GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

PUBLIC EMPLOYEES RETIREMENT SYSTEM ASSOCIATION OF MINNESOTA

PUBLIC EMPLOYEES POLICE & FIRE PLAN

ACTUARIAL VALUATION REPORT AS OF JULY 1, 2013

GRS Gabriel Roeder Smith & Company
Consultants & Actuaries
100 South Fifth Street
Suite 1900
Minneapolis, MN 55402-1267
612.605.6200 phone
612.605.6203 fax
www.gabrielroeder.com

November 2013

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, 2013 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 Board and staff 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, 2013, 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. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such future measurements.

This report should not be relied on for any purpose other than the purpose described herein. 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.

Brian B. Murphy and Bonita J. Wurst 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

Brian B. Murphy, FSA, EA, MAAA

Bonita J. Wurst

Bonita J. Wurst, ASA, EA, MAAA

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, 2013	Actuarial Valuation as of July 1, 2012
Statutory Contributions - Chapter 353 (% of Payroll)	27.25%	25.43%
Required Contributions - Chapter 356 (% of Payroll)	29.89%	33.37%
Sufficiency / (Deficiency)	(2.64)%	(7.94)%

The contribution deficiency decreased from (7.94)% of payroll to (2.64)% of payroll. The primary reasons for the decreased contribution deficiency are the significant changes in plan provisions. See page 3 for detail about these changes. Member and employer contributions rates are scheduled to increase an additional 2.25% of payroll in total over the next two fiscal years. However, a contribution deficiency remains.

Based on the actuarial value of assets and scheduled contribution rates, statutory contributions are not sufficient to fully amortize the unfunded actuarial accrued liability over the statutory amortization period of 26 years. However, on a market value of assets basis, contributions are sufficient.

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 14.3% for the plan year ending June 30, 2013. The AVA earned approximately 6.5% for the plan year ending June 30, 2013 as compared to the assumed rate of 8.0%. 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). Statements No. 67 and No. 68, issued in June 2012, replace the requirements of Statements No. 25 and No. 27, respectively. Statement No. 68, effective for the fiscal year beginning July 1, 2014, sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67, effective for the fiscal year beginning July 1, 2013, sets the rules for the systems themselves. Accounting information prepared according to Statements No. 67 and No. 68 will be provided in a separate report.

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, 2013	**July 1, 2012**
Contributions for FYE 2014 (*% of Payroll*)		
Statutory - Chapter 353	27.25%	25.43%
Required - Chapter 356	29.89%	33.37%
Sufficiency / (Deficiency)	(2.64)%	(7.94)%
Funding Ratios (*dollars in thousands*)		
Assets		
- Current assets (AVA)	$ 5,932,945	$ 5,797,868
- Current assets (MVA)	6,346,741	5,772,047
Accrued Benefit Funding Ratio		
- Current benefit obligations	$ 7,069,407	$ 7,140,240
- Funding ratio (AVA)	83.92%	81.20%
- Funding ratio (MVA)	89.78%	80.84%
Accrued Liability Funding Ratio		
- Actuarial accrued liability	$ 7,304,032	$ 7,403,295
- Funding ratio (AVA)	81.23%	78.31%
- Funding ratio (MVA)	86.89%	77.97%
Projected Benefit Funding Ratio		
- Current and expected future assets	$ 8,355,999	$ 7,892,639
- Current and expected future benefit obligations	8,688,026	8,896,375
- Projected benefit funding ratio (AVA)	96.18%	88.72%
Participant Data		
Active members		
- Number	10,940	10,865
- Projected annual earnings *(000s)* *	822,003	807,180
- Average projected annual earnings *	75,137	74,442
- Average age	40.7	40.5
- Average service	12.7	12.6
Service retirements	6,583	6,463
Survivors	1,865	1,848
Disability retirements	1,131	1,095
Deferred retirements	1,388	1,303
Terminated other non-vested	988	971
Total	**22,895**	**22,545**

** These values exclude 18 members who were merged into PERA P&F in 2012 from Minneapolis Police and Minneapolis Fire Retirement Funds whose benefits are not pay related.*

Summary of Valuation Results

Effects of Changes

The following changes in actuarial assumptions and methods were recognized as of July 1, 2013:

- Member contributions as a percent of pay will increase from 9.6% to 10.2% beginning January 1, 2014 and to 10.8% beginning January 1, 2015. Employer contributions will increase from 14.4% to 15.3% beginning January 1, 2014 and to 16.2% beginning January 1, 2015. Since the contribution increases will be effective January 1, 2014, the statutory contribution rates shown in this report for the fiscal year ending June 30, 2014 reflect half a year at the rate as of July 1, 2013 and half a year at the rate as of January 1, 2014.
- State contributions of $9 million will be made annually on October 1 beginning in 2013. Contributions continue until both PERA P&F and MSRS State Patrol reach 90% funding (on a Market Value of Assets basis).
- Vesting requirement changed to 50% vested after 10 years grading to 100% vested after 20 years for members hired after June 30, 2014.
- For members hired after June 30, 2014, allowable service used to determine benefits is limited to 33 years, with a refund of the pro-rata share of employee contributions for excess years of service.
- For retirements after June 30, 2019, reduction for early retirement is 5/12% per month for each month that the member is under age 55 at the time of retirement (phased-in over five-year period for retirements occurring between July 1, 2014 and June 30, 2019).
- Post-retirement increases were reduced from 1.5% per year to 1.0% per year. Increases revert to inflation up to 2.5% when a 90% funding ratio is reached for two consecutive years (funding ratio calculated using Market Value of Assets).
- For retirements after May 31, 2014, the first post-retirement increase will be delayed two years.
- The funding ratio threshold that must be attained to pay a 2.5% postretirement benefit increase to benefit recipients was changed from 90% for one year to 90% for two consecutive years. The funding ratio threshold that determines when a 1.0% postretirement benefit increase must be paid was changed from less than 90% for one year to less than 80% for one year or less than 85% for two consecutive years.

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

Summary of Valuation Results

Effects of Changes (Concluded)

The combined impact of the above changes was to decrease the accrued liability by $0.35 billion and decrease the required contribution by 4.4% of pay, as follows:

	Before Plan Changes	Reflecting Plan Changes
Normal Cost Rate, % of Pay	20.5%	18.9%
Amortization of Unfunded Accrued Liability, % of pay	13.7%	10.9%
Expenses (% of Pay)	0.1%	0.1%
Total Required Contribution, % of Pay	34.3%	29.9%
Accrued Liability Funding Ratio	77.5%	81.2%
Projected Benefit Funding Ratio	87.6%	96.2%
Unfunded Accrued Liability (in billions)	$1.7	$1.4

The results in this report are based on prescribed retirement rates that were adopted as a result of the most recent experience study, dated November 2010. These rates do not reflect any behavior changes that may occur as a result of the changes described above. In particular, the early retirement factor change may result in more retirements initially, and fewer early retirements after the reduction factors have been fully phased in. Experience that differs from the assumptions will create actuarial losses or gains that will increase or decrease the cost of the plan over time. We recommend regular experience studies for all plans, especially when there have been major changes in plan provisions.

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 1.0% post-retirement benefit increases in all future years) is currently 86.9%. If the plan reaches a funding ratio of 90% (on a market value of assets basis) for two consecutive years in the future, post-retirement increases will revert to inflation (up to a cap of 2.5%).

We performed a projection of liabilities and assets, using the 2013 valuation results as a baseline and assuming future experience follows the valuation assumptions (including future investment returns of 8.0% for four years and 8.5% thereafter). In addition, the projection utilized the following methods and assumptions:

- Liabilities and normal cost assume future COLAs at 2.5% level payable for all years.
- Cash flow assuming future COLAs at current 1.0% level.
- Level normal cost as a percent of pay (assuming total payroll increases as assumed in the valuation for purposes of amortizing the unfunded liability). Plan changes affecting members first hired after June 30, 2014 are expected to ultimately reduce the cost of the plan, but have not yet had a material impact on the valuation results. We did not attempt to quantify this reduction.
- Current statutory contribution levels (i.e., not including potential contribution increases under the contribution stabilizer statutes).

Based on these assumptions and methods, the projection indicates that the funded status of this plan is not expected to reach 90% within the next 15 years of the projection. The liabilities in this report are based on the assumption that the post-retirement benefit increase will remain at the reduced level of 1.0% indefinitely. If we assumed future post-retirement benefit increases of 2.5% instead of 1.0%, the actuarial accrued liability would be $8.4 billion instead of $7.3 billion, resulting in a funded ratio of 75.9% (on a market value basis) as of July 1, 2013.

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 Fiduciary Net Position *(Dollars in Thousands)*

	Market Value	
Assets in Trust	**June 30, 2013**	**June 30, 2012**
Cash, equivalents, short term securities	$ 161,583	$ 115,452
Fixed income	1,456,052	1,284,985
Equity	3,797,435	3,465,898
SBI alternative	919,315	902,253
Other	0	0
Total Assets in Trust	**$ 6,334,385**	**$ 5,768,588**
Assets receivable	15,730 *	11,241 **
Amounts payable	(3,374)	(7,782)
Net Assets Held in Trust for Pension Benefits	**$ 6,346,741**	**$ 5,772,047**

* *Includes $11.534 million contribution from Minneapolis to be paid by July 15, 2013.*
** *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 prior two fiscal years.

Change in Assets		**Market Value**			
Year Ending		**June 30, 2013**		**June 30, 2012**	
1.	Fund balance at market value at beginning of year	$ 5,772,047		$ 5,317,032	
2.	Contributions				
	a. Member	76,434		76,264	
	b. Employer	125,995	*	121,891	**
	c. Other sources	0		0	
	d. Total contributions	202,429		198,155	
3.	Investment income				
	a. Investment income/(loss)	815,439		164,778	
	b. Investment expenses	(8,697)		(7,852)	
	c. Net subtotal	806,742		156,926	
4.	Other	24		488,521	***
5.	**Total income:** *(2.d.) + (3.c.) + (4.)*	**$ 1,009,195**		**$ 843,602**	
6.	Benefits Paid				
	a. Annuity benefits	(431,726)		(386,208)	
	b. Refunds	(2,020)		(1,524)	
	c. Total benefits paid	(433,746)		(387,732)	
7.	Expenses				
	a. Other	0		0	
	b. Administrative	(755)		(855)	
	c. Total expenses	(755)		(855)	
8.	**Total disbursements:** *(6.c.) + (7.c.)*	**(434,501)**		**(388,587)**	
9.	**Fund balance at market value at end of year**	**$ 6,346,741**		**$ 5,772,047**	
10.	Approximate return on market value of assets	14.3%		2.4%	

* *Includes $11.534 million contribution from Minneapolis to be paid by July 15, 2013.*
** *Includes $7.323 million contribution from Minneapolis to be paid by December 31, 2012.*
*** *Includes amounts transferred to the Fund due to the mergers of Minneapolis Police, Minneapolis Fire, Virginia Fire, and Fairmont Police.*

Plan Assets

Actuarial Asset Value *(Dollars in Thousands)*

		June 30, 2013	June 30, 2012
1. Market value of assets available for benefits		**$ 6,346,741**	**$ 5,772,047**
2. Determination of average balance			
a. Total assets available at beginning of year		5,772,047	5,317,032
b. Total assets available at end of year		6,346,741	5,772,047
c. Net investment income for fiscal year		806,742	156,926
d. Average balance *[a. + b. - c.] / 2*		5,656,023	5,466,077
3. Expected return *[8.0% * 2.d.] (8.5% in 2012)*		452,482	464,616
4. Actual return		806,742	156,926
5. Current year asset gain/(loss) *[4. - 3.]*		354,260	(307,690)
6. Unrecognized asset returns			
	Original Amount	**Unrecognized Amount**	
a. Year ended June 30, 2013	$ 354,260	$ 283,408	N/A
b. Year ended June 30, 2012	(307,690)	(184,614)	$ (246,152)
c. Year ended June 30, 2011	653,285	261,314	391,972
d. Year ended June 30, 2010	268,440	53,688	107,376
e. Year ended June 30, 2009	(1,395,085)	N/A	(279,017)
f. Unrecognized return adjustment		413,796	(25,821)
7. **Actuarial value at end of year** *(1. - 6.f.)*		**$ 5,932,945**	**$ 5,797,868**
8. Approximate return on actuarial value of assets during fiscal year		6.5%	4.3%
9. Ratio of actuarial value of assets to market value of assets		0.93	1.00

Membership Data

Distribution of Active Members**

	Years of Service as of June 30, 2013									
Age	**<3***	**3 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35+**	**Total**
< 25	167	3								**170**
Avg. Earnings	32,802	46,179								**33,038**
25 - 29	526	262	321							**1,109**
Avg. Earnings	42,654	57,717	65,052							**52,696**
30 - 34	299	204	1,058	219						**1,780**
Avg. Earnings	45,948	60,581	68,979	72,044						**64,525**
35 - 39	126	85	576	887	177					**1,851**
Avg. Earnings	45,094	58,005	68,437	74,489	77,322					**70,119**
40 - 44	89	60	348	689	921	119				**2,226**
Avg. Earnings	39,884	56,930	67,636	74,704	79,232	83,368				**74,064**
45 - 49	38	26	156	341	584	593	183			**1,921**
Avg. Earnings	42,672	54,511	68,060	73,628	81,254	84,886	88,778			**79,542**
50 - 54	18	8	67	140	264	333	392	72		**1,294**
Avg. Earnings	36,060	55,447	69,180	76,959	79,146	84,884	88,755	88,462		**82,553**
55 - 59	7	8	23	48	80	93	102	73	8	**442**
Avg. Earnings	59,621	49,050	62,098	73,292	78,266	84,395	88,861	90,100	101,872	**82,177**
60 - 64	1	2	13	23	28	9	23	14	5	**118**
Avg. Earnings	81,742	21,542	61,129	61,444	72,622	74,477	83,780	96,510	80,909	**73,890**
65 - 69		1	2		1	1	2	1	2	**10**
Avg. Earnings		9,909	69,963		112,607	61,658	82,266	71,716	87,053	**73,445**
70+		1								**1**
Avg. Earnings		23,284								**23,284**
Total	**1,271**	**660**	**2,564**	**2,347**	**2,055**	**1,148**	**702**	**160**	**15**	**10,922**
Avg. Earnings	**42,214**	**58,022**	**68,032**	**74,194**	**79,520**	**84,586**	**88,595**	**89,809**	**92,908**	**71,323**

* *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 18 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, 2013							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<50								
Avg. Benefit								
50 - 54	112	277	1					**390**
Avg. Benefit	52,147	46,142	52,561					**47,883**
55 - 59	102	497	403					**1,002**
Avg. Benefit	58,351	56,202	46,168					**52,385**
60 - 64	38	245	602	471	5	4		**1,365**
Avg. Benefit	44,901	53,022	51,270	46,815	47,654	49,317		**49,851**
65 - 69	12	96	199	743	292	15	5	**1,362**
Avg. Benefit	58,474	42,552	45,218	50,961	48,725	45,634	48,271	**49,047**
70 - 74		11	44	255	549	84	10	**953**
Avg. Benefit		21,854	31,854	48,676	58,012	47,880	46,986	**52,880**
75 - 79		2	5	75	290	228	55	**655**
Avg. Benefit		23,784	51,646	37,171	57,527	51,339	50,355	**52,292**
80 - 84	1		1	9	148	184	123	**466**
Avg. Benefit	20,344		36,026	26,835	52,265	51,817	52,823	**51,641**
85 - 89			1		55	104	123	**283**
Avg. Benefit			1,294		53,709	54,696	50,663	**52,563**
90+					14	32	61	**107**
Avg. Benefit					51,361	51,716	38,354	**44,052**
Total	**265**	**1,128**	**1,256**	**1,553**	**1,353**	**651**	**377**	**6,583**
Avg. Benefit	**53,662**	**51,531**	**47,944**	**48,522**	**54,993**	**51,439**	**49,202**	**50,792**

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.

Membership Data

Distribution of Survivors

	Years Since Death as of June 30, 2013							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<45	14	70	46	9	5			**144**
Avg. Benefit	8,478	16,144	15,944	18,374	24,969			**15,780**
45 - 49	1	6	6	4	1	2		**20**
Avg. Benefit	49,260	29,411	37,405	33,966	45,770	23,927		**33,982**
50 - 54	2	17	14	2	4	2	3	**44**
Avg. Benefit	26,442	42,778	31,610	19,644	41,257	44,140	30,364	**36,508**
55 - 59	8	17	24	11	10	5	2	**77**
Avg. Benefit	27,504	30,994	30,443	29,235	41,761	40,915	27,766	**32,167**
60 - 64	7	36	29	13	8	14	10	**117**
Avg. Benefit	32,629	32,077	29,994	29,873	49,412	34,931	32,636	**32,924**
65 - 69	14	48	55	35	29	17	16	**214**
Avg. Benefit	37,690	31,727	28,385	32,690	36,170	27,391	30,406	**31,575**
70 - 74	15	48	40	42	30	19	13	**207**
Avg. Benefit	25,415	31,523	29,775	33,124	31,568	31,876	33,917	**31,257**
75 - 79	22	49	52	32	41	20	20	**236**
Avg. Benefit	31,662	27,868	30,909	29,135	31,015	32,157	30,748	**30,218**
80 - 84	14	56	67	48	57	34	31	**307**
Avg. Benefit	28,506	28,736	32,145	26,026	28,821	30,316	25,514	**28,911**
85 - 89	9	52	46	44	59	28	44	**282**
Avg. Benefit	25,563	28,821	25,637	28,202	26,961	28,439	25,823	**27,206**
90+	2	13	33	36	55	32	46	**217**
Avg. Benefit	35,620	25,573	22,839	25,784	26,987	26,774	23,680	**25,419**
Total	**108**	**412**	**412**	**276**	**299**	**173**	**185**	**1,865**
Avg. Benefit	**27,547**	**28,052**	**27,784**	**28,755**	**30,548**	**30,219**	**27,199**	**28,584**

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.

Membership Data

Distribution of Disability Retirements

	Years Disabled* as of June 30, 2013							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
< 45	12	36	29	5	1			**83**
Avg. Benefit	38,516	32,662	31,276	24,230	33,065			**32,521**
45 - 49	12	27	32	14	7	1		**93**
Avg. Benefit	43,562	37,456	38,283	33,548	32,001	39,667		**37,553**
50 - 54	9	23	43	40	11	3		**129**
Avg. Benefit	52,948	35,044	39,503	36,011	38,541	34,533		**38,365**
55 - 59	8	29	70	62	17	1		**187**
Avg. Benefit	45,873	47,521	46,616	38,775	42,803	50,883		**43,801**
60 - 64	4	9	79	112	30	2		**236**
Avg. Benefit	28,202	38,137	48,123	51,909	49,607	33,466		**49,266**
65 - 69	1	6	24	119	69	8	1	**228**
Avg. Benefit	27,094	52,431	40,388	49,676	52,802	46,031	41,154	**49,453**
70 - 74		2	4	23	69	9	2	**109**
Avg. Benefit		48,599	49,273	43,520	52,818	39,506	47,029	**49,443**
75+			2	3	11	30	20	**66**
Avg. Benefit			45,693	30,951	45,307	46,380	49,995	**46,574**
Total	**46**	**132**	**283**	**378**	**215**	**54**	**23**	**1,131**
Avg. Benefit	**42,790**	**38,835**	**42,944**	**45,647**	**49,689**	**44,005**	**49,353**	**44,825**

** Based on effective date as provided by PERA; "Years Disabled" may reflect years since age 65 for members over age 65.*

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

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on 7/1/2012	**10,865**	**1,303**	**971**	**6,463**	**1,095**	**1,848**	**22,545**
New Members	539	0	0	0	0	0	**539**
Return to active	51	(29)	(20)	(1)	(1)	0	**0**
Terminated non-vested	(44)	0	44	0	0	0	**0**
Service retirements	(194)	(71)	0	265	0	0	**0**
Terminated deferred	(192)	192	0	0	0	0	**0**
Terminated refund/transfer	(29)	(18)	(21)	0	0	0	**(68)**
Deaths	(10)	0	0	(151)	(17)	(97)	**(275)**
New beneficiary	0	0	0	0	0	121	**121**
Disabled	(46)	0	0	0	46	0	**0**
Data adjustments	0	11	14	7	8	(7)	**33**
Net change	75	85	17	120	36	17	**350**
Members on 6/30/2013	**10,940**	**1,388**	**988**	**6,583**	**1,131**	**1,865**	**22,895**

Terminated Member Statistics	Deferred Retirement	Other Non-Vested	Total
Number	1,388	988	2,376
Average age	46.2	46.6	46.4
Average service	9.1	0.7	5.6
Average annual benefit, with augmentation to Normal Retirement Date and 30% Combined Service Annuity (CSA) load	$28,274	N/A	$28,274
Average refund value, with 30% CSA load	$32,784	$4,542	$21,040

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 27.25% 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.

	June 30, 2013
A. Actuarial Value of Assets	$ 5,932,945
B. Expected Future Assets	
1. Present value of expected future statutory supplemental contributions	1,039,060
2. Present value of future normal cost contributions	1,383,994
3. Total expected future assets: *(1.) + (2.)*	$ 2,423,054
C. Total Current and Expected Future Assets *(A.+ B.3)*	$ 8,355,999

D. Current Benefit Obligations*	Non-Vested	Vested	Total
1. Benefit recipients			
a. Service retirements	$ 0	$ 3,418,641	$ 3,418,641
b. Disability retirements	0	493,827	493,827
c. Survivors	0	421,007	421,007
2. Deferred retirements with augmentation	0	298,423	298,423
3. Former members without vested rights	3,235	0	3,235
4. Active members	27,102	2,407,172	2,434,274
5. Total current benefit obligations	$ 30,337	$ 7,039,070	$ 7,069,407

E. Expected Future Benefit Obligations	$ 1,618,619
F. Total Current and Expected Future Benefit Obligations**	$ 8,688,026
G. Unfunded Current Benefit Obligations: *(D.5.) - (A.)*	$ 1,136,462
H. Unfunded Current and Future Benefit Obligations: *(F.) - (C.)*	$ 332,027
I. Accrued Benefit Funding Ratio: *(A.)/(D.5.)*	83.92%
J. Projected Benefit Funding Ratio: *(C.)/(F.)*	96.18%

* *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	$ 3,533,614	$ 1,042,967	$ 2,490,647
b. Disability benefits	366,321	214,384	151,937
c. Survivor's benefits	52,781	33,373	19,408
d. Deferred retirements	96,968	81,409	15,559
e. Refunds*	3,209	11,861	(8,652)
f. Total	$ 4,052,893	$ 1,383,994	$ 2,668,899
2. Deferred retirements with future augmentation	298,423	0	298,423
3. Former members without vested rights	3,235	0	3,235
4. Annuitants	4,333,475	0	4,333,475
5. Total	$8,688,026	$ 1,383,994	$ 7,304,032
B. Determination of Unfunded Actuarial Accrued Liability (UAAL)			
1. Actuarial accrued liability			$ 7,304,032
2. Current assets (AVA)			5,932,945
3. Unfunded actuarial accrued liability			$ 1,371,087
C. Determination of Supplemental Contribution Rate**			
1. Present value of future payrolls through the amortization date of June 30, 2039			$ 12,579,414
2. Supplemental contribution rate: *(B.3.) / (C.1.)*			10.90% ***

* *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, 2013 is 15.303368.*

Development of Costs

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

	Year Ending June 30, 2013		
	Actuarial Accrued Liability	Current Assets	Unfunded Actuarial Accrued Liability
A. Unfunded actuarial accrued liability at beginning of year	$ 7,403,295	$ 5,797,868	$ 1,605,427
B. Changes due to interest requirements and current rate of funding			
1. Normal cost and expenses	$ 166,710	$ 0	$ 166,710
2. Benefit payments	(433,746)	(433,746)	0
3. Contributions	0	202,429	(202,429)
4. Interest on A., B.1., B.2. and B.3.	607,753	454,577	153,176
5. Total *(B.1. + B.2. + B.3. + B.4.)*	340,717	223,260	117,457
C. Expected unfunded actuarial accrued liability at end of year *(A. + B.5.)*			$ 1,722,884
D. Increase (decrease) due to actuarial losses (gains) because of experience deviations from expected			
1. Age and Service Retirements			$ (7,928)
2. Disability Retirements			(2,037)
3. Death-in-Service Benefits			808
4. Withdrawals			2,737
5. Salary increases			(67,411)
6. Investment income			88,183
7. Mortality of annuitants			6,518
8. Other items			(18,106)
9. Total			$ 2,764
E. Unfunded actuarial accrued liability at end of year before plan amendments and changes in actuarial assumptions *(C. + D.5.)*			$ 1,725,648
F. Change in unfunded actuarial accrued liability due to changes in plan provisions			(354,561)
G. Change in unfunded actuarial accrued liability due to changes in actuarial assumptions			0
H. Change in unfunded actuarial accrued liability due to changes in decrement timing and miscellaneous methodology			0
I. Unfunded actuarial accrued liability at end of year *(E. + F. + G. + H.)**			$ 1,371,087

** The unfunded actuarial accrued liability on a market value of assets basis is $957,291.*

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	9.90%	$ 81,378
2. Employer contributions	14.85%	122,067
3. Minneapolis Police contributions***	0.93%	7,612
4. Minneapolis Fire contributions***	0.48%	3,922
5. Virginia Fire contributions	0.00%	25
6. State contributions****	1.09%	9,000
7. Total	27.25%	$ 224,004
B. Required contributions - Chapter 356		
1. Normal cost		
a. Retirement benefits	14.27%	$ 117,299
b. Disability benefits	2.96%	24,331
c. Survivors	0.48%	3,946
d. Deferred retirement benefits	1.03%	8,467
e. Refunds*	0.16%	1,315
f. Total	18.90%	$ 155,358
2. Supplemental contribution amortization of Unfunded Actuarial Accrued Liability by June 30, 2039	10.90%	$ 89,598
3. Allowance for expenses	0.09%	$ 740
4. Total	29.89% **	$ 245,696
C. Contribution Sufficiency/(Deficiency) *(A.7. - B.4.)*	(2.64)%	$ (21,692)

Note: Projected annual payroll for fiscal year beginning on the valuation date: $822,003.

* *Includes non-vested refunds and non-married survivor benefits only.*
** *The required contribution on a market value of assets basis is 26.60% of payroll.*
*** *Contributions due July 15, 2014. 2013 contributions are included in assets as receivable contributions.*
*****Contributions paid until both PERA P&F and MSRS State Patrol reach 90% funding (on a Market Value of Assets basis).*

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, 2013

Group	Number	Annual Benefits	Average Age	Present Value of Projected Benefits
Active Members	3	N/A	61.9	$ 1,807
Service Retirements	516	27,759	72.6	289,813
Disability Retirements	9	398	72.6	3,716
Survivors	230	6,984	80.0	51,521
Total	**758**	**$35,141**	**74.8**	**$346,857**

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, 2013

Group	Number	Annual Benefits	Average Age	Present Value of Projected Benefits
Active Members	15	N/A	59.9	$ 8,927
Service Retirements	291	$ 14,855	73.6	159,356
Disability Retirements	43	2,132	71.7	20,624
Survivors	167	4,765	79.1	39,588
Total	**516**	**$ 21,752**	**74.8**	**$228,495**

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, 2013

Group	Number	Annual Benefits*	Average Age	Present Value of Projected Benefits
Service Retirements	9	$ 247	83.2	$ 1,440
Survivors	4	62	83.8	354
Total	**13**	**$ 309**	**83.4**	**$1,794**

* *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 1.0% beginning January 1, 2013. The annual adjustment will match inflation, up to 2.5%, any time the fund exceeds a 90% funded ratio for two consecutive years. If the adjustment is increased to 2.5% and the funded ratio falls below 80% for one year or 85% for two consecutive years the post-retirement benefit increase will be lowered to 1.0%.*

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.

Year Ending June 30, 2013

Group	Number	Annual Benefits*	Average Age	Present Value of Projected Benefits
Service Retirements	9	$ 556	71.9	$ 5,182
Survivors	4	152	84.1	855
Total	**13**	**$ 708**	**75.7**	**$6,037**

* *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 1.0% beginning January 1, 2013. The annual adjustment will match inflation, up to 2.5%, any time the fund exceeds a 90% funded ratio for two consecutive years. If the adjustment is increased to 2.5% and the funded ratio falls below 80% for one year or 85% for two consecutive years the post-retirement benefit increase will be lowered to 1.0%.*

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 8.38% (8.36% last year).

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 was 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

None.

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, 2013 to June 30, 2017 7.00% per annum post-retirement 8.00% per annum pre-retirement July 1, 2017 and later 7.50% per annum post-retirement 8.50% per annum pre-retirement
Benefit increases after retirement	Payment of 1.00% annual benefit increases after retirement are accounted for by using the 7.50% post-retirement assumption (7.0% during 4-year select period), as required by Minnesota Statute. Mathematically, this assumption funds a post-retirement benefit increase of 0.9% instead of 1.0%. This valuation does not reflect any potential additional benefit increases payable if the plan's funding ratio exceeds 90%.
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 projected with scale AA, white collar adjustment, set back two years for males and females.
Healthy Post-retirement	RP-2000 annuitant generational mortality table projected with scale AA, 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	Account balances accumulate interest until normal retirement date and are discounted back to the valuation date. 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.
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 13 members reported with zero salary. We used prior year salary (four members), if available; otherwise high five salary with a 10% load to account for salary increases (eight members). If neither prior year salary nor high five salary was available, we assumed a value of $35,000 (one member). Note former members of either Minneapolis Police or Minneapolis Fire are excluded from these salary counts as salary is not used to calculate the benefit. There were also 68 members reported without a gender and two members reported without a date of birth. We assumed male gender and a date of birth of July 1, 1966. <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 (five members), we assumed a value of $24,000. If credited service was not reported (14 members), we used elapsed time from hire date to termination date (three members); otherwise we assumed nine years of service (11 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. <u>Data for inactive members:</u> There were four beneficiaries with missing or invalid dates of birth; we assumed a date of birth of July 1, 1943.
Changes in actuarial assumptions	The post-retirement investment rate assumption was changed from 7.00% (6.50% for the select period ending June 30, 2017) to 7.50% (7.00% for the select period ending June 30, 2017) to reflect the post-retirement benefit increase change from 1.5% to 1.0%.

Actuarial Basis

Summary of Actuarial Assumptions (Continued)

	Rate (%)*					
	Healthy Post-Retirement Mortality**		Healthy Pre-Retirement Mortality**		Disability Mortality	
Age	Male	Female	Male	Female	Male	Female
20	0.03%	0.02%	0.03%	0.02%	0.04%	0.02%
25	0.04	0.02	0.04	0.02	0.05	0.04
30	0.04	0.03	0.04	0.02	0.08	0.06
35	0.06	0.05	0.05	0.04	0.11	0.08
40	0.09	0.06	0.08	0.06	0.17	0.13
45	0.13	0.10	0.11	0.08	0.57	0.29
50	0.60	0.24	0.17	0.13	0.57	0.47
55	0.54	0.35	0.24	0.20	0.92	0.74
60	0.66	0.56	0.35	0.31	1.58	1.24
65	1.16	0.91	0.56	0.50	2.67	2.09
70	1.93	1.52	0.85	0.76	4.75	3.50

* *Generally, mortality rates are expected to increase as age increases. Due to the combination of pre-retirement rates, post-retirement rates, the white collar adjustment, and Projection Scale AA, the prescribed mortality tables have a few ages where assumed mortality decreases slightly instead of increases. We have used the rates as prescribed, but note that the prescribed assumption may not be reasonable at every age. If the rates were reasonably adjusted so that they decreased at all ages, we would not expect the valuation results to be materially different.*

***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

	Member	**Employer**
Percent of Salary		
Current	9.60%	14.40%
January 1, 2014	10.20	15.30
January 1, 2015 & later	10.80	16.20

Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).

State Contributions	$9 million paid annually on October 1 until both PERA P&F and MSRS State Patrol become 90% funded (on a Market Value of Assets basis).
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

	Vesting Percent if First Hired		
Years of Service	**Before 7/1/2010**	**After 6/30/2010 & before 7/1/2014**	**After 6/30/2014**
<3	0%	0%	0%
3 – 4	100	0	0
5	100	50	0
6	100	60	0
7	100	70	0
8	100	80	0
9	100	90	0
10	100	100	50
11	100	100	55
12	100	100	60
13	100	100	65
14	100	100	70
15	100	100	75
16	100	100	80
17	100	100	85
18	100	100	90
19	100	100	95
20+	100	100	100

Actuarial Basis

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

Retirement

Normal retirement benefit

Age/service requirement	Age 55 and at least partially 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 (up to 33 years if hired after June 30, 2014), pro rata for completed months. A pro-rata share of member contributions will be refunded at retirement for excess service.

Early retirement

Age/service requirement	Age 50 and at least partially 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. If the effective date of retirement is after June 30, 2019, the reduction is 5/12% for each month that the member is under age 55 at the time of retirement. The change in early retirement factors will be phased in over a five-year period for retirements occurring between July 1, 2014 and June 30, 2019.
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.
Benefit Increases	Benefit recipients receive a future annual 1.0% post-retirement benefit increase. The annual adjustment will match inflation, up to 2.5%, any time the fund exceeds a 90% funded ratio for two consecutive years. If the adjustment is increased to 2.5% and the funded ratio falls below 80% for one year or 85% for two consecutive years the post-retirement benefit increase will be lowered to 1.0%. 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. For retirements after May 31, 2014, the first increase will be delayed two years. 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.

Actuarial Basis

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

Disability

Duty disability benefit

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%.

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. A deferred annuity may be elected in lieu of a refund if vested.
Deferred benefit	
Age/service requirement	Partially or fully vested.
Amount	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 RP-2000 for healthy annuitants, white collar adjustment, projected to 2027 using scale AA, no setbacks, blended 90% males, and 7.0% 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 is 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	Member contributions as a percent of pay will increase from 9.6% to 10.2% beginning January 1, 2014 and to 10.8% beginning January 1, 2015. Employer contributions will increase from 14.4% to 15.3% beginning January 1, 2014 and to 16.2% beginning January 1, 2015. State contributions of $9 million will be made annually on October 1 beginning in 2013. Contributions continue until both PERA P&F and MSRS State Patrol reach 90% funding (on a Market Value of Assets basis). Vesting requirement changed to 50% vested after 10 years grading to 100% vested after 20 years for members hired after June 30, 2014. For members hired after June 30, 2014, allowable service used to determine benefits is limited to 33 years, with a refund of the pro-rata share of employee contributions for excess years of service. For retirements after June 30, 2019, reduction for early retirement is 5/12% per month for each month that the member is under age 55 at the time of retirement (phased in over five-year period for retirements occurring between July 1, 2014 and June 30, 2019). Post-retirement increases were reduced from 1.5% per year to 1.0% per year. Increases revert to inflation up to 2.5% when a 90% funding ratio is reached for two consecutive years (funding ratio calculated using Market Value of Assets). For retirements after May 31, 2014, the first post-retirement increase will be delayed two years. The funding ratio threshold that must be attained to pay a 2.5% postretirement benefit increase to benefit recipients was changed from 90% for one year to 90% for two consecutive years. The funding ratio threshold that determines when a 1.0% postretirement benefit increase must be paid was changed from less than 90% for one year to less than 80% for one year or less than 85% for two consecutive years.

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 1.0% per year.
Surviving spouse's benefit	Annual benefit based on 23 units for the surviving spouse of an active or retired 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 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.
Benefit Increases	Benefit recipients receive a future annual 1.0% post-retirement benefit increase. The annual adjustment will match inflation, up to 2.5%, any time the fund exceeds a 90% funded ratio for two consecutive years. If the adjustment is increased to 2.5% and the funded ratio falls below 80% for one year or 85% for two consecutive years the post-retirement benefit increase will be lowered to 1.0%. 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. For retirements after January 1, 2015, the first increase will be delayed two years.

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** 2013 — 100.775 2014 — 104.264 2015 — 124.031 Unit values after 2015 are assumed to increase 1.0% 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.
Benefit Increases	Benefit recipients receive a future annual 1.0% post-retirement benefit increase. The annual adjustment will match inflation, up to 2.5%, any time the fund exceeds a 90% funded ratio for two consecutive years. If the adjustment is increased to 2.5% and the funded ratio falls below 80% for one year or 85% for two consecutive years the post-retirement benefit increase will be lowered to 1.0%. 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. For retirements after January 1, 2015, the first increase will be delayed two years.

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
7-1-2013	5,932,945	7,304,032	1,371,087	81.23	796,188 [2]	172.21

[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 (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	796,188 [2]	76,434	189,254	125,995	66.57
2014	29.89					

[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.
GASB No. 67 and GASB No. 68	Statements No. 67 and No. 68, issued in June 2012, replace the requirements of Statements No. 25 and No. 27, respectively. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves. Accounting information prepared according to Statements No. 67 and No. 68 will be provided in a separate report.
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.