Gabriel Roeder Smith & Company
Consultants & Actuaries

MINNESOTA PUBLIC EMPLOYEES POLICE & FIRE PLAN

ACTUARIAL VALUATION REPORT AS OF JULY 1, 2012

GRS
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November 2012

Public Employees Retirement Association of Minnesota
Public Employees Police & Fire Plan
St. Paul, Minnesota

Dear Trustees of the Public Employees Police & Fire Plan:

The results of the July 1, 2012 annual actuarial valuation of the Public Employees Police & Fire Plan are presented in this report. This report was prepared at the request of the Board and is intended for use by the Retirement Plan and those designated or approved by the Board. This report may be provided to parties other than the Plan only in its entirety. GRS is not responsible for the consequences of any unauthorized use of this report.

The purpose of the valuation is to measure the Plan's funding progress, to determine the required contribution rate for the fiscal year beginning July 1, 2012, and to determine the actuarial information required by Governmental Accounting Standards Board (GASB) Statement No. 25. Note that we have not attempted to quantify the impact of GASB Statements No. 67 and No. 68 in this report.

The valuation was based upon information furnished by the Public Employees Retirement Association of Minnesota (PERA), concerning benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not otherwise audit the data. We are not responsible for the accuracy or completeness of the information provided by PERA.

Actuarial assumptions, including discount rates, mortality tables and others identified in this report, are prescribed by Minnesota Statutes Section 356.215 the Legislative Commission on Pensions and Retirement (LCPR), and the Trustees. These parties are responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation methods, and assumptions. The policies, methods and assumptions used in this valuation are those that have been so prescribed and are described in the Actuarial Basis of this report. PERA is solely responsible for communicating to GRS any changes required thereto.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

This report should not be relied on for any purpose other than the purpose described in the primary communication. Determinations of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

The undersigned actuaries are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. In addition, Mr. Murphy meets the requirements of “approved actuary” under Minnesota Statutes Section 356.215, Subdivision 1, Paragraph (c).

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge and belief the information contained in this report is accurate and fairly presents the actuarial position of the Public Employees Police & Fire Plan as of the valuation date and was performed in accordance with the requirements of Minnesota Statutes Section 356.215, and the requirements of the Standards for Actuarial Work established by the LCPR. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

We are available to answer any questions or provide further details.

Respectfully submitted,

Brian B. Murphy

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BBM/BJW:sc

Contents

Summary of Valuation Results

Contributions

The following table summarizes important contribution information as described in the Development of Costs section.

Contributions	Actuarial Valuation as of July 1, 2012	Actuarial Valuation as of July 1, 2011
Statutory Contributions - Chapter 353 (% of Payroll)	25.43%	24.00%
Required Contributions - Chapter 356 (% of Payroll)	33.37%	28.78%
Sufficiency / (Deficiency)	(7.94%)	(4.78%)

The contribution deficiency increased from (4.78%) of payroll to (7.94%) of payroll. The primary reasons for the increased contribution deficiency are the recognition of investment losses from this year and prior years in the actuarial value of assets and the change in assumed investment return. See page 3 for detail about this change. The contribution deficiency indicates that without further changes or favorable actuarial experience, the funded status will deteriorate in the future and assets will be depleted.

Statutory contributions are not sufficient to fully amortize the unfunded actuarial accrued liability over the statutory amortization period of 27 years. Based on the current member and employer contribution rates and other methods and assumptions described in this report, an infinite number of years would be required to eliminate the unfunded liability (the unfunded liability will never be eliminated).

The Plan Assets section provides detail on the plan assets used for the valuation including a development of the actuarial value of assets (AVA). The market value of assets (MVA) earned approximately 2.4% for the plan year ending June 30, 2012. The rate of return was calculated by the State Board of Investment. The AVA earned approximately 4.3% for the plan year ending June 30, 2012 as compared to the assumed rate of 8.5%. The assumed rate is mandated by Minnesota Statutes.

Participant reconciliation and statistics are detailed in the Membership Data section. The Actuarial Basis section includes a summary of plan provisions and actuarial methods and assumptions used for the calculations in this report. The Plan Accounting sections detail the required accounting information for the Plan under GASB No. 25 (as amended by GASB No. 50).

Summary of Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in plan provisions, actuarial assumptions or valuation methods and procedures between the two valuations are described after the summary.

	Actuarial Valuation as of	
	July 1, 2012	**July 1, 2011**
Contributions (*% of Payroll*)		
Statutory - Chapter 353	25.43%	24.00%
Required - Chapter 356	33.37%	28.78%
Sufficiency / (Deficiency)	(7.94%)	(4.78%)
Funding Ratios (*dollars in thousands*)		
Assets		
- Current assets (AVA)	$ 5,797,868	$ 5,274,602
- Current assets (MVA)	5,772,047	5,317,032
Accrued Benefit Funding Ratio		
- Current benefit obligations	$ 7,140,240	$ 6,151,733
- Funding ratio (AVA)	81.20%	85.74%
- Funding ratio (MVA)	80.84%	86.43%
Accrued Liability Funding Ratio		
- Actuarial accrued liability	$ 7,403,295	$ 6,363,546
- Funding ratio (AVA)	78.31%	82.89%
- Funding ratio (MVA)	77.97%	83.55%
Projected Benefit Funding Ratio		
- Current and expected future assets	$ 7,892,639	$ 7,168,755
- Current and expected future benefit obligations	8,896,375	7,753,202
- Projected benefit funding ratio (AVA)	88.72%	92.46%
Participant Data		
Active members		
- Number	10,865	10,880
- Projected annual earnings *(000s)*	807,180	796,689
- Average projected annual earnings	74,442	73,225
- Average age	40.5	40.3
- Average service	12.6	12.4
Service retirements	6,463	5,549
Survivors	1,848	1,435
Disability retirements	1,095	864
Deferred retirements	1,303	1,335
Terminated other non-vested	971	870
Total	**22,545**	**20,933**

Summary of Valuation Results

The 2011 valuation was prepared by Mercer. As part of the transition of actuarial work from Mercer to GRS, we replicated the 2011 valuation including a change from beginning of year decrement timing to mid-year decrement timing. The results of this replication are as follows:

	Valuation Results As of July 1, 2011 (000's)		
	Mercer	**GRS**	**Ratio**
Present Value of Projected Benefits	$7,753,202	$7,784,731	100.4%
Actuarial Accrued Liability	$6,363,546	$6,366,419	100.0%
Required Contributions (% of pay)	28.78%	28.58%	99.3%

Differences in valuation results due to differences in actuarial software are not unexpected. The replication results indicate a high degree of consistency.

Effects of Changes

The following changes in actuarial assumptions and methods were recognized as of July 1, 2012:

- The investment return assumption was changed from 8.5% pre-retirement and 7.0% post-retirement to a 5-year select and ultimate approach with rates of 8.0% pre-retirement and 6.5% post-retirement for the period July 1, 2012 to June 30, 2017 and 8.5% pre-retirement and 7.0% post-retirement thereafter.
- As per MN Statutes 356.215 subdivision 11(c), a new amortization period is determined by amortizing the unfunded liability before the assumption changes over the original amortization period using original assumptions, amortizing the additional unfunded liability over 30 years using current assumptions, and then determining the equivalent amortization period in whole years. This resulted in a new amortization period of 27 years (previously 26 years).
- The Minneapolis Police and Minneapolis Firefighter's Relief Associations were consolidated with the Police & Fire Plan on December 30, 2011. The Virginia Fire Department and Fairmont Policemen's Relief Associations were consolidated with the Police & Fire Plan on June 29, 2012.

Summary of Valuation Results

Effects of Changes (Concluded)

The combined impact of the above changes was to increase the accrued liability by $0.2 billion and increase the required contribution by 2.1% of pay, as follows:

	Before Changes	Reflecting Assumption Changes	Reflecting Assumption Changes and Mergers	Reflecting Assumption Changes, Mergers, and New Amortization Period
Normal Cost Rate, % of Pay	19.9%	20.6%	20.6%	20.6%
Amortization of Unfunded Accrued Liability, % of pay	11.3%	12.0%	12.9%	12.7%
Expenses (% of Pay)	0.1%	0.1%	0.1%	0.1%
Total Required Contribution, % of Pay	31.3%	32.7%	33.6%	33.4%
Accrued Liability Funding Ratio	79.4%	78.2%	78.2%	81.2%
Projected Benefit Funding Ratio	89.0%	87.1%	88.6%	88.7%
Unfunded Accrued Liability (in billions)	$1.4	$1.5	$1.6	$1.6

Refer to the Actuarial Basis section of this report for a complete description of these changes.

Note that the increase in required contribution due to mergers is offset by additional funding – see page 18 for detail.

Summary of Valuation Results

Valuation of Future Post-Retirement Benefit Increases

A very important assumption affecting the valuation results is the expectation of future post-retirement benefit increases. The plan's accrued liability funding ratio (on a market value of assets basis and assuming 1.5% post-retirement benefit increases in all future years) is currently 78.0%. If the plan reaches a funding ratio of 90% (on a market value of assets basis) in the future, post-retirement increases will revert to inflation (up to a cap of 2.5%).

The liabilities in this report are based on the assumption that the post-retirement benefit increase will remain at the reduced level of 1.5% indefinitely. If we assumed future post-retirement benefit increases of 2.5% instead of 1.5%, the actuarial accrued liability would be $8.1 billion instead of $7.4 billion, resulting in a funded ratio of 71.6% (on a market value basis) as of July 1, 2012.

Supplemental Information

The remainder of the report includes information supporting the results presented in the previous sections.

- **Plan assets** presents information about the plan's assets as reported by the Public Employees Retirement Association of Minnesota. The assets represent the portion of total fund liabilities that has been funded.

- **Membership data** presents and describes the membership data used in the valuation.

- **Development of costs** shows the liabilities for plan benefits and the derivation of the contribution amount.

- **Actuarial basis** describes the plan provisions, as well as the methods and assumptions used to value the plan. The valuation is based on the premise that the plan is ongoing.

- **Plan accounting under GASB No. 25 (as amended by GASB No. 50)** shows the disclosures required by GASB Statement No. 25 as amended by GASB Statement No. 50.

- **Glossary** defines the terms used in this report.

Plan Assets

Statement of Plan Net Assets as of June 30, 2012 *(Dollars in Thousands)*

Assets in Trust		**Market Value**
Cash, equivalents, short term securities	$	115,452
Fixed income		1,284,985
Equity		3,465,898
SBI alternative		902,253
Other		0
Total Assets in Trust	**$**	**5,768,588**
Assets Receivable*		11,241
Amounts Payable		(7,782)
Net Assets Held in Trust for Pension Benefits	$	5,772,047

**Includes $7.323 million contribution from Minneapolis to be paid by December 31, 2012.*

Plan Assets

Reconciliation of Plan Assets *(Dollars in Thousands)*

The following exhibit shows the revenue, expenses and resulting assets of the Fund as reported by the Public Employees Retirement Association for the Plan's Fiscal Year July 1, 2011 to June 30, 2012.

Change in Assets	**Market Value**
1. Fund balance at market value at July 1, 2011	$ 5,317,032
2. Contributions	
a. Member	76,264
b. Employer**	121,891
c. Other sources	0
d. Total contributions	198,155
3. Investment income	
a. Investment income/(loss)	164,778
b. Investment expenses	(7,852)
c. Net subtotal	156,926
4. Other*	488,521
5. Total income: *(2.d.) + (3.c.) + (4.)*	**$ 843,602**
6. Benefits Paid	
a. Annuity benefits	(386,208)
b. Refunds	(1,524)
c. Total benefits paid	(387,732)
7. Expenses	
a. Other	0
b. Administrative	(855)
c. Total expenses	(855)
8. Total disbursements: *(6.c.) + (7.c.)*	**(388,587)**
9. Fund balance at market value at July 1, 2012:** *(1.) + (5.) + (8.)*	**$ 5,772,047**

* *Includes amounts transferred to the Fund due to the mergers of Minneapolis Police, Minneapolis Fire, Virginia Fire, and Fairmont Police.*

** *Includes $7.323 million contribution from Minneapolis to be paid by December 31, 2012.*

Plan Assets

Actuarial Asset Value *(Dollars in Thousands)*

			June 30, 2012
1. Market value of assets available for benefits			$ 5,772,047
2. Determination of average balance			
a. Total assets available at July 1, 2011			5,317,032
b. Total assets available at June 30, 2012			5,772,047
c. Net investment income for fiscal year ending June 30, 2012			156,926
d. Average balance *[a. + b. - c.] / 2*			5,466,077
3. Expected return *[8.5% * 2.d.]*			464,616
4. Actual return			156,926
5. Current year asset gain/(loss) *[4. - 3.]*			(307,690)
6. Unrecognized asset returns			
	Original Amount	**% Not Recognized**	
a. Year ended June 30, 2012	(307,690)	80%	(246,152)
b. Year ended June 30, 2011	653,285	60%	391,972
c. Year ended June 30, 2010	268,440	40%	107,376
d. Year ended June 30, 2009	(1,395,085)	20%	(279,017)
e. Unrecognized return adjustment			(25,821)
7. **Actuarial value at June 30, 2012** *(1. - 6.e.)*			**$ 5,797,868**

Membership Data

Distribution of Active Members**

	Years of Service as of June 30, 2012									
Age	**<3***	**3 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35+**	**Total**
< 25	131	5								**136**
Avg. Earnings	33,284	48,933								**33,859**
25 - 29	483	369	316							**1,168**
Avg. Earnings	41,472	59,418	64,649							**53,412**
30 - 34	244	266	983	231						**1,724**
Avg. Earnings	46,507	59,817	67,348	71,993						**63,859**
35 - 39	105	126	585	954	168	1				**1,939**
Avg. Earnings	45,002	57,881	67,096	73,305	75,272	77,251				**69,069**
40 - 44	73	72	323	767	855	147				**2,237**
Avg. Earnings	40,190	54,288	67,623	74,091	79,168	82,149				**73,883**
45 - 49	34	37	140	336	531	598	177			**1,853**
Avg. Earnings	43,712	56,827	68,003	72,815	79,048	84,424	82,777			**78,082**
50 - 54	14	9	75	144	230	324	342	75	1	**1,214**
Avg. Earnings	52,881	77,420	69,702	73,540	78,423	85,120	87,254	84,982	91,413	**81,694**
55 - 59	10	5	32	61	45	88	101	79	5	**426**
Avg. Earnings	36,068	37,893	61,190	74,024	73,223	81,905	87,796	92,506	82,209	**80,077**
60 - 64	4	2	16	26	21	13	27	15	8	**132**
Avg. Earnings	46,588	27,388	58,741	67,215	69,521	76,466	79,829	97,421	94,716	**73,917**
65 - 69	1		2	2	1	1	1	1	2	**11**
Avg. Earnings	8,051		67,025	72,514	24,257	72,956	99,308	72,226	86,413	**66,245**
70+		1	1	1						**3**
Avg. Earnings		18,501	932	54,601						**24,678**
Total	**1,099**	**892**	**2,473**	**2,522**	**1,851**	**1,172**	**648**	**170**	**16**	**10,843**
Avg. Earnings	**42,019**	**58,683**	**66,925**	**73,319**	**78,403**	**84,037**	**85,825**	**89,501**	**89,563**	**70,536**

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

** *This exhibit excludes 22 members who were merged into PERA P&F in 2012 from Minneapolis Police and Minneapolis Fire Retirement Funds whose benefits are not pay related.*

In each cell, the top number is the count of active participants for the age/service combination and the bottom number is average valuation earnings for the fiscal year ending on the valuation date.

Membership Data

Distribution of Service Retirements*

	Years Retired as of June 30, 2012							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<50								
Avg. Benefit								
50 - 54	123	249	1					**373**
Avg. Benefit	48,821	47,139	50,000					**47,701**
55 - 59	144	481	434					**1,059**
Avg. Benefit	53,386	54,535	46,211					**50,967**
60 - 64	36	228	611	490	6	6	1	**1,378**
Avg. Benefit	46,437	48,550	50,755	45,894	45,645	43,478	43,953	**48,490**
65 - 69	21	89	192	749	193	18	2	**1,264**
Avg. Benefit	44,654	37,864	43,399	51,109	45,948	45,089	50,000	**48,022**
70 - 74	4	7	58	300	492	66	10	**937**
Avg. Benefit	44,846	24,876	33,885	50,935	57,517	45,717	45,561	**52,690**
75 - 79	1	2	6	102	270	210	47	**638**
Avg. Benefit	64,000	23,432	44,044	42,258	56,488	48,670	48,719	**50,859**
80 - 84			3	13	164	166	98	**444**
Avg. Benefit			19,229	43,157	50,519	50,027	54,022	**50,681**
85 - 89	1			5	81	73	108	**268**
Avg. Benefit	53,333			33,712	57,283	44,922	47,212	**49,403**
90+				1	33	14	54	**102**
Avg. Benefit				37,806	53,513	42,223	37,617	**43,394**
Total	**330**	**1,056**	**1,305**	**1,660**	**1,239**	**553**	**320**	**6,463**
Avg. Benefit	**50,299**	**49,838**	**47,308**	**48,871**	**54,385**	**47,894**	**47,855**	**49,710**

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

**Retirement dates were not available for nine members of the former Fairmont Police plan; they are included in the <1 year since retirement column.*

Membership Data

Distribution of Survivors*

	Years Since Death as of June 30, 2012							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<45	20	53	49	10	4			**136**
Avg. Benefit	19,517	15,292	16,993	18,320	23,290			**16,984**
45 - 49	2	8	7	3	3	2		**25**
Avg. Benefit	40,154	36,198	27,744	33,192	43,562	23,573		**33,660**
50 - 54	3	15	9	3	3	4	1	**38**
Avg. Benefit	54,044	36,422	34,038	25,474	28,220	39,468	18,846	**35,595**
55 - 59	8	22	27	10	7	4	5	**83**
Avg. Benefit	30,282	34,415	31,861	29,999	40,720	46,656	27,391	**33,352**
60 - 64	10	30	32	18	14	13	7	**124**
Avg. Benefit	37,208	29,120	26,923	30,471	45,835	31,122	31,502	**31,633**
65 - 69	14	50	38	38	30	15	16	**201**
Avg. Benefit	27,519	28,005	30,841	30,118	33,423	27,484	29,060	**29,760**
70 - 74	17	44	32	47	24	16	13	**193**
Avg. Benefit	35,373	30,380	30,895	33,044	32,316	30,627	30,947	**31,854**
75 - 79	10	48	59	35	37	23	22	**234**
Avg. Benefit	27,834	25,800	33,074	26,355	30,298	30,677	31,299	**29,512**
80 - 84	26	52	63	51	77	30	32	**331**
Avg. Benefit	26,537	29,157	31,199	26,809	27,903	29,573	22,563	**28,086**
85 - 89	10	45	44	45	74	28	35	**281**
Avg. Benefit	26,345	27,814	23,576	25,205	26,712	25,356	24,133	**25,687**
90+	1	21	27	41	50	25	37	**202**
Avg. Benefit	19,644	24,033	22,283	24,916	27,259	23,323	23,793	**24,623**
Total	**121**	**388**	**387**	**301**	**323**	**160**	**168**	**1,848**
Avg. Benefit	**28,803**	**27,126**	**27,833**	**27,743**	**29,792**	**28,652**	**26,067**	**27,986**

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

**Dates of death were not available for four members of the former Fairmont Police plan; they are included in the <1 years since death column.*

Membership Data

Distribution of Disability Retirements

	Years Disabled as of June 30, 2012							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
< 45	11	32	36	5	2			**86**
Avg. Benefit	35,788	31,358	30,926	29,755	25,820			**31,522**
45 - 49	10	20	29	19	5			**83**
Avg. Benefit	40,094	38,806	37,061	32,678	33,588			**36,635**
50 - 54	3	28	46	43	8	4		**132**
Avg. Benefit	36,484	35,877	39,325	36,210	40,163	36,884		**37,491**
55 - 59	4	34	80	61	15			**194**
Avg. Benefit	44,601	47,133	46,133	41,235	44,851			**44,637**
60 - 64	2	7	83	125	27	1		**245**
Avg. Benefit	27,105	40,972	47,664	51,499	47,522	38,709		**49,209**
65 - 69	4	2	27	120	47			**200**
Avg. Benefit	54,029	30,907	41,860	49,083	53,567			**49,079**
70 - 74		2	4	25	58	1	1	**91**
Avg. Benefit		47,880	59,280	44,319	48,254	34,826	47,674	**47,496**
75+			1	6	11	31	15	**64**
Avg. Benefit			28,228	46,573	43,791	44,309	45,903	**44,555**
Total	**34**	**125**	**306**	**404**	**173**	**37**	**16**	**1,095**
Avg. Benefit	**39,788**	**38,648**	**42,612**	**45,932**	**47,947**	**43,099**	**46,014**	**44,206**

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

Membership Data

Reconciliation of Members*

	Active Members	Vested Terminated Members	Nonvested Terminated Members	Retired Participants	Disableds	Beneficiaries	Total
A. Number as of June 30, 2011	10,880	1,335	870	5,549	864	1,435	20,933
B. Data Adjustments	(1)		2	3	(6)	(3)	(5)
C. Additions	482	179	149	332	41	104	1,287
D. Deletions:							-
1. Service Retirements	(258)	(64)	-		(6)		(328)
2. Disability	(34)	(3)	(1)				(38)
3. Death	(14)	(3)	(3)	(126)	(8)	(70)	(224)
4. Terminated--Vested	(149)	-	(17)				(166)
5. Terminated--Refund	(29)	(23)	(14)				(66)
6. Terminated--Nonvested	(33)	(84)					(117)
7. Returned to Active		(35)	(16)				(51)
8. Other Deletions				(1)		(16)	(17)
E. Preliminary Number as of June 30, 2012*	10,844	1,302	970	5,757	885	1,450	21,208
Data Adjustments	(1)	1	1		2	3	6
Disability Reclassification				(154)	154		-
Subtotal	10,843	1,303	971	5,603	1,041	1,453	21,214
Minneapolis Police	4			534	8	229	
Minneapolis Fire	18			308	46	158	
Fairmont Police				9	-	4	
Virginia Fire				9	-	4	
GRS Final	10,865	1,303	971	6,463	1,095	1,848	22,545

* *Provided by PERA and checked for reasonableness.*

Terminated Member Statistics	Deferred Retirement	Other Non-Vested	Total
Number	1,303	971	2,274
Average age	45.8	45.1	45.5
Average service	8.8	0.7	5.3
Average annual benefit, with augmentation to Normal Retirement Date and 30% Combined Service Annuity (CSA) load	$27,591	N/A	$27,591
Average refund value, with 30% CSA load	$28,923	$4,280	$18,401

Development of Costs

Actuarial Valuation Balance Sheet *(Dollars in Thousands)*

The actuarial balance sheet is based on the principle that the long-term projected benefit obligations of the plan should be ideally equal to the long-term resources available to fund those obligations. The resources available to meet projected obligations for current members consist of current fund assets plus the present value of anticipated future contributions intended to fund benefits for current members. In the exhibit below, B.2 is the estimated present value of contributions to fund the normal cost rate for current members until their respective termination dates. Item B.1 is the present value of the total 25.43% statutory contribution net of normal cost and anticipated plan expenses during the period from the valuation date to the statutory unfunded amortization date.

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

	Non-Vested	Vested	June 30, 2012
A. Actuarial Value of Assets			$ 5,797,868
B. Expected Future Assets			
1. Present value of expected future statutory supplemental contributions			601,691
2. Present value of future normal cost contributions			1,493,080
3. Total expected future assets: *(1.) + (2.)*			$ 2,094,771
C. Total Current and Expected Future Assets *(A.+ B.3)*			$ 7,892,639
D. Current Benefit Obligations*			
1. Benefit recipients	**Non-Vested**	**Vested**	**Total**
a. Service retirements	$ 0	$ 3,447,319	$ 3,447,319
b. Disability retirements	0	493,375	493,375
c. Survivors	0	425,421	425,421
2. Deferred retirements with augmentation	0	284,576	284,576
3. Former members without vested rights	4,156	0	4,156
4. Active members	27,235	2,458,158	2,485,393
5. Total Current Benefit Obligations	$ 31,391	$ 7,108,849	$ 7,140,240
E. Expected Future Benefit Obligations			$ 1,756,135
F. Total Current and Expected Future Benefit Obligations**			$ 8,896,375
G. Unfunded Current Benefit Obligations: *(D.5.) - (A.)*			$ 1,342,372
H. Unfunded Current and Future Benefit Obligations: *(F.) - (C.)*			$ 1,003,736
I. Accrued Benefit Funding Ratio: *(A.)/(D.5.)*			81.20%
J. Projected Benefit Funding Ratio: *(C.)/(F.)*			88.72%

* *Present value of credited projected benefits (projected compensation, current service)*

** *Present value of projected benefits (projected compensation, projected service)*

Development of Costs

Determination of Unfunded Actuarial Accrued Liability and Supplemental Contribution Rate (*Dollars in Thousands)*

	Actuarial Present Value of Projected Benefits	Actuarial Present Value of Future Normal Costs	Actuarial Accrued Liability
A. Determination of Actuarial Accrued Liability (AAL)			
1. Active members			
a. Retirement annuities	$ 3,694,766	$ 1,137,743	$ 2,557,023
b. Disability benefits	387,559	229,302	158,257
c. Survivor's benefits	55,386	35,803	19,583
d. Deferred retirements	101,103	79,893	21,210
e. Refunds*	2,714	10,339	(7,625)
f. Total	$ 4,241,528	$ 1,493,080	$ 2,748,448
2. Deferred retirements with future augmentation	284,576	0	284,576
3. Former members without vested rights	4,156	0	4,156
4. Annuitants	4,366,115	0	4,366,115
5. Total	$8,896,375	$ 1,493,080	$ 7,403,295
B. Determination of Unfunded Actuarial Accrued Liability (UAAL)			
1. Actuarial accrued liability			$ 7,403,295
2. Current assets (AVA)			5,797,868
3. Unfunded actuarial accrued liability			$ 1,605,427
C. Determination of Supplemental Contribution Rate**			
1. Present value of future payrolls through the amortization date of June 30, 2039			$ 12,640,561
2. Supplemental contribution rate: *(B.3.) / (C.1.)*			12.70% ***

* *Includes non-vested refunds and non-married survivor benefits only.*

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

*** *The amortization factor as of July 1, 2012 is 15.6602.*

Development of Costs

Changes in Unfunded Actuarial Accrued Liability (UAAL) *(Dollars in Thousands)*

	Year Ending June 30, 2012
A. Unfunded actuarial accrued liability at beginning of year	$ 1,088,944
B. Changes due to interest requirements and current rate of funding	
1. Normal cost and expenses	$ 158,345
2. Contributions (excluding accrued Minneapolis contributions)	(190,832)
3. Interest on A., B.1. and B.2.	91,180
4. Total *(B.1. + B.2. + B.3.)*	58,693
C. Expected unfunded actuarial accrued liability at end of year *(A. + B.4.)*	$ 1,147,637
D. Increase (decrease) due to actuarial losses (gains) because of experience deviations from expected	
1. Age and Service Retirements	$ 1,075
2. Disability Retirements	(4,584)
3. Death-in-Service Benefits	$ 1,842
4. Withdrawals	(5,822)
5. Salary Increases	(63,598)
6. Investment Income	234,741
7. Mortality of Annuitants	12,792
8. Other Items	$ 68,661
9. Total	$ 245,107
E. Unfunded actuarial accrued liability at end of year before plan amendments and changes in actuarial assumptions *(C. + D.5.)*	$ 1,392,744
F. Change in unfunded actuarial accrued liability due to mergers during fiscal year	$ 104,699
G. Change in unfunded actuarial accrued liability due to changes in actuarial assumptions	$ 106,794
H. Change in unfunded actuarial accrued liability due to changes in decrement timing and miscellaneous methodology	$ 1,190
I. Unfunded actuarial accrued liability at end of year *(E. + F. + G. + H.)**	$ 1,605,427

** The unfunded actuarial accrued liability on a market value of assets basis is $1,631,248.*

Development of Costs

Determination of Contribution Sufficiency/(Deficiency) *(Dollars in Thousands)*

The required contribution is defined in statutes as the sum of normal cost, a supplemental contribution to amortize the UAAL, and an allowance for expenses.

	Percent of Payroll	Dollar Amount
A. Statutory contributions - Chapter 353		
1. Employee contributions	9.60%	$ 77,489
2. Employer contributions	14.40%	$ 116,234
3. Minneapolis Police contributions***	0.94%	$ 7,612
4. Minneapolis Fire contributions***	0.49%	$ 3,922
5. Virginia Fire contributions	0.00%	25
6. Total	25.43%	$ 205,282
B. Required contributions - Chapter 356		
1. Normal cost		
a. Retirement benefits	15.69%	$ 126,646
b. Disability benefits	3.19%	25,749
c. Survivors	0.52%	4,197
d. Deferred retirement benefits	1.02%	8,233
e. Refunds*	0.14%	1,130
f. Total	20.56%	$ 165,955
2. Supplemental contribution amortization of Unfunded Actuarial Accrued Liability by June 30, 2039	12.70%	$ 102,512
3. Allowance for expenses	0.11%	$ 888
4. Total	33.37% **	$ 269,355
C. Contribution Sufficiency/(Deficiency) *(A.6. - B.4.)*	(7.94%)	$ (64,073)

Note: Projected annual payroll for fiscal year beginning on the valuation date: $807,180.

* *Includes non-vested refunds and non-married survivor benefits only.*
** *The required contribution on a market value of assets basis is 33.57% of payroll.*
*** *Contributions due July 15, 2013. 2012 contributions are included in assets as receivable contributions.*

Development of Costs

Special Groups – Minneapolis Police Relief Association (000s)

The Minneapolis Police Relief Association was consolidated with the P&F Plan on December 30, 2011, per 2011 legislation. The annual employer contribution after consolidation is defined as the amount necessary to amortize on a level dollar basis the estimated unfunded present value of benefits at consolidation by December 31, 2031. Contributions are payable annually on July 15th.

The 2012 employer contribution is $5,699,000 (previously calculated). The employer contribution to be made annually on July 15 beginning in 2013 and ending in 2031 is $7,612,423 (previously calculated). If, in the future, there are any changes in P&F's statutory discount rate, the contribution amount must be recalculated.

Year Ending June 30, 2012

Group	Number	Annual Benefits	Average Age	Present Value of Projected Benefits
Active Members	4	N/A	61.6	$ 2,476
Service Retirements	534	27,542	71.8	308,753
Disability Retirements	8	338	71.1	3,480
Survivors	229	6,659	79.9	51,561
Total	**775**	**$34,539**	**74.1**	**$366,270**

Development of Costs

Special Groups – Minneapolis Firefighters' Relief Association (000s)

The Minneapolis Firefighters' Relief Association was consolidated with the P&F Plan on December 30, 2011, per 2011 legislation. The annual employer contribution after consolidation is defined as the amount necessary to amortize on a level dollar basis the estimated unfunded present value of benefits at consolidation by December 31, 2031. Contributions are payable annually on July 15th.

The 2012 employer contribution is $1,624,000 (previously calculated). The employer contribution to be made annually on July 15 beginning in 2013 and ending in 2031 is $3,921,787 (previously calculated). If, in the future, there are any changes in P&F's statutory discount rate, the contribution amount must be recalculated.

Year Ending June 30, 2012

Group	Number	Annual Benefits	Average Age	Present Value of Projected Benefits
Active Members	18	N/A	59.6	$ 11,165
Service Retirements	308	15,121	73.1	172,686
Disability Retirements	46	2,193	71.5	22,376
Survivors	158	4,323	78.9	37,725
Total	**530**	**$21,637**	**74.2**	**$243,952**

Development of Costs

Special Groups – Virginia Fire Department Relief Association (000s)

The Virginia Fire Department Relief Association was consolidated with the P&F Plan on June 29, 2012. The annual employer contribution after consolidation is defined as the amount necessary to amortize on a level dollar basis the estimated unfunded present value of benefits at consolidation by December 31, 2020.

The employer contribution to be made annually beginning in 2012 and ending in 2020 is $25,431 (previously calculated). If, in the future, there are any changes in P&F's statutory discount rate, the contribution amount must be recalculated.

Year Ending June 30, 2012

Group	Number	Annual Benefits*	Average Age	Present Value of Projected Benefits
Service Retirements	9	$ 243	82.3	$ 1,490
Survivors	4	61	82.8	373
Total	**13**	**$304**	**82.5**	**$1,863**

* *Benefit amounts were provided by PERA for all members. Surviving spouses will receive a benefit equal to 50% of the annuitant benefit amount. All members will receive the PERA P&F post-retirement increases of inflation up to 1.5% beginning January 1, 2013. If the PERA P&F Plan becomes 90% funded on a market value of assets basis the post-retirement benefit increases will revert to 2.5%.*

Development of Costs

Special Groups – Fairmont Police Department Relief Association (000s)

The Fairmont Police Department Relief Association was consolidated with the P&F Plan on June 29, 2012. The assets exceeded the present value of future benefits at consolidation by $462,639 (previously calculated). PERA credited these assets to an interest bearing suspense account within the P&F Fund and the account will be used to offset any increase in liability for this group of members due to any changes in P&F's statutory discount rate until June 30, 2015. After June 30, 2015, the account will be paid to the City of Fairmont.

Group	Number	Annual Benefits*	Average Age	Present Value of Projected Benefits
Service Retirements	9	$ 548	70.9	$ 5,506
Survivors	4	150	83.1	899
Total	**13**	**$698**	**74.7**	**$6,405**

* *Benefit amounts were provided by PERA for all members, and are based on earned units (maximum 60), and the current unit value of $1,066.67. Surviving spouses will receive an annual benefit equal to 35 times the unit value. All members will receive the PERA P&F post-retirement increases of inflation up to 1.5% beginning January 1, 2013. If the PERA P&F Plan becomes 90% funded on a market value of assets basis the post-retirement benefit increases will revert to 2.5%.*

Actuarial Basis

Actuarial Methods

All actuarial methods are prescribed by Minnesota Statutes, the Legislative Commission on Pensions and Retirement, or the Board of Trustees. Different methodologies may also be reasonable and results based on other methodologies would produce different results.

Actuarial Cost Method

An actuarial cost method is a set of techniques used by the actuary to develop contribution levels under a retirement plan. The actuarial cost method used in this valuation for all purposes is the Entry Age Actuarial Cost Method. Under this method, a normal cost is developed by amortizing the actuarial value of benefits expected to be received by each active participant (as a level percentage of pay) over the total working lifetime of that participant, from hire to termination. Age as of the valuation date was calculated based on the dates of birth provided by the Fund. Entry age for valuation purposes was calculated as the age on the valuation date minus the provided years of service on the valuation date.

To the extent that current assets and future normal costs do not support participants' expected future benefits, an unfunded actuarial accrued liability ("UAAL") develops. The UAAL is amortized over the statutory amortization period using level percent of payroll assuming payroll increases. The total contribution developed under this method is the sum of normal cost, expenses, and the payment toward the UAAL.

Select and Ultimate Discount Rate Methodology

Based on direction from the LCPR's actuary, the select and ultimate discount rate methodology was applied to the entry age normal results as follows:

1. The present value of projected benefits was calculated using the prescribed select and ultimate discount rates.
2. An equivalent single interest rate that produced approximately the same present value of projected benefits was determined.
3. The equivalent single interest rate was used to determine the entry age normal accrued liability and normal cost.

The equivalent single interest rate used in this valuation was 8.36%.

Funding Objective

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

Decrement Timing

All decrements are assumed to occur mid-year.

Actuarial Basis

Actuarial Methods (Concluded)

Asset Valuation Method

The assets are valued based on a five-year moving average of expected and market values (five-year average actuarial value) determined as follows:

- At the end of each plan year, an average asset value is calculated as the average of the market asset value at the beginning and end of the fiscal year net of investment income for the fiscal year;
- The investment gain or (loss) is taken as the excess of actual investment income over the expected investment income based on the average asset value as calculated above;
- The investment gain or (loss) so determined is recognized over five years at 20% per year;
- The asset value is the sum of the market asset value plus the scheduled recognition of investment gains or (losses) during the current and the preceding four fiscal years.

The Minnesota Post Retirement Investment Fund (Post Fund) was dissolved on June 30, 2009. For the purpose of determining the actuarial value of assets, the Post Fund asset loss for the fiscal year ending June 30, 2009 is recognized incrementally over five years at 20% per year, similar to the smoothing described above. Prior to June 30, 2009, Post Fund asset gains and losses were not smoothed.

Payment on the Unfunded Actuarial Accrued Liability

Payment equals a level percentage of payroll each year to the statutory amortization date of June 30, 2039 assuming payroll increases of 3.75% per annum. If there is a negative Unfunded Actuarial Accrued Liability, the surplus amount is amortized over 30 years as a level percentage of payroll. If the unfunded liability increases due to changes in benefits, assumptions, or methods, the statutory amortization date will be re-determined. Projected payroll is multiplied by 0.959 in the determination of the present value of future payroll to account for timing differences (as required by the Standards for Actuarial Work).

Changes in Methods since Prior Valuation

Decrement timing was changed from beginning of year to mid-year.

Actuarial Basis

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. All actuarial assumptions are prescribed by Minnesota Statutes, the Legislative Commission on Pensions and Retirement (LCPR), or the Board of Trustees. These parties are responsible for selecting the assumptions used for this valuation. The assumptions prescribed are based on the last experience study, dated November 2010, prepared by a former actuary.

The Allowance for Combined Service Annuity was also based on a recommendation by a former actuary. We are unable to judge the reasonableness of this assumption without performing a substantial amount of additional work beyond the scope of the assignment.

Investment return	Select and Ultimate Rates: July 1, 2012 to June 30, 2017 6.50% per annum post-retirement 8.00% per annum pre-retirement July 1, 2017 and later 7.00% per annum post-retirement 8.50% per annum pre-retirement
Benefit increases after retirement	Payment of 1.50% annual benefit increases after retirement are accounted for by using the 7.00% post-retirement assumption (6.5% during 5-year select period), as required by Minnesota Statute. Mathematically, this assumption funds a post-retirement benefit increase of 1.4% instead of 1.5%.
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.
Payroll growth	3.75% per year.
Mortality rates	
Healthy Pre-retirement	RP-2000 employee generational mortality table, white collar adjustment, set back two years for males and females.
Healthy Post-retirement	RP-2000 annuitant generational mortality table, white collar adjustment. The RP-2000 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 15 to 70 and the annuitant mortality table contains mortality rates for ages 50 to 95. We have applied the annuitant mortality table for active members beyond age 70 until the assumed retirement age and the employee mortality table for annuitants younger than age 50.
Disabled	RP-2000 healthy annuitant mortality table, white collar adjustment, set forward eight years for males and females.
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year.
Withdrawal	Select and Ultimate rates based on actual experience. Ultimate rates after the third year are shown in rate table. Select rates in the first three years are:

Year	Select Withdrawal Rates
1	8.00%
2	5.00%
3	3.50%

Actuarial Basis

Summary of Actuarial Assumptions (Continued)

Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 30.00% to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	Prior year administrative expenses expressed as percentage of prior year projected payroll.
Refund of contributions	All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit. Account balances for deferred members accumulate interest until normal retirement date and are discounted back to the valuation date.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	85% of male and 65% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Wives are assumed to be three years younger than their husbands for male members, and husbands are assumed to be four years older than their wives for female members. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 10% elect 25% Joint & Survivor option 20% elect 50% Joint & Survivor option 20% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option Females: 5% elect 25% Joint & Survivor option 15% elect 50% Joint & Survivor option 5% elect 75% Joint & Survivor option 15% elect 100% Joint & Survivor option Remaining married members and unmarried members are assumed to elect the Straight Life option. Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility.
Service credit accruals	It is assumed that members accrue one year of service credit per year.

Actuarial Basis

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided. In cases where submitted data was missing or incomplete, the following assumptions were applied: <u>Data for active members:</u> There were 20 members reported with zero salary. We used prior year salary (10 members), if available; otherwise high five salary with a 10% load to account for salary increases (nine members). If neither prior year salary or high five salary was available, we assumed a value of $35,000 (one member). There were also 56 members reported without a gender. We assumed male gender. No members were reported without a date of birth. <u>Data for terminated members:</u> We calculated benefits for these members using the reported Average Salary and credited service. If Average Salary was not reported (six members), we assumed a value of $24,000. If credited service was not reported (13 members), we used elapsed time from hire date to termination date (five members); otherwise we assumed nine years of service (eight members). If termination date was not reported (seven members), we assumed the termination date was equal to the hire date plus credited service, otherwise the valuation date. There were two members reported without a gender; male was assumed. No members were reported without a date of birth.
Changes in actuarial assumptions	The investment return assumption was changed from 8.5% pre-retirement and 7.0% post-retirement to a 5-year select and ultimate approach with rates of 8.0% pre-retirement and 6.5% post-retirement for the period July 1, 2012 to June 30, 2017 and 8.5% pre-retirement and 7.0% post-retirement thereafter.

Actuarial Basis

Summary of Actuarial Assumptions (Continued)

	Rate (%)			
	Healthy Pre-Retirement Mortality*		Disability Mortality	
Age	**Male**	**Female**	**Male**	**Female**
20	0.03%	0.02%	0.04%	0.02%
25	0.04	0.02	0.05	0.04
30	0.04	0.02	0.08	0.06
35	0.05	0.04	0.11	0.08
40	0.08	0.06	0.17	0.13
45	0.11	0.08	0.57	0.29
50	0.17	0.13	0.57	0.47
55	0.24	0.20	0.92	0.74
60	0.35	0.31	1.58	1.24
65	0.56	0.50	2.67	2.09
70	0.85	0.76	4.75	3.50

* *These rates were adjusted for mortality improvements using projection scale AA.*

	Withdrawal Rates After Third Year		Disability Retirement	
Age	**Male**	**Female**	**Male**	**Female**
20	6.01%	6.01%	0.11%	0.11%
25	3.24	3.24	0.13	0.13
30	1.90	1.90	0.16	0.16
35	1.46	1.46	0.19	0.19
40	1.26	1.26	0.29	0.29
45	0.91	0.91	0.54	0.54
50	0.50	0.50	1.04	1.04
55	0.11	0.11	2.03	2.03
60	0.00	0.00	0.00	0.00

Actuarial Basis

Summary of Actuarial Assumptions (Concluded)

Age	Retirement
50	13%
51	10
52	10
53	10
54	13
55	30
56	20
57	20
58	20
59	20
60	25
61	25
62	35
63	35
64	35
65	50
66	50
67	50
68	50
69	50
70+	100

Salary Scale	
Year	Increase
1	13.00%
2	11.00
3	9.00
4	8.00
5	6.50
6	6.10
7	5.80
8	5.60
9	5.40
10	5.30
11	5.20
12	5.10
13	5.00
14	4.90
15	4.80
16	4.80
17	4.80
18	4.80
19	4.80
20	4.80
21	4.70
22	4.60
23+	4.50

Actuarial Basis

Summary of Plan Provisions – Police & Fire Plan

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30.
Eligibility	All full-time and certain part-time police officers and fire fighters, and certain paramedics, who are not contributing to any other local retirement fund.
Contributions	Shown as a percent of salary: Member 9.60% of salary Employer 14.40% of salary Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
Allowable service	Police and Fire service during which member contributions were made. May also include certain leaves of absence and military service.
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leaves and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.
Average salary	Average of the five highest successive years of salary. Average Salary is based on all Allowable Service if less than five years.
Vesting	Hired before July 1, 2010: 100% vested after 3 years of Allowable Service. Hired after June 30, 2010: 50% vested after 5 years of Allowable Service; 60% vested after 6 years of Allowable Service; 70% vested after 7 years of Allowable Service; 80% vested after 8 years of Allowable Service; 90% vested after 9 years of Allowable Service; 100% vested after 10 years of Allowable Service.

Retirement

Normal retirement benefit

Age/service requirement	Age 55 and vested. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.
Amount	3.0% of Average Salary for each year of Allowable Service, pro rata for completed months.

Early retirement

Age/service requirement	Age 50 and vested.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date and 0.10% (0.20% for members enrolled in the plan after June 30, 2007) reduction for each month the member is under age 55.

Actuarial Basis

Summary of Plan Provisions – Police & Fire Plan (Continued)

Retirement (Continued)	
Form of payment	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 25%, 50%, 75% or 100% Joint and Survivor with bounce back feature. The Joint and Survivor options are determined on an actuarially equivalent basis, but with no actuarial reduction for the bounce back feature.
<u>Benefit increases</u>	Benefit recipients receive an annual post-retirement benefit increase matching the rate of inflation, up to 1.5%. The annual adjustment will match inflation, up to 2.5%, any time the fund exceeds 90% funding (on a Market Value of Assets basis). A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase. Members retired under laws in effect before July 1, 1973 receive an additional lump sum payment each year. In 1989, this lump sum payment is the greater of $25 times each full year of Allowable Service or the difference between $400 times each full year of Allowable Service and the sum of benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the fund. Effective January 1, 2002, annual lump sum payment is divided by 12 and paid as a monthly life annuity in the annuity form elected.
Disability	
<u>Duty disability benefit</u>	
Age/service requirement	Physically or mentally unable to perform normal duties as a police officer or fire fighter as a direct result of an act of duty specific to protecting property and personal safety of others. Members age 55 or older with 20 or more years of Allowable Service are not eligible to apply for duty disability benefits.
Amount	60.00%, plus an additional 3.00% for each year of service in excess of 20 years, of Average Salary paid until Normal Retirement Age, or for 60 months, whichever is later. The retirement benefit is then recalculated but is never lower than the disability benefit. If a member became disabled prior to July 1, 1997 but did not commence their benefit before July 1, 1997, the benefit is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in post-retirement interest rates from 5.00% to 6.00%.

Actuarial Basis

Summary of Plan Provisions – Police & Fire Plan (Continued)

Disability (Continued)

Regular disability benefit

Age/service requirement	Physically or mentally unable to perform normal duties as a police officer or fire fighter with one year of Allowable Service. Members age 55 or older with 15 or more years of Allowable Service are not eligible to apply for regular disability benefits.
Amount	45.00% of Average Salary, paid until Normal Retirement Age, or for 60 months, whichever is later. The retirement benefit is then recalculated but is never lower than the disability benefit. Benefits for total and permanent regular disability are calculated as 3.00% of Average Salary for each year of Allowable Service, with a minimum of 45.00% of Average Salary. If a member became disabled prior to July 1, 1997 but did not commence his or her benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.

Retirement benefit

Age/service requirement	Upon cessation of disability benefits.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before age 55 or the normal retirement benefit available at age 55, or an actuarially equivalent optional annuity.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.

Actuarial Basis

Summary of Plan Provisions – Police & Fire Plan (Continued)

Death

Surviving spouse benefit

Age/service requirement	Death of active member or regular disabled member with surviving spouse whose disability benefit accrued before July 1, 2007, who is vested at death (service requirement is waived if death occurs in the line of duty).
Amount	50.00% of salary (60.00% if death occurs in the line of duty after June 30, 2007) averaged over last six months. Benefit paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991. If a member becomes deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.

Surviving dependent children's benefit

Age/service requirement	Non-duty related death of active member or regular disabled member with eligible dependent child.
Amount	10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 50.00% of salary and maximum of 70.00% of salary. Benefits paid until child marries, dies, or attains age 18 (age 23 if full-time student).

Duty disability surviving spouse benefit

Age/service requirement	Member who is totally and permanently disabled who dies before age 55 or within five years of the effective date of the disability benefit, whichever is later.
Amount	60.00% of salary averaged over last six months. Benefits paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991.
Benefit increases	Same as for retirement.

Actuarial Basis

Summary of Plan Provisions – Police & Fire Plan (Continued)

Death (Continued)

Duty disability surviving dependent children's benefit

Age/service requirement	Death of a member with an eligible dependent child who was disabled in the line of duty and died as a direct result of the disability.
Amount	10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 60.00% of salary and maximum of 80.00% of salary. Benefits paid until child marries, dies, or attains age 18 (age 23 if full-time student). If a member became deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Surviving spouse optional annuity

Age/service requirement	Active member dies before age 55. Benefits commence when member would have been age 55 or as early as age 50 if qualified for early retirement, benefits commence immediately if member had 30 years of service.
Amount	Survivor's payment of the 100% joint and survivor benefit the member could have elected if terminated. Alternatively, spouse may elect refund of deceased's contributions with interest if there are no dependent children. If a member became deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.

Actuarial Basis

Summary of Plan Provisions – Police & Fire Plan (Continued)

Termination	
Refund of contributions	
Age/service requirement	Termination of public service.
Amount	If member terminated before July 1, 2011, member's contributions credited with 6% interest compounded annually prior to July 1, 2011 and 4% interest thereafter. If member terminated after June 30, 2011, member's contributions credited with 4% interest compounded annually.
Deferred benefit	A deferred annuity may be elected in lieu of a refund if vested.
Age/service requirement	
Amount	Partially or fully vested. Benefit computed under law in effect at termination and increased by the following percentage (augmentation) compounded annually for terminations prior to 2012: (a.) 0.00% before July 1, 1971; (b.) 5.00% from July 1, 1971 to January 1, 1981; (c.) 3.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (d.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012; and (e.) 1.00% from January 1, 2012 thereafter. Members who terminate after 2011 will receive no future augmentation. If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Form of payment	Same as for retirement.
Optional form conversion factors	Actuarially equivalent factors based on 1983 Group Annuity Mortality blended 85% male (set forward one year) and 15% female, and 6% interest.

Actuarial Basis

Summary of Plan Provisions – Police & Fire Plan (Concluded)

Combined service annuity	Members are eligible for combined service benefits if they: (a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or (b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010). Other requirements for combined service include: (a.) Member must have at least six months of allowable service credit in each plan worked under; (b.) Member may not be in receipt of a benefit from another plan. Members who meet the above requirements must have their benefit based on the following: (a.) Allowable service in all covered plans are combined in order to determine eligibility for early retirement. (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	The Minneapolis Police and Minneapolis Firefighter's Relief Associations were consolidated with the Police & Fire Plan on December 30, 2011. The Virginia Fire Department and Fairmont Policemen's Relief Associations were consolidated with the Police & Fire Plan on June 29, 2012.

Actuarial Basis

Summary of Plan Provisions – Minneapolis Police Relief Association

Normal retirement benefit	Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows: **Service** — **Units** 20 — 35.0 units 21 — 36.6 units 22 — 38.2 units 23 — 39.8 units 24 — 41.4 units 25 or more — 43.0 units Members must be at least age 50 with 5 years of service to receive this benefit.
Unit values	**Calendar Year** — **Unit Value** 2012 — $ 104.651 2013 — 109.011 2014 — 114.825 2015 — 124.031 Unit values after 2015 are assumed to increase 1.5% per year.
Surviving spouse's benefit	Annual benefit based on 23 units for the surviving spouse of an active or retired member.
Surviving children's benefit	Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 41 units.
Contributions	Member and employer contributions equal to 8% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account.

Actuarial Basis

Summary of Plan Provisions – Minneapolis Firefighters' Relief Association

Normal retirement benefit	Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows: **Service** / **Units** 15 / 25.0 units 16 / 26.6 units 17 / 28.2 units 18 / 29.8 units 19 / 31.4 units 20 / 35.0 units 21 / 36.6 units 22 / 38.2 units 23 / 39.8 units 24 / 41.4 units 25 or more / 43.0 units Members must be at least age 50 with 5 years of service to receive this benefit. Members may choose among alternative survivor payment forms which modify the number of units payable to the member and their spouse. A member who is single at the time of retirement and who has at least 25 years of service may choose to receive 43.3 units on the condition of a reduced survivor payment to any future spouse.
Unit values	**Calendar Year** / **Unit Value** 2012 / $ 96.899 2013 / 100.775 2014 / 104.264 2015 / 124.031 Unit values after 2015 are assumed to increase 1.5% per year.
Disability benefit	Annual benefit based on 41 units for the disabled member.
Surviving spouse's benefit	Annual benefit based on 23 units for the surviving spouse of an active or retired member and 22 units for the surviving spouse of a disabled member. Upon retirement, members may choose an alternative form of payment that provides 50%, 75% or 100% of their benefit to their spouse after their death. The units are adjusted if one of these alternate forms is selected.
Surviving children's benefit	Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 43 units.
Contributions	Member and employer contributions equal to 8% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account.

Plan Accounting Under GASB No. 25 (as amended by GASB No. 50)

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

Schedule of Funding Progress[1] *(Dollars in Thousands)*

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a)/(b)	Actual Covered Payroll (Previous FY) (c)	UAAL as a Percentage of Covered Payroll [(b)-(a)]/(c)
7-1-1991	$ 839,560	$ 794,295	$ (45,265)	105.70 %	$ 238,230	(19.00) %
7-1-1992	979,981	888,826	(91,155)	110.26	239,258	(38.11)
7-1-1993	1,118,342	1,009,226	(109,116)	110.81	253,666	(43.02)
7-1-1994	1,234,961	1,099,221	(135,740)	112.35	277,566	(48.90)
7-1-1995	1,385,901	1,196,795	(189,106)	115.80	293,919	(64.34)
7-1-1996	1,633,010	1,334,202	(298,808)	122.40	316,189	(94.50)
7-1-1997	1,974,635	1,556,483	(418,152)	126.87	346,319	(120.74)
7-1-1998	2,337,313	1,741,344	(595,969)	134.22	375,131	(158.87)
7-1-1999	3,679,551	3,004,637	(674,914)	122.46	352,066	(191.70)
7-1-2000	4,145,351	3,383,187	(762,164)	122.53	392,796	(194.04)
7-1-2001	4,472,041	3,712,360	(759,681)	120.46	500,839	(151.68)
7-1-2002	4,672,679	3,886,311	(786,368)	120.23	522,153	(150.60)
7-1-2003	4,683,115	4,390,953	(292,162)	106.65	560,503	(52.12)
7-1-2004	4,746,834	4,692,190	(54,644)	101.16	551,266	(9.91)
7-1-2005	4,814,961	4,956,340	141,379	97.15	580,723	24.35
7-1-2006	5,017,951	5,260,564	242,613	95.39	618,435	39.23
7-1-2007	5,198,922	5,669,347	470,425	91.70	648,342	72.56
7-1-2008	5,233,015	5,918,061	685,046	88.42	703,701	97.35
7-1-2009	5,239,855	6,296,274	1,056,419	83.22	733,164	144.09
7-1-2010	5,188,339	5,963,672	775,333	87.00	740,101	104.76
7-1-2011	5,274,602	6,363,546	1,088,944	82.89	775,806	140.36
7-1-2012	5,797,868	7,403,295	1,605,427	78.31	794,417 [2]	202.09

[1] *Information prior to 2012 provided by prior actuaries. See prior reports for additional detail.*
[2] *Assumed equal to actual member contributions divided by 9.60%.*

Plan Accounting Under GASB No. 25 (as amended by GASB No. 50)

Schedule of Contributions from the Employer and Other Contributing Entities[1]

(Dollars in Thousands)

The GASB Statement No. 25 required and actual contributions are as follows:

Plan Year Ended June 30	Actuarially Required Contribution Rate[2] (a)	Actual Covered Payroll (b)	Actual Member Contributions (c)	Annual Required Contributions [(a)x(b)] - (c) = (d)	Actual Employer Contributions[3] (e)	Percentage Contributed (e)/(d)
1991	17.56%	$ 238,230	$ 17,636	$ 24,197	$ 26,440	109.27%
1992	17.54	239,158	19,217	22,731	28,766	126.55
1993	18.60	253,666	20,406	26,776	30,434	113.66
1994	17.45	277,566	21,806	26,629	32,536	122.18
1995	17.28	293,919	22,356	28,433	33,548	117.99
1996	16.49	316,189	24,065	28,075	36,066	128.46
1997	15.11	346,319	26,354	25,975	39,508	152.10
1998	15.69	375,131	28,552	30,306	42,786	141.18
1999	12.32	352,066	30,897	12,478	46,280	370.89
2000	12.87	392,796	31,214	19,339	53,178	274.98
2001	12.21	500,839	31,341	29,811	52,960	177.65
2002	12.61	522,153	33,801	32,042	90,664	282.95
2003	15.52	560,503	34,751	35,424	50,917	143.74
2004	19.47	551,266	36,313	71,019	52,770	74.30
2005	21.99	580,723	37,873	89,828	55,802	62.12
2006	24.36	618,435	42,970	107,681	63,603	59.07
2007	25.76	648,342	50,688	116,325	74,707	64.22
2008	28.82	703,701	58,259	144,548	87,023	60.20
2009	28.41	733,164	67,701	140,591	101,548	72.23
2010	29.99	740,101	71,736	150,220	107,066	71.27
2011	25.52	775,806	73,702	124,284	109,604	88.19
2012	28.78	794,417 [2]	76,264	152,369	121,891	80.00
2013	33.37					

[1] *Information prior to 2012 provided by prior actuary. See prior reports for additional detail.*

[2] *Assumed equal to actual member contributions divided by 9.60%.*

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

Glossary of Terms

Accrued Benefit Funding Ratio	The ratio of assets to Current Benefit Obligations.
Accrued Liability Funding Ratio	The ratio of assets to Actuarial Accrued Liability.
Actuarial Accrued Liability (AAL)	The difference between the Actuarial Present Value of Future Benefits, and the Actuarial Present Value of Future Normal Costs.
Actuarial Assumptions	Assumptions about future plan experience that affect costs or liabilities, such as: mortality, withdrawal, disablement, and retirement; future increases in salary; future rates of investment earnings; future investment and administrative expenses; characteristics of members not specified in the data, such as marital status; characteristics of future members; future elections made by members; and other items.
Actuarial Cost Method	A procedure for allocating the Actuarial Present Value of Future Benefits between the Actuarial Present Value of Future Normal Costs and the Actuarial Accrued Liability.
Actuarial Equivalent	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV)	The amount of funds required to provide a payment or series of payments in the future. It is determined by discounting the future payments with an assumed interest rate and with the assumed probability each payment will be made.
Actuarial Present Value of Projected Benefits	The Actuarial Present Value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits, and inactive, non-retired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB No. 25, such as the Funded Ratio and the Annual Required Contribution (ARC).
Actuarial Value of Assets	The value of the assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the actuarially required contribution (ARC).

Glossary of Terms (Continued)

Amortization Method A method for determining the Amortization Payment. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. The stream of payments increases at the rate at which total covered payroll of all active members is assumed to increase.

Amortization Payment That portion of the plan contribution or ARC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Amortization Period The period used in calculating the Amortization Payment.

Annual Required Contribution (ARC) The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under GASB No. 25. The ARC consists of the Employer Normal Cost and Amortization Payment.

Augmentation Annual increases to deferred benefits.

Closed Amortization Period A specific number of years that is reduced by one each year, and declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc.

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

Employer Normal Cost The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.

Expected Assets The present value of anticipated future contributions intended to fund benefits for current members.

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 valuations. To the extent that actual experience differs from that assumed, Unfunded Actuarial Accrued Liabilities emerge which may be larger or smaller than projected. Gains are due to favorable experience, e.g., the assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, losses are the result of unfavorable experience, i.e., actual results that produce Unfunded Actuarial Accrued Liabilities which are larger than projected.

Glossary of Terms (Concluded)

GASB	Governmental Accounting Standards Board.
GASB No. 25 and GASB No. 27	These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 27 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 25 sets the rules for the systems themselves.
GASB No. 50	The accounting standard governing a state or local governmental employer's accounting for pensions.
Normal Cost	The annual cost assigned, under the Actuarial Cost Method, to the current plan year.
Projected Benefit Funding Ratio	The ratio of the sum of Actuarial Value of Assets and Expected Assets to the Actuarial Present Value of Projected Benefits.
Unfunded Actuarial Accrued Liability	The difference between the Actuarial Accrued Liability and Actuarial Value of Assets.
Valuation Date	The date as of which the Actuarial Present Value of Future Benefits are determined. The benefits expected to be paid in the future are discounted to this date.