108	1,098	0.0984	0.1140	125
3	88	954	0.0922	0.0730	70
4	42	721	0.0583	0.0520	37
5	34	720	0.0472	0.0390	28
6	39	776	0.0503	0.0300	23
7	22	735	0.0299	0.0280	21
8	30	769	0.0390	0.0250	19
9	21	785	0.0268	0.0200	16
10	23	751	0.0306	0.0180	14
Totals	476	7,921	0.0601	0.0582	461

Male Age-Based Withdrawals

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	-	N/A	0.0180	-
30-34	3	228	0.0132	0.0120	3
35-39	30	1,901	0.0158	0.0115	22
40-44	58	2,637	0.0220	0.0105	28
45-49	49	2,624	0.0187	0.0100	26
50-54	53	2,468	0.0215	0.0095	23
Over 54	29	3,179	0.0091		29
Totals	222	13,037	0.0170	0.0100	131

PUBLIC SCHOOLS FEMALES
WITHDRAWAL EXPERIENCE
DURING CALENDAR YEAR 2013

Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	171	1,645	0.1040	0.1500	247
2	300	3,113	0.0964	0.1050	327
3	210	2,561	0.0820	0.0710	182
4	129	2,236	0.0577	0.0550	123
5	118	2,280	0.0518	0.0460	105
6	117	2,452	0.0477	0.0400	98
7	117	2,448	0.0478	0.0350	86
8	104	2,311	0.0450	0.0300	69
9	69	2,255	0.0306	0.0250	56
10	65	2,217	0.0293	0.0230	51
Totals	1,400	23,518	0.0595	0.0571	1,344

Female Age-Based Withdrawals

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	-	N\A	0.0220	-
30-34	16	730	0.0219	0.0170	12
35-39	103	4,709	0.0219	0.0120	57
40-44	87	6,034	0.0144	0.0095	57
45-49	113	6,628	0.0170	0.0092	61
50-54	120	6,430	0.0187	0.0090	58
Over 54	96	8,750	0.0110		96
Totals	535	33,281	0.0161	0.0102	341

UNIVERSITY MALES
WITHDRAWAL EXPERIENCE
DURING CALENDAR YEAR 2013

Male Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	65	363	0.1791	0.1830	66
2	123	695	0.1770	0.1500	104
3	114	655	0.1740	0.1130	74
4	68	542	0.1255	0.0960	52
5	32	449	0.0713	0.0850	38
6	50	494	0.1012	0.0750	37
7	38	405	0.0938	0.0700	28
8	24	354	0.0678	0.0550	19
9	21	329	0.0638	0.0430	14
10	17	360	0.0472	0.0320	12
Totals	552	4,646	0.1188	0.0956	444

Male Age-Based Withdrawals

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	-	N/A	0.0320	-
30-34	4	29	0.1379	0.0320	1
35-39	11	180	0.0611	0.0310	6
40-44	14	487	0.0287	0.0250	12
45-49	23	751	0.0306	0.0180	14
50-54	25	904	0.0277	0.0140	13
Over 54	8	2,651	0.0030		8
Totals	85	5,002	0.0170	0.0108	54

UNIVERSITY FEMALES
WITHDRAWAL EXPERIENCE
DURING CALENDAR YEAR 2013

Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	82	430	0.1907	0.2200	95
2	139	795	0.1748	0.1500	119
3	143	809	0.1768	0.1250	101
4	84	601	0.1398	0.1000	60
5	68	628	0.1083	0.0950	60
6	52	629	0.0827	0.0800	50
7	23	489	0.0470	0.0700	34
8	36	486	0.0741	0.0600	29
9	24	432	0.0556	0.0500	22
10	17	423	0.0402	0.0400	17
Totals	668	5,722	0.1167	0.1026	587

Female Age-Based Withdrawals

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	-	N/A	0.0500	-
30-34	3	51	0.0588	0.0420	2
35-39	14	276	0.0507	0.0390	11
40-44	19	514	0.0370	0.0310	16
45-49	19	765	0.0248	0.0230	18
50-54	25	920	0.0272	0.0150	14
Over 54	16	2,095	0.0076		16
Totals	96	4,621	0.0208	0.0167	77

PROTECTIVE WITH SOCIAL SECURITY
WITHDRAWAL EXPERIENCE
DURING CALENDAR YEAR 2013

Male and Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	56	380	0.1474	0.1500	57
2	73	970	0.0753	0.0700	68
3	48	704	0.0682	0.0430	30
4	36	582	0.0619	0.0380	22
5	29	743	0.0390	0.0340	25
6	31	876	0.0354	0.0260	23
7	39	868	0.0449	0.0250	22
8	31	746	0.0416	0.0230	17
9	25	672	0.0372	0.0200	13
10	27	722	0.0374	0.0170	12
Totals	395	7,263	0.0544	0.0398	289

Male and Female Age-Based Withdrawals

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	8	0.0000	0.0170	-
30-34	11	680	0.0162	0.0150	10
35-39	51	2,094	0.0244	0.0130	27
40-44	40	2,961	0.0135	0.0110	33
45-49	47	2,734	0.0172	0.0105	29
50-54	13	2,149	0.0060	0.0100	21
Over 54	16	1,453	0.0110		16
Totals	178	12,079	0.0147	0.0113	136

PROTECTIVE WITHOUT SOCIAL SECURITY
WITHDRAWAL EXPERIENCE
DURING CALENDAR YEAR 2013

Male and Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	1	38	0.0263	0.0400	2
2	4	85	0.0471	0.0350	3
3	1	82	0.0122	0.0210	2
4	-	95	0.0000	0.0130	1
5	1	94	0.0106	0.0120	1
6	3	107	0.0280	0.0110	1
7	-	86	0.0000	0.0100	1
8	2	109	0.0183	0.0090	1
9	-	66	0.0000	0.0080	1
10	1	85	0.0118	0.0070	1
Totals	13	847	0.0153	0.0165	14

Male and Female Age-Based Withdrawals

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	-	N/A	0.0070	-
30-34	-	54	0.0000	0.0070	-
35-39	-	286	0.0000	0.0065	2
40-44	4	472	0.0085	0.0060	3
45-49	1	438	0.0023	0.0055	2
50-54	5	429	0.0117	0.0050	2
Totals	10	1,679	0.0060	0.0054	9

EXECUTIVE AND ELECTED MALES
WITHDRAWAL EXPERIENCE
DURING CALENDAR YEAR 2013

Male and Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	5	53	0.0943	0.2000	11
2	14	113	0.1239	0.1400	16
3	12	112	0.1071	0.1400	16
4	1	43	0.0233	0.1000	4
5	6	46	0.1304	0.1000	5
6	-	46	0.0000	0.0900	4
7	2	55	0.0364	0.0850	5
8	2	23	0.0870	0.0800	2
9	5	50	0.1000	0.0750	4
10	2	40	0.0500	0.0700	3
Totals	49	581	0.0843	0.1205	70

Male and Female Age-Based Withdrawals

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	-	N/A	0.0600	-
30-34	-	-	N\A	0.0450	-
35-39	-	20	0.0000	0.0400	1
40-44	3	46	0.0652	0.0350	2
45-49	6	79	0.0759	0.0320	3
50-54	8	137	0.0584	0.0300	4
Over 54	3	495	0.0061		3
Totals	20	777	0.0257	0.0167	13

GENERAL
DISABILITY EXPERIENCE
DURING CALENDAR YEAR 2013

Male Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	13	0.0000	0.0001	-
25-29	-	530	0.0000	0.0001	-
30-34	-	2,002	0.0000	0.0001	-
35-39	-	2,775	0.0000	0.0002	-
40-44	-	3,791	0.0000	0.0005	2
45-49	3	5,056	0.0006	0.0007	4
50-54	9	7,094	0.0013	0.0020	14
55-59	11	6,409	0.0017	0.0035	23
60-64	7	3,622	0.0019	0.0070	25
65-69	1	810	0.0012	0.0027	2
70-74	-	204	0.0000	0.0024	-
75 and over	-	-	N/A	0.0024	-
Totals	31	32,306	0.0010	0.0022	70

Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	48	0.0000	0.0001	-
25-29	-	1,086	0.0000	0.0001	-
30-34	-	3,253	0.0000	0.0003	1
35-39	-	4,532	0.0000	0.0004	2
40-44	1	6,022	0.0002	0.0006	3
45-49	1	8,842	0.0001	0.0008	7
50-54	9	13,051	0.0007	0.0013	17
55-59	13	12,229	0.0011	0.0025	31
60-64	11	7,093	0.0016	0.0032	22
65-69	1	1,610	0.0006	0.0025	4
70-74	-	318	0.0000	0.0021	1
75 and over	-	-	N/A	0.0021	-
Totals	36	58,084	0.0006	0.0015	88

The people shown on this page are cases involving §40.63 disability benefits and includes those who were either active or inactive with pending benefits at the beginning of the year. The LTDI plan is described in a separate report.

PUBLIC SCHOOLS
DISABILITY EXPERIENCE
DURING CALENDAR YEAR 2013

Male Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	1	0.0000	0.0001	-
25-29	-	293	0.0000	0.0001	-
30-34	-	1,916	0.0000	0.0001	-
35-39	-	2,754	0.0000	0.0001	-
40-44	-	3,107	0.0000	0.0002	1
45-49	1	2,947	0.0003	0.0005	1
50-54	1	2,706	0.0004	0.0018	5
55-59	4	1,864	0.0021	0.0023	4
60-64	1	716	0.0014	0.0041	3
65-69	-	141	0.0000	0.0058	1
70-74	-	23	0.0000	0.0060	-
75 and over	-	-	N/A	0.0060	-
Totals	7	16,468	0.0004	0.0009	15

Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	-	N/A	0.0001	-
25-29	-	1,156	0.0000	0.0001	-
30-34	-	5,788	0.0000	0.0001	1
35-39	-	6,889	0.0000	0.0001	1
40-44	-	7,442	0.0000	0.0003	2
45-49	2	7,796	0.0003	0.0010	8
50-54	9	7,378	0.0012	0.0014	10
55-59	6	5,319	0.0011	0.0021	11
60-64	2	2,531	0.0008	0.0029	7
65-69	-	347	0.0000	0.0016	1
70-74	-	51	0.0000	0.0014	-
75 and over	-	-	N/A	0.0014	-
Totals	19	44,697	0.0004	0.0009	41

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UNIVERSITY
DISABILITY EXPERIENCE
DURING CALENDAR YEAR 2013

Male Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	-	N/A	0.0001	-
25-29	-	43	0.0000	0.0001	-
30-34	-	266	0.0000	0.0001	-
35-39	-	609	0.0000	0.0001	-
40-44	-	994	0.0000	0.0001	-
45-49	-	1,118	0.0000	0.0003	-
50-54	-	1,127	0.0000	0.0005	1
55-59	-	1,204	0.0000	0.0015	2
60-64	-	802	0.0000	0.0014	1
65-69	-	208	0.0000	0.0017	-
70-74	-	35	0.0000	0.0015	-
75 and over	-	-	N/A	0.0015	-
Totals	-	6,406	0.0000	0.0006	4

Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	-	N/A	0.0001	-
25-29	-	73	0.0000	0.0001	-
30-34	-	539	0.0000	0.0001	-
35-39	-	892	0.0000	0.0004	-
40-44	-	1,050	0.0000	0.0005	-
45-49	-	1,150	0.0000	0.0004	-
50-54	2	1,245	0.0016	0.0009	1
55-59	-	1,112	0.0000	0.0012	1
60-64	1	720	0.0014	0.0018	1
65-69	-	151	0.0000	0.0012	-
70-74	-	32	0.0000	0.0010	-
75 and over	-	-	N/A	0.0010	-
Totals	3	6,964	0.0004	0.0004	3

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PROTECTIVE WITH SOCIAL SECURITY
DISABILITY EXPERIENCE
DURING CALENDAR YEAR 2013

Male and Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	18	0.0000	0.0001	-
25-29	-	893	0.0000	0.0001	-
30-34	-	2,327	0.0000	0.0001	-
35-39	-	2,826	0.0000	0.0003	1
40-44	-	3,386	0.0000	0.0004	1
45-49	1	3,009	0.0003	0.0006	2
50-54	7	1,930	0.0036	0.0009	2
55-59	-	552	0.0000	0.0196	11
60-64	-	248	0.0000	0.0210	5
65-69	-	43	0.0000	0.0014	-
70-74	-	-	N/A	0.0014	-
75 and over	-	-	N/A	0.0014	-
Totals	8	15,232	0.0005	0.0014	22

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PROTECTIVE WITHOUT SOCIAL SECURITY
DISABILITY EXPERIENCE
DURING CALENDAR YEAR 2013

Male and Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0004	-
20-24	-	1	0.0000	0.0004	-
25-29	-	102	0.0000	0.0004	-
30-34	-	272	0.0000	0.0004	-
35-39	-	395	0.0000	0.0005	-
40-44	-	529	0.0000	0.0008	-
45-49	1	454	0.0022	0.0016	1
50-54	2	329	0.0061	0.0112	4
55-59	-	31	0.0000	0.0016	-
60-64	-	4	0.0000	0.0016	-
65-69	-	1	0.0000	0.0016	-
70-74	-	-	N/A	0.0016	-
75 and over	-	-	N/A	0.0016	-
Totals	3	2,118	0.0014	0.0024	5

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EXECUTIVE AND ELECTED
DISABILITY EXPERIENCE
DURING CALENDAR YEAR 2013

Male and Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0000	-
20-24	-	-	N/A	0.0000	-
25-29	-	1	0.0000	0.0000	-
30-34	-	9	0.0000	0.0000	-
35-39	-	43	0.0000	0.0001	-
40-44	-	78	0.0000	0.0001	-
45-49	-	107	0.0000	0.0002	-
50-54	-	173	0.0000	0.0003	-
55-59	-	188	0.0000	0.0012	-
60-64	-	124	0.0000	0.0011	-
65-69	-	66	0.0000	0.0009	-
70-74	-	29	0.0000	0.0009	-
75 and over	-	-	N/A	0.0009	-
Totals	-	818	N/A	N/A	-

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GENERAL
PAY INCREASE ASSUMPTION
DURING CALENDAR YEAR 2013

Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	35,687	10.39 %	7.45 %
6-10	25,091	3.61 %	5.90 %
11-15	22,208	2.75 %	5.25 %
16-20	14,237	2.58 %	5.00 %
21-25	11,123	2.33 %	4.75 %
26-30	6,702	2.14 %	4.50 %
31-35	3,899	1.86 %	4.30 %
36-40	1,388	1.66 %	4.20 %
Over 40	222	1.18 %	4.10 %
Total	120,557		

PUBLIC SCHOOLS
PAY INCREASE ASSUMPTION
DURING CALENDAR YEAR 2013

Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	14,574	11.77 %	9.75 %
6-10	14,787	4.03 %	8.00 %
11-15	15,440	2.99 %	6.70 %
16-20	11,882	2.13 %	5.25 %
21-25	8,656	1.61 %	4.55 %
26-30	4,621	1.73 %	4.25 %
31-35	1,827	1.26 %	4.20 %
36-40	422	1.80 %	4.10 %
Over 40	83	0.35 %	4.05 %
Total	72,292		

UNIVERSITY
PAY INCREASE ASSUMPTION
DURING CALENDAR YEAR 2013

Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	**Number**	**Actual**	**Expected**
1-5	4,992	14.53 %	7.15 %
6-10	4,012	4.56 %	6.75 %
11-15	3,397	4.16 %	6.10 %
16-20	2,139	3.70 %	5.50 %
21-25	1,634	3.39 %	4.90 %
26-30	1,054	2.58 %	4.75 %
31-35	534	3.14 %	4.50 %
36-40	212	1.91 %	4.35 %
Over 40	81	2.95 %	4.20 %
Total	18,055		

PROTECTIVE WITH SOCIAL SECURITY
PAY INCREASE ASSUMPTION
DURING CALENDAR YEAR 2013

Male and Female Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	3,039	12.69 %	8.75 %
6-10	3,650	3.75 %	5.50 %
11-15	4,188	3.09 %	4.90 %
16-20	3,416	2.28 %	4.80 %
21-25	2,259	2.31 %	4.70 %
26-30	1,075	1.78 %	4.60 %
31-35	287	1.89 %	4.50 %
36-40	69	1.26 %	4.40 %
Over 40	10	2.34 %	4.20 %
Total	17,993		

PROTECTIVE WITHOUT SOCIAL SECURITY
PAY INCREASE ASSUMPTION
DURING CALENDAR YEAR 2013

Male and Female Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	**Number**	**Actual**	**Expected**
1-5	384	15.84 %	9.50 %
6-10	444	3.62 %	5.30 %
11-15	543	2.88 %	4.60 %
16-20	514	2.60 %	4.50 %
21-25	433	2.73 %	4.40 %
26-30	219	2.93 %	4.30 %
31-35	53	1.94 %	4.20 %
36-40	5	1.34 %	4.10 %
Over 40	-	N/A	4.05 %
Total	2,595		

EXECUTIVE AND ELECTED
PAY INCREASE ASSUMPTION
DURING CALENDAR YEAR 2013

Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	**Number**	**Actual**	**Expected**
1-5	354	10.96 %	6.00 %
6-10	202	1.79 %	5.75 %
11-15	157	2.93 %	5.50 %
16-20	151	5.51 %	5.00 %
21-25	145	3.25 %	4.50 %
26-30	101	1.67 %	4.40 %
31-35	79	1.11 %	4.30 %
36-40	33	1.14 %	4.20 %
Over 40	8	1.03 %	4.10 %
Total	1,230		

GENERAL MALES
NORMAL RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Male Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	55	299	0.1839	0.2000	60
58	44	266	0.1654	0.2000	53
59	30	277	0.1083	0.2000	55
60	39	254	0.1535	0.2000	51
61	43	261	0.1648	0.2000	52
62	35	193	0.1813	0.2700	52
63	39	152	0.2566	0.3200	49
64	27	115	0.2348	0.2400	28
65	115	588	0.1956	0.2400	141
66	103	449	0.2294	0.3000	135
67	55	288	0.1910	0.2400	69
68	27	184	0.1467	0.1700	31
69	27	168	0.1607	0.1700	29
70	22	138	0.1594	0.1700	23
71	15	112	0.1339	0.1700	19
72	10	97	0.1031	0.1700	16
73	6	63	0.0952	0.1700	11
74	5	65	0.0769	0.1700	11
Totals	697	3,969	0.1756	0.2230	885
75 & Over	23	264			264
Totals	720	4,233			1,149

GENERAL MALES
EARLY RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Male Age-Based Early Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	82	1,631	0.0503	0.0800	130
56	71	1,490	0.0477	0.0800	119
57	44	1,130	0.0389	0.0425	48
58	59	1,119	0.0527	0.0525	59
59	65	1,039	0.0626	0.0550	57
60	57	913	0.0624	0.0750	68
61	50	915	0.0546	0.0800	73
62	110	780	0.1410	0.1400	109
63	66	575	0.1148	0.1600	92
64	56	439	0.1276	0.1700	75
Totals	660	10,031	0.0658	0.0827	830

GENERAL FEMALES
NORMAL RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	61	358	0.1704	0.1700	61
58	58	329	0.1763	0.1700	56
59	31	300	0.1033	0.1700	51
60	39	270	0.1444	0.2000	54
61	34	241	0.1411	0.2000	48
62	48	215	0.2233	0.2700	58
63	45	160	0.2813	0.2800	45
64	35	135	0.2593	0.2500	34
65	257	1,049	0.2450	0.2500	262
66	191	686	0.2784	0.2900	199
67	105	457	0.2298	0.2000	91
68	58	281	0.2064	0.1800	51
69	34	228	0.1491	0.1800	41
70	41	217	0.1889	0.1800	39
71	17	162	0.1049	0.1800	29
72	15	90	0.1667	0.1500	14
73	13	88	0.1477	0.1500	13
74	5	54	0.0926	0.1500	8
Totals	1,087	5,320	0.2043	0.2169	1,154
75 & Over	43	301			301
Totals	1,130	5,621			1,455

Female Age-Based Early Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	123	2,858	0.0430	0.0610	174
56	133	2,885	0.0461	0.0640	185
57	79	2,243	0.0352	0.0420	94
58	99	2,186	0.0453	0.0550	120
59	107	2,057	0.0520	0.0530	109
60	112	1,879	0.0596	0.0810	152
61	125	1,664	0.0751	0.0700	116
62	234	1,478	0.1583	0.1500	222
63	169	1,144	0.1477	0.1500	172
64	146	928	0.1573	0.1500	139
Totals	1,327	19,322	0.0687	0.0768	1,483

PUBLIC SCHOOL MALES
NORMAL RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Male Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	54	128	0.4219	0.4000	51
58	33	126	0.2619	0.3500	44
59	24	79	0.3038	0.2500	20
60	30	82	0.3659	0.2800	23
61	21	64	0.3281	0.2500	16
62	29	61	0.4754	0.3600	22
63	15	46	0.3261	0.3200	15
64	8	32	0.2500	0.2400	8
65	32	122	0.2623	0.2400	29
66	29	107	0.2710	0.2500	27
67	6	56	0.1071	0.2400	13
68	4	44	0.0909	0.2400	11
69	4	35	0.1143	0.2400	8
70	3	17	0.1765	0.2000	3
71	6	20	0.3000	0.2000	4
72	3	16	0.1875	0.2000	3
73	-	11	0.0000	0.2000	2
74	1	5	0.2000	0.2000	1
Totals	302	1,051	0.2873	0.2854	300
75 & Over	3	22			22
Totals	305	1,073			322

PUBLIC SCHOOL MALES
EARLY RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Male Age-Based Early Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	70	577	0.1213	0.1200	69
56	80	517	0.1547	0.1200	62
57	33	280	0.1179	0.1200	34
58	35	253	0.1383	0.1200	30
59	36	237	0.1519	0.1200	28
60	29	164	0.1768	0.1200	20
61	30	185	0.1622	0.1200	22
62	36	155	0.2323	0.2000	31
63	31	119	0.2605	0.2000	24
64	19	93	0.2043	0.2000	19
Totals	399	2,580	0.1547	0.1314	339

PUBLIC SCHOOL FEMALES
NORMAL RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	92	278	0.3309	0.2700	75
58	71	239	0.2971	0.2700	65
59	57	222	0.2568	0.2700	60
60	37	138	0.2681	0.2700	37
61	37	120	0.3083	0.2700	32
62	56	109	0.5138	0.3400	37
63	31	84	0.3690	0.2700	23
64	12	51	0.2353	0.2300	12
65	87	263	0.3308	0.2800	74
66	84	221	0.3801	0.3000	66
67	24	107	0.2243	0.2800	30
68	20	69	0.2899	0.2600	18
69	21	61	0.3443	0.2000	12
70	7	33	0.2121	0.2000	7
71	5	26	0.1923	0.2000	5
72	-	19	0.0000	0.2000	4
73	-	15	0.0000	0.2000	3
74	3	17	0.1765	0.2000	3
Totals	644	2,072	0.3108	0.2717	563
75 & Over	6	45			45
Totals	650	2,117			608

PUBLIC SCHOOL FEMALES
EARLY RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Female Age-Based Early Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	167	1,465	0.1140	0.1100	161
56	188	1,357	0.1385	0.1100	149
57	124	963	0.1288	0.1100	106
58	103	776	0.1327	0.1100	85
59	112	758	0.1478	0.1100	83
60	137	700	0.1957	0.1500	105
61	102	639	0.1596	0.1500	96
62	136	524	0.2595	0.2000	105
63	105	397	0.2645	0.2000	79
64	71	271	0.2620	0.2000	54
Totals	1,245	7,850	0.1586	0.1303	1,023

UNIVERSITY MALES
NORMAL RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Male Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	2	21	0.0952	0.1300	3
58	4	28	0.1429	0.1300	4
59	4	39	0.1026	0.1300	5
60	6	37	0.1622	0.1300	5
61	3	42	0.0714	0.1300	5
62	3	51	0.0588	0.1500	8
63	5	63	0.0794	0.1500	9
64	4	48	0.0833	0.1500	7
65	22	150	0.1467	0.1500	23
66	18	146	0.1233	0.2000	29
67	17	110	0.1545	0.1800	20
68	10	72	0.1389	0.1800	13
69	12	72	0.1667	0.1800	13
70	6	50	0.1200	0.2000	10
71	11	40	0.2750	0.2000	8
72	4	29	0.1379	0.1500	4
73	4	22	0.1818	0.1500	3
74	2	18	0.1111	0.1500	3
Totals	137	1,038	0.1320	0.1657	172
75 & Over	5	50			50
Totals	142	1,088			222

UNIVERSITY MALES
EARLY RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Male Age-Based Early Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	10	252	0.0397	0.0475	12
56	9	270	0.0333	0.0300	8
57	5	225	0.0222	0.0200	5
58	8	231	0.0346	0.0250	6
59	6	226	0.0265	0.0400	9
60	8	196	0.0408	0.0400	8
61	3	175	0.0171	0.0750	13
62	13	176	0.0739	0.0700	12
63	13	145	0.0897	0.0750	11
64	2	110	0.0182	0.0800	9
Totals	77	2,006	0.0384	0.0464	93

UNIVERSITY FEMALES
NORMAL RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	3	27	0.1111	0.1400	4
58	4	26	0.1538	0.1400	4
59	4	33	0.1212	0.1300	4
60	3	28	0.1071	0.1300	4
61	3	42	0.0714	0.1900	8
62	2	41	0.0488	0.1900	8
63	7	27	0.2593	0.1900	5
64	3	23	0.1304	0.1800	4
65	23	112	0.2054	0.2200	25
66	20	88	0.2273	0.2300	20
67	13	51	0.2549	0.1700	9
68	12	53	0.2264	0.1700	9
69	3	24	0.1250	0.1700	4
70	2	24	0.0833	0.2000	5
71	3	13	0.2308	0.2000	3
72	2	13	0.1538	0.2000	3
73	2	10	0.2000	0.2000	2
74	1	9	0.1111	0.2000	2
Totals	110	644	0.1708	0.1910	123
75 & Over	2	11			11
Totals	112	655			134

UNIVERSITY FEMALES
EARLY RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Female Age-Based Early Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	9	224	0.0402	0.0550	12
56	9	247	0.0364	0.0550	14
57	10	214	0.0467	0.0400	9
58	10	193	0.0518	0.0400	8
59	9	234	0.0385	0.0650	15
60	14	191	0.0733	0.0650	12
61	8	152	0.0526	0.0750	11
62	19	166	0.1145	0.1000	17
63	14	117	0.1197	0.1000	12
64	7	94	0.0745	0.1300	12
Totals	109	1,832	0.0595	0.0666	122

PROTECTIVE WITH SOCIAL SECURITY
NORMAL RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
50	21	345	0.0609	0.0600	21
51	32	349	0.0917	0.0700	24
52	26	307	0.0847	0.0800	25
53	59	291	0.2027	0.2300	67
54	51	346	0.1474	0.1800	62
55	55	309	0.1780	0.1700	53
56	43	252	0.1706	0.1600	40
57	25	227	0.1101	0.1600	36
58	26	183	0.1421	0.1600	29
59	17	152	0.1118	0.1600	24
60	20	128	0.1563	0.1800	23
61	23	113	0.2035	0.1800	20
62	23	95	0.2421	0.2200	21
63	10	64	0.1563	0.2900	19
64	12	44	0.2727	0.1600	7
65	10	33	0.3030	0.3000	10
66	7	14	0.5000	0.2000	3
67	7	14	0.5000	0.1500	2
68	3	5	0.6000	0.2500	1
69	1	5	0.2000	0.2000	1
70	1	2	0.5000	1.0000	2
71	-	1	0.0000	1.0000	1
72	1	2	0.5000	1.0000	2
73	-	3	0.0000	1.0000	3
74	-	1	0.0000	1.0000	1
Totals	473	3,285	0.1440	0.1513	497
75 & Over	-	2			2
Totals	473	3,287			499

PROTECTIVE WITHOUT SOCIAL SECURITY
NORMAL RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
50	-	69	0.0000	0.0350	2
51	5	76	0.0658	0.0375	3
52	3	73	0.0411	0.0450	3
53	17	74	0.2297	0.1700	13
54	11	65	0.1692	0.2500	16
55	12	46	0.2609	0.2100	10
56	12	50	0.2400	0.2700	14
57	5	25	0.2000	0.3000	8
58	11	32	0.3438	0.3000	10
59	5	24	0.2083	0.3000	7
60	6	15	0.4000	0.2600	4
61	2	7	0.2857	0.1500	1
62	2	5	0.4000	0.2000	1
63	1	2	0.5000	0.4000	1
64	-	-	N/A	0.4000	-
65	-	-	N\A	0.4000	-
66	-	1	0.0000	0.4000	-
67	-	-	N/A	0.4000	-
68	-	-	N/A	0.4000	-
69	-	-	N/A	0.4000	-
70	-	-	N/A	1.0000	-
71	-	-	N/A	1.0000	-
72	-	-	N/A	1.0000	-
73	-	-	N/A	1.0000	-
74	-	-	N/A	1.0000	-
Totals	92	564	0.1631	0.1649	93
75 & Over	-	-	N/A		-
Totals	92	564			93

EXECUTIVE AND ELECTED
NORMAL RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	2	9	0.2222	0.1500	1
58	2	10	0.2000	0.1500	2
59	1	17	0.0588	0.1500	3
60	5	11	0.4545	0.1000	1
61	3	10	0.3000	0.1300	1
62	4	53	0.0755	0.1300	7
63	6	46	0.1304	0.1200	6
64	13	37	0.3514	0.1200	4
65	10	35	0.2857	0.1200	4
66	9	36	0.2500	0.2000	7
67	6	25	0.2400	0.1700	4
68	5	16	0.3125	0.1500	2
69	2	13	0.1538	0.1500	2
70	2	14	0.1429	0.1300	2
71	2	9	0.2222	0.1300	1
72	2	12	0.1667	0.2500	3
73	1	7	0.1429	0.1000	1
74	-	5	0.0000	0.1000	1
Totals	75	365	0.2055	0.1425	52
75 & Over	2	17			17
Totals	77	382			69

EXECUTIVE AND ELECTED
EARLY RETIREMENT EXPERIENCE
DURING CALENDAR YEAR 2013

Male and Female Age-Based Early Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	-	46	0.0000	0.0450	2
56	1	46	0.0217	0.0450	2
57	2	32	0.0625	0.0450	1
58	1	23	0.0435	0.0450	1
59	1	41	0.0244	0.0450	2
60	1	26	0.0385	0.0450	1
61	2	33	0.0606	0.0450	1
62	-	6	0.0000	0.0450	-
63	-	6	0.0000	0.0450	-
64	-	12	0.0000	0.0450	1
Over 64	2	73	0.0274		
Totals	10	344			11

DEATH-IN-SERVICE
DURING CALENDAR YEAR 2013

Male

Age	Deaths	Exposure	Crude Rates	Current Rates	Expected Deaths
Under 20	-	13	0.0000	0.0001	-
20-24	-	1,325	0.0000	0.0002	-
25-29	1	6,783	0.0001	0.0002	1
30-34	5	9,860	0.0005	0.0003	3
35-39	4	11,210	0.0004	0.0005	5
40-44	18	13,190	0.0014	0.0006	8
45-49	11	13,790	0.0008	0.0008	11
50-54	18	14,923	0.0012	0.0014	20
55-59	24	13,298	0.0018	0.0027	36
60-64	21	8,221	0.0026	0.0035	29
65-69	17	2,766	0.0061	0.0060	16
70-74	6	747	0.0080	0.0097	7
75 and over	6	1	6.0000	0.0170	-
Totals	131	96,127	0.0014	0.0014	136

Female

Age	Deaths	Exposure	Crude Rates	Current Rates	Expected Deaths
Under 20	-	37	0.0000	0.0001	-
20-24	-	2,395	0.0000	0.0001	-
25-29	1	11,997	0.0001	0.0001	1
30-34	5	15,807	0.0003	0.0002	3
35-39	3	17,340	0.0002	0.0003	5
40-44	10	19,840	0.0005	0.0004	8
45-49	15	23,028	0.0007	0.0006	14
50-54	15	26,189	0.0006	0.0009	25
55-59	29	23,440	0.0012	0.0016	37
60-64	27	13,678	0.0020	0.0023	31
65-69	10	3,818	0.0026	0.0036	14
70-74	4	803	0.0050	0.0064	5
75 and over	4	-	N/A	0.0116	-
Totals	123	158,372	0.0008	0.0009	143