Gabriel Roeder Smith & Company
Consultants & Actuaries

PUBLIC EMPLOYEES RETIREMENT ASSOCIATION OF MINNESOTA
GENERAL EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT AS OF JULY 1, 2015

GRS
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November 25, 2015

Public Employees Retirement Association of Minnesota
Trustees of the General Employees Retirement Plan
St. Paul, Minnesota

Dear Trustees of the General Employees Retirement Plan:

The results of the July 1, 2015 annual actuarial valuation of the General Employees Retirement 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 and to determine the required contribution rate for the fiscal year beginning July 1, 2015. 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.

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

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 General Employees Retirement 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:mrb

Other Observations

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if there are no changes in benefits or contributions and all actuarial assumptions are met (including the assumption of the plan earning 8.0% on the actuarial value of assets), it is expected that:

(1) The unfunded actuarial accrued liabilities will be fully amortized after 24 years, and
(2) The funded status of the plan will increase gradually towards a 100% funded ratio.
(3) The unfunded liability will grow initially as a dollar amount before beginning to decline.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

(1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in other words of transferring the obligations to a unrelated third party in an arm's length market value type transaction.
(2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
(3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

Contents

Summary of Valuation Results

Contributions

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

	Actuarial Valuation as of	
Contributions	**July 1, 2015**	**July 1, 2014**
Statutory Contributions - Chapter 353 (% of Payroll)	14.66%	13.75%
Required Contributions - Chapter 356 (% of Payroll)	15.89%	15.80%
Sufficiency/(Deficiency)	(1.23)%	(2.05)%

The statutory contribution deficiency decreased from 2.05% of payroll to 1.23% of payroll. The primary reasons for the decrease are the recognition of deferred gains on assets from prior years and the additional supplemental contributions arising from the full merger of the MERF division.

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 18 years. Based on current statutory contributions, the actuarial value of assets, and other methods and assumptions described in this report, the unfunded liability will be eliminated in 24 years. On a market value of assets basis, contributions are deficient by 0.35% of payroll.

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 4.4% for the plan year ending June 30, 2015. The AVA earned approximately 12.1% for the plan year ending June 30, 2015 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.

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, 2015	**July 1, 2014**
Contributions *(% of Payroll)*		
Statutory - Chapter 353	14.66%	13.75%
Required - Chapter 356	15.89%	15.80%
Sufficiency/(Deficiency)	(1.23)%	(2.05)%
Funding Ratios *(dollars in thousands)*		
Accrued Benefit Funding Ratio		
- Current assets (AVA)	$ 17,974,439	$ 15,644,540
- Current benefit obligations	22,503,855	20,246,103
- Funding ratio	79.87%	77.27%
Accrued Liability Funding Ratio		
- Current assets (AVA)	17,974,439	$ 15,644,540
- Market value of assets (MVA)	18,581,795	17,404,822
- Actuarial accrued liability	$ 23,560,951	21,282,504
- Funding ratio (AVA)	76.29%	73.51%
- Funding ratio (MVA)	78.87%	81.78%
Projected Benefit Funding Ratio		
- Current and expected future assets	$ 25,830,668	$ 22,716,547
- Current and expected future benefit obligations	26,678,663	24,123,025
- Projected benefit funding ratio	96.82%	94.17%
Participant Data		
Active members		
- Number	145,650	143,343
- Projected annual earnings *(000s)*	$ 5,616,092	$ 5,392,643
- Average projected annual earnings	$ 38,559	$ 37,621
- Average age	46.7	47.0
- Average service	10.4	10.7
Service retirements	78,372	71,740
Survivors	8,419	7,690
Disability retirements	3,801	3,704
Deferred retirements	51,605	48,505
Terminated other non-vested	125,366	121,019
Total	**413,213**	**396,001**

Summary of Valuation Results

Effects of Changes

The following changes in plan provisions, actuarial assumptions and methods were recognized as of July 1, 2015:

- The discount rate was changed from 8.0% through June 30, 2017 and 8.5% thereafter to 8.0% for all years.
- The inflation assumption was changed from 3.00% to 2.75%.
- The payroll growth assumption was changed from 3.75% to 3.50%.
- Assumed increases in member salaries were decreased by 0.25% at all ages.
- The assumed post-retirement benefit increase rate was changed from 1.0% per year through 2026 and 2.5% thereafter to 1.0% per year through 2034 and 2.5% per year thereafter. See page 4 for additional detail about this assumption.
- The MERF Division was fully merged into PERA's General Employees Retirement Plan on January 1, 2015.
- The Contribution Stabilizer statutes were revised to make changes to contribution rates less prescriptive and more flexible.

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

The combined impact of the above changes was to increase the accrued liability by $1.4 billion and increase the required contribution by 0.8% of pay, as follows:

	Before Assumption Changes	Reflecting Assumption Changes	Reflecting Assumption Changes and MERF Merger
Normal Cost Rate, % of Pay	7.4%	7.6%	7.6%
Amortization of Unfunded Accrued Liability, % of pay	7.5%	7.8%	8.1%
Expenses (% of Pay)	0.2%	0.2%	0.2%
Total Required Contribution, % of Pay	15.1%	15.6%	15.9%
Accrued Liability Funding Ratio	76.8%	76.1%	76.3%
Projected Benefit Funding Ratio	97.0%	95.8%	96.8%
Unfunded Accrued Liability (in billions)	$5.2	$5.4	$5.6

Summary of Valuation Results

Valuation of Future Post-Retirement Benefit Increases

Benefit recipients receive a future annual 1.0% post-retirement benefit increase. If the funding ratio reaches 90% (based on a 2.5% post-retirement benefit increase assumption) for two consecutive years, the benefit increase will revert to 2.5%. If, after reverting to a 2.5% benefit increase, the funding ratio declines to less than 80% for one-year or less than 85% for two consecutive years, the benefit increase will decrease to 1.0%. Benefit increases already granted, however, will not be affected.

To determine an assumption regarding a future change in the post-retirement benefit increase, we performed a projection of liabilities and assets based on the following methods and assumptions:

- Future investment returns of 8.00%;
- Open group; stable active population (new member profile based on average new members hired in recent years);
- The post-retirement benefit increase rate is assumed to be 1.0% per year until the funding ratio threshold required to pay a 2.5% post-retirement benefit increase is reached; and
- Current statutory contributions (i.e., not including potential contribution increases under the contribution stabilizer statutes).

Based on these assumptions and methods, the projection indicates that this plan is expected to attain the funding ratio threshold required to pay a 2.5% post-retirement benefit increase in the year 2034, and that the plan would begin paying 2.5% benefit increases on January 1, 2035. This assumption is reflected in our calculations.

Summary of Valuation Results

Risk Measures Summary *(Dollars in Thousands)*

Valuation Date (6/30)	(1) Accrued Liabilities (AAL)	(2) Market Value of Assets	(3) Market Value Unfunded AAL	(4) Valuation Payroll	(5) Market Value Funded Ratio (2)/(1)	(6) Retiree Liabilities	(7) RetLiab/ AAL (6)/(1)	(8) AAL/ Payroll (1)/(4)	(9) Assets/ Payroll (2)/(4)
2010	$17,180,956	$11,338,582	$5,842,374	$4,804,627	66.0%	$7,900,020	46.0%	357.6%	236.0%
2011	17,898,849	13,616,622	4,282,227	5,079,429	76.1%	8,315,059	46.5%	352.4%	268.1%
2012	18,598,897	13,577,653	5,021,244	5,142,592	73.0%	8,870,045	47.7%	361.7%	264.0%
2013	19,379,769	15,084,608	4,295,161	5,246,928	77.8%	9,351,606	48.3%	369.4%	287.5%
2014	21,282,504	17,404,822	3,877,682	5,351,920	81.8%	10,229,051	48.1%	397.7%	325.2%
2015	23,560,951	18,581,795	4,979,156	5,549,255	78.9%	12,092,665	51.3%	424.6%	334.9%

Valuation Date (6/30)	(10) Portfolio StdDev	(11) Std Dev % of Pay (9) x (10)	(12) Unfunded/ Payroll	(13) Non-Investment Cash Flow (NICF)	(14) NICF/ Assets (13)/(2)	(15) Market Rate of Return	(16) 5-year Trailing Average
2010			121.6%	$(298,297)	-2.6%	15.7%	N/A
2011			84.3%	(329,963)	-2.4%	23.0%	N/A
2012			97.6%	(359,950)	-2.7%	2.3%	2.3%
2013			81.9%	(396,791)	-2.6%	14.2%	6.2%
2014			72.5%	(441,245)	-2.5%	18.5%	14.5%
2015	14.1%	47.2%	89.7%	(492,445)	-2.7%	4.4%	12.2%

(5). The Funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

(6) and (7). The ratio of Retiree liabilities to total accrued liabilities gives an indication of the maturity of the system. As the ratio increases, cash flow needs increase, and the liquidity needs of the portfolio change. A ratio on the order of 50% indicates a maturing system.

(8) and (9) The ratios of liabilities and assets to payroll gives an indication of both maturity and volatility. Many systems have ratios between 500% and 700%. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

(10) and (11). The portfolio standard deviation measures the volatility of investment return. When multiplied by the ratio of assets to payroll it gives the effect of a one standard deviation asset move as a percent of payroll. This figure helps users understand the difficulty of dealing with investment volatility and the challenges volatility brings to sustainability.

(12) The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A ratio above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability within a reasonable time frame.

(13) and (14) The ratio of Non-Investment Cash Flow to assets is an important measure of sustainability. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately -4%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.

(15) and (16) Investment return is probably the largest single risk that most systems face. The year by year return and the 5 year geometric average give an indicator of the realism of the systems assumed return. Of course past performance is not a guarantee of future results.

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.

- **Additional schedules** shows the Schedule of Funding Progress and Schedule of Contributions.

- **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, 2015**	**June 30, 2014**
Cash, equivalents, short term securities	$ 355,041	$ 457,676
Fixed income	4,364,607	4,061,777
Equity	11,528,261	10,675,284
SBI Alternative	2,288,787	2,195,599
Other	7,382	7,626
Total Assets in Trust	**$ 18,544,078**	**$ 17,397,962**
Assets Receivable	46,518	16,199
Amounts Payable	(8,801)	(9,339)
Net Assets Held in Trust for Pension Benefits	**$ 18,581,795**	**$ 17,404,822**

Plan Assets

Reconciliation of Plan Assets *(Dollars in Thousands)*

The following exhibits show 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, 2015**	**June 30, 2014**
1. Fund balance at market value at beginning of year	$ 17,404,822	$ 15,084,608
2. Contributions		
a. Member	353,765	334,495
b. Employer	435,115	382,251
c. Other sources	0	0
d. Total contributions	788,880	716,746
3. Investment income		
a. Investment income/(loss)	803,212	2,785,047
b. Investment expenses	(25,708)	(24,193)
c. Net subtotal	777,504	2,760,854
4. Other	278	605
5. Total income: *(2.d.) + (3.c.) + (4.)*	**$ 1,566,662**	**$ 3,478,205**
6. Benefits Paid		
a. Annuity benefits	(1,235,303)	(1,109,866)
b. Refunds	(35,655)	(38,264)
c. Total benefits paid	(1,270,958)	(1,148,130)
7. Expenses		
a. Other	0	0
b. Administrative	(10,367)	(9,861)
c. Total expenses	(10,367)	(9,861)
8. Total disbursements: *(6.c.) + (7.c.)*	**(1,281,325)**	**(1,157,991)**
9. Transfer between funds	**$ 891,636**	**$ 0**
10. Fund balance at market value at end of year	**$ 18,581,795**	**$ 17,404,822**
11. Approximate return on market value of assets	4.4%	18.5%

Plan Assets

Actuarial Asset Value *(Dollars in Thousands)*

		June 30, 2015	June 30, 2014
1. Market value of assets available for benefits		$ 18,581,795	$ 17,404,822
2. Determination of average balance			
a. Total assets available at beginning of year		17,404,822	15,084,608
b. Total assets available at end of year		18,581,795	17,404,822
c. Net investment income for fiscal year		777,504	2,760,854
d. Average balance *[a. + b. - c.] / 2*		17,604,557	14,864,288
3. Expected return *[8.0% * 2.d.]*		1,408,365	1,189,143
4. Actual return		777,504	2,760,854
5. Current year asset gain/(loss) *[4. - 3.]*		(630,861)	1,571,711
6. Unrecognized asset returns			
	Original Amount	**Unrecognized Amount**	
a. Year ended June 30, 2015	$(630,861)	$ (504,689)	N/A
b. Year ended June 30, 2014	1,571,711	943,027	$ 1,257,369
c. Year ended June 30, 2013	833,405	333,362	500,043
d. Year ended June 30, 2012	(821,722)	(164,344)	(328,689)
e. Year ended June 30, 2011	1,657,793	N/A	331,559
f. Unrecognized return adjustment		607,356	1,760,282
7. **Actuarial value at end of year** *(1. - 6.f.)*		**$17,974,439**	**$ 15,644,540**
8. Approximate return on actuarial value of assets during fiscal year		12.1%	14.1%
9. Ratio of actuarial value of assets to market value of assets		0.97	0.90

Membership Data

Distribution of Active Members (Total)

	Years of Service as of June 30, 2015									
Age	**<3***	**3 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35+**	**Total**
< 25	5,420	228	17							**5,665**
Avg. Earnings	14,215	23,764	17,911							**14,611**
25 - 29	8,405	1,908	1,076	21						**11,410**
Avg. Earnings	22,979	32,846	35,041	34,037						**25,786**
30 - 34	6,573	2,059	3,512	849	23					**13,016**
Avg. Earnings	26,817	37,760	43,406	45,711	44,697					**34,288**
35 - 39	5,502	1,849	3,328	2,413	750	6				**13,848**
Avg. Earnings	25,368	36,409	44,615	53,522	53,844	63,470				**37,933**
40 - 44	4,729	1,820	3,313	2,454	2,107	426	11			**14,860**
Avg. Earnings	23,739	31,074	39,092	51,916	59,410	56,093	53,382			**38,721**
45 - 49	4,159	1,787	4,131	3,183	2,584	1,634	623	21		**18,122**
Avg. Earnings	23,191	28,636	34,057	43,640	55,244	60,868	58,830	60,045		**39,032**
50 - 54	3,451	1,583	4,254	4,068	3,533	2,317	2,007	856	55	**22,124**
Avg. Earnings	22,951	29,131	32,064	37,162	45,804	56,419	63,208	61,140	59,951	**40,135**
55 - 59	2,886	1,294	3,174	3,746	4,077	3,117	2,537	1,599	882	**23,312**
Avg. Earnings	22,709	30,913	32,809	37,085	40,574	46,995	59,456	65,353	60,700	**41,583**
60 - 64	1,865	883	2,001	2,280	2,580	2,510	2,056	1,019	1,210	**16,404**
Avg. Earnings	19,342	26,962	33,368	37,415	39,776	43,399	52,053	62,338	65,769	**41,065**
65 - 69	942	370	796	672	589	550	441	198	286	**4,844**
Avg. Earnings	13,200	16,887	24,254	33,725	38,970	40,984	49,546	56,126	68,297	**32,750**
70+	480	217	490	385	165	116	71	48	73	**2,045**
Avg. Earnings	9,191	11,752	13,033	18,126	25,470	30,987	37,738	43,706	56,305	**18,098**
Total	**44,412**	**13,998**	**26,092**	**20,071**	**16,408**	**10,676**	**7,746**	**3,741**	**2,506**	**145,650**
Avg. Earnings	**22,345**	**31,405**	**36,108**	**41,853**	**46,707**	**50,207**	**57,641**	**62,772**	**63,870**	**36,786**

* *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.*

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 Active Members (Basic)

	Years of Service as of June 30, 2015									
Age	**<3***	**3 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35+**	**Total**
< 25										
Avg. Earnings										
25 - 29										
Avg. Earnings										
30 - 34										
Avg. Earnings										
35 - 39										
Avg. Earnings										
40 - 44										
Avg. Earnings										
45 - 49										
Avg. Earnings										
50 - 54										
Avg. Earnings										
55 - 59										
Avg. Earnings										
60 - 64										
Avg. Earnings										
65 - 69									4	**4**
Avg. Earnings									63,138	**63,138**
70+									3	**3**
Avg. Earnings									61,868	**61,868**
Total									**7**	**7**
Avg. Earnings									**62,594**	**62,594**

* *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.*

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 Active Members (Coordinated)

	Years of Service as of June 30, 2015									
Age	**<3***	**3 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35+**	**Total**
< 25	5,420	228	17							**5,665**
Avg. Earnings	14,215	23,764	17,911							**14,611**
25 - 29	8,405	1,908	1,076	21						**11,410**
Avg. Earnings	22,979	32,846	35,041	34,037						**25,786**
30 - 34	6,573	2,059	3,512	849	23					**13,016**
Avg. Earnings	26,817	37,760	43,406	45,711	44,697					**34,288**
35 - 39	5,502	1,849	3,328	2,413	750	6				**13,848**
Avg. Earnings	25,368	36,409	44,615	53,522	53,844	63,470				**37,933**
40 - 44	4,729	1,820	3,313	2,454	2,107	426	11			**14,860**
Avg. Earnings	23,739	31,074	39,092	51,916	59,410	56,093	53,382			**38,721**
45 - 49	4,159	1,787	4,131	3,183	2,584	1,634	623	21		**18,122**
Avg. Earnings	23,191	28,636	34,057	43,640	55,244	60,868	58,830	60,045		**39,032**
50 - 54	3,451	1,583	4,254	4,068	3,533	2,317	2,007	856	55	**22,124**
Avg. Earnings	22,951	29,131	32,064	37,162	45,804	56,419	63,208	61,140	59,951	**40,135**
55 - 59	2,886	1,294	3,174	3,746	4,077	3,117	2,537	1,599	875	**23,305**
Avg. Earnings	22,709	30,913	32,809	37,085	40,574	46,995	59,456	65,353	60,703	**41,577**
60 - 64	1,865	883	2,001	2,280	2,580	2,510	2,056	1,019	1,196	**16,390**
Avg. Earnings	19,342	26,962	33,368	37,415	39,776	43,399	52,053	62,338	65,724	**41,041**
65 - 69	942	370	796	672	589	550	441	198	278	**4,836**
Avg. Earnings	13,200	16,887	24,254	33,725	38,970	40,984	49,546	56,126	68,079	**32,679**
70+	480	217	490	385	165	116	71	48	66	**2,038**
Avg. Earnings	9,191	11,752	13,033	18,126	25,470	30,987	37,738	43,706	55,746	**17,949**
Total	**44,412**	**13,998**	**26,092**	**20,071**	**16,408**	**10,676**	**7,746**	**3,741**	**2,470**	**145,614**
Avg. Earnings	**22,345**	**31,405**	**36,108**	**41,853**	**46,707**	**50,207**	**57,641**	**62,772**	**63,815**	**36,778**

* *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.*

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 Active Members (MERF)

	Years of Service as of June 30, 2015									
Age	**<3***	**3 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35+**	**Total**
< 25										
Avg. Earnings										
25 - 29										
Avg. Earnings										
30 - 34										
Avg. Earnings										
35 - 39										
Avg. Earnings										
40 - 44										
Avg. Earnings										
45 - 49										
Avg. Earnings										
50 - 54										
Avg. Earnings										
55 - 59									7	**7**
Avg. Earnings									60,365	**60,365**
60 - 64									14	**14**
Avg. Earnings									69,608	**69,608**
65 - 69									4	**4**
Avg. Earnings									88,622	**88,622**
70+									4	**4**
Avg. Earnings									61,353	**61,353**
Total									**29**	**29**
Avg. Earnings									**68,861**	**68,861**

* *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.*

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 (Total)

Age	Years Retired as of June 30, 2015							
	<1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25+	**Total**
<50								
Avg. Benefit								
50 - 54	12	24	1					**37**
Avg. Benefit	13,036	10,665	12,690					**11,489**
55 - 59	764	1,579	76	11				**2,430**
Avg. Benefit	15,738	13,034	19,540	37,030				**14,197**
60 - 64	2,212	5,814	2,510	192	12			**10,740**
Avg. Benefit	15,489	15,405	13,034	30,529	31,331			**15,156**
65 - 69	1,965	9,700	6,133	2,699	178	9		**20,684**
Avg. Benefit	14,095	13,878	14,526	14,483	41,020	39,536		**14,415**
70 - 74	311	2,683	6,119	4,652	2,250	19	4	**16,038**
Avg. Benefit	10,337	11,183	12,163	13,708	15,113	47,859	34,490	**12,873**
75 - 79	81	588	1,497	4,418	4,030	1,128	28	**11,770**
Avg. Benefit	6,243	8,365	9,372	10,711	15,313	20,333	38,648	**12,957**
80 - 84	34	211	421	972	3,618	2,545	600	**8,401**
Avg. Benefit	6,933	5,078	6,247	8,178	12,842	21,020	22,640	**14,930**
85 - 89	7	56	136	266	710	2,417	1,629	**5,221**
Avg. Benefit	5,144	6,011	4,905	5,939	11,091	17,253	24,758	**17,722**
90+	1	6	24	69	116	457	2,378	**3,051**
Avg. Benefit	4,581	8,077	4,154	6,563	7,017	14,472	20,239	**18,407**
Total	**5,387**	**20,661**	**16,917**	**13,279**	**10,914**	**6,575**	**4,639**	**78,372**
Avg. Benefit	**14,505**	**13,620**	**12,718**	**12,533**	**14,527**	**19,165**	**22,259**	**14,405**

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 Service Retirements (Basic)

	Years Retired as of June 30, 2015							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<50								
Avg. Benefit								
50 - 54								
Avg. Benefit								
55 - 59								
Avg. Benefit								
60 - 64					1			**1**
Avg. Benefit					24,980			**24,980**
65 - 69	1	6	18	87	11			**123**
Avg. Benefit	32,303	16,025	29,846	41,896	26,316			**37,399**
70 - 74		15	51	188	296	2	1	**553**
Avg. Benefit		25,652	31,004	38,285	43,188	33,817	24,192	**39,853**
75 - 79		3	15	113	487	283	9	**910**
Avg. Benefit		74,995	26,395	27,786	43,431	48,146	28,961	**42,635**
80 - 84		1	4	33	232	598	201	**1,069**
Avg. Benefit		93,893	17,287	30,412	30,351	46,182	41,401	**41,297**
85 - 89		1		6	47	417	575	**1,046**
Avg. Benefit		53,490		35,492	30,469	35,992	41,249	**38,647**
90+				1	5	73	888	**967**
Avg. Benefit				26,891	26,837	36,801	31,449	**31,824**
Total	**1**	**26**	**88**	**428**	**1,079**	**1,373**	**1,674**	**4,669**
Avg. Benefit	**32,303**	**32,819**	**29,358**	**35,574**	**39,719**	**42,975**	**35,992**	**38,725**

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 Service Retirements (Coordinated)

	Years Retired as of June 30, 2015							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<50								
Avg. Benefit								
50 - 54	12	24	1					**37**
Avg. Benefit	13,036	10,665	12,690					**11,489**
55 - 59	761	1,572	52					**2,385**
Avg. Benefit	15,617	12,901	10,626					**13,718**
60 - 64	2,202	5,773	2,392	59	2			**10,428**
Avg. Benefit	15,390	15,234	11,764	10,721	15,497			**14,446**
65 - 69	1,957	9,623	5,968	2,387	19			**19,954**
Avg. Benefit	14,007	13,784	14,009	10,908	14,222			**13,530**
70 - 74	311	2,646	6,002	4,287	1,792			**15,038**
Avg. Benefit	10,337	10,918	11,790	11,826	7,513			**11,107**
75 - 79	81	578	1,462	4,209	3,355	796	2	**10,483**
Avg. Benefit	6,243	7,643	9,057	9,859	10,045	8,354	22,338	**9,545**
80 - 84	34	209	409	916	3,262	1,793	336	**6,959**
Avg. Benefit	6,933	4,565	5,753	7,002	10,885	11,574	5,629	**9,787**
85 - 89	7	55	135	254	629	1,878	862	**3,820**
Avg. Benefit	5,144	5,148	4,796	4,443	8,186	12,367	10,201	**10,278**
90+	1	6	24	65	107	360	1,229	**1,792**
Avg. Benefit	4,581	8,077	4,154	5,313	5,064	9,396	9,782	**9,177**
Total	**5,366**	**20,486**	**16,445**	**12,177**	**9,166**	**4,827**	**2,429**	**70,896**
Avg. Benefit	**14,413**	**13,459**	**12,127**	**10,409**	**9,673**	**11,189**	**9,367**	**11,914**

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 Service Retirements (MERF)

	Years Retired as of June 30, 2015							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<50								
Avg. Benefit								
50 - 54								
Avg. Benefit								
55 - 59	3	7	24	11				**45**
Avg. Benefit	46,566	43,033	38,854	37,030				**39,572**
60 - 64	10	41	118	133	9			**311**
Avg. Benefit	37,188	39,455	38,777	39,316	35,556			**38,953**
65 - 69	7	71	147	225	148	9		**607**
Avg. Benefit	36,130	26,494	33,617	41,809	45,553	39,536		**38,847**
70 - 74		22	66	177	162	17	3	**447**
Avg. Benefit		33,121	31,530	33,169	47,878	49,511	37,923	**38,909**
75 - 79		7	20	96	188	49	17	**377**
Avg. Benefit		39,446	19,605	27,978	36,486	54,299	45,696	**36,210**
80 - 84		1	8	23	124	154	63	**373**
Avg. Benefit		23,488	25,999	23,139	31,562	33,282	53,506	**35,318**
85 - 89			1	6	34	122	192	**355**
Avg. Benefit			19,545	39,723	38,045	28,421	40,724	**36,162**
90+				3	4	24	261	**292**
Avg. Benefit				26,857	34,495	22,686	31,335	**30,622**
Total	**20**	**149**	**384**	**674**	**669**	**375**	**536**	**2,807**
Avg. Benefit	**38,225**	**32,404**	**34,246**	**36,278**	**40,393**	**34,654**	**37,797**	**36,862**

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 (Total)

	Years Since Death as of June 30, 2015							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<45	20	70	51	17	15	5	4	**182**
Avg. Benefit	8,688	6,799	4,602	4,301	8,860	7,806	20,494	**6,656**
45 - 49	3	36	29	13	8	3	3	**95**
Avg. Benefit	12,018	5,790	5,790	9,882	8,060	9,320	3,961	**6,791**
50 - 54	20	53	38	14	10	9	5	**149**
Avg. Benefit	8,780	7,436	8,277	5,381	10,541	14,158	10,732	**8,363**
55 - 59	35	155	87	39	21	11	5	**353**
Avg. Benefit	14,591	10,260	9,816	8,537	13,812	9,579	13,244	**10,622**
60 - 64	47	223	184	87	50	21	14	**626**
Avg. Benefit	13,066	10,627	11,402	11,407	15,059	21,659	18,420	**12,045**
65 - 69	84	281	227	134	55	30	22	**833**
Avg. Benefit	10,823	13,012	11,765	12,192	19,535	23,339	14,756	**13,168**
70 - 74	77	295	230	139	90	64	69	**964**
Avg. Benefit	13,195	12,746	11,999	12,672	14,775	18,794	20,257	**13,722**
75 - 79	83	332	226	198	142	102	104	**1,187**
Avg. Benefit	17,882	14,277	15,295	15,190	19,421	22,378	25,829	**17,199**
80 - 84	82	323	245	208	175	133	185	**1,351**
Avg. Benefit	19,154	19,484	16,181	17,997	19,443	18,767	24,885	**19,300**
85 - 89	72	297	248	236	177	171	308	**1,509**
Avg. Benefit	24,142	20,016	17,761	19,904	21,069	20,447	25,021	**21,019**
90+	33	137	190	165	139	148	358	**1,170**
Avg. Benefit	23,496	20,729	16,512	17,589	19,239	18,369	21,811	**19,535**
Total	**556**	**2,202**	**1,755**	**1,250**	**882**	**697**	**1,077**	**8,419**
Avg. Benefit	**16,194**	**14,656**	**13,711**	**15,478**	**18,496**	**19,585**	**23,212**	**16,588**

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 Survivors (Basic)

	Years Since Death as of June 30, 2015							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<45		2		1		1	2	**6**
Avg. Benefit		22,800		5,676		20,418	27,532	**21,126**
45 - 49						2		**2**
Avg. Benefit						12,796		**12,796**
50 - 54	1			1	1	1		**4**
Avg. Benefit	29,403			2,337	4,698	36,686		**18,281**
55 - 59				2	1	1	1	**5**
Avg. Benefit				8,029	15,943	9,058	36,855	**15,583**
60 - 64		4	4	3	3	2	6	**22**
Avg. Benefit		14,611	9,533	10,749	14,935	54,358	28,865	**20,706**
65 - 69	4	14	8	10	5	8	7	**56**
Avg. Benefit	26,470	24,236	20,435	29,080	37,719	34,103	20,082	**26,812**
70 - 74	9	33	29	22	10	21	27	**151**
Avg. Benefit	34,314	24,743	24,616	31,387	30,613	29,105	26,707	**27,604**
75 - 79	15	64	61	46	36	31	46	**299**
Avg. Benefit	37,092	26,812	32,657	34,564	37,368	30,937	30,406	**31,964**
80 - 84	23	110	79	71	61	43	68	**455**
Avg. Benefit	39,279	31,451	29,869	32,569	34,606	31,741	28,361	**31,735**
85 - 89	26	104	92	91	90	81	120	**604**
Avg. Benefit	34,303	32,846	31,233	36,037	32,259	29,816	26,597	**31,408**
90+	13	58	82	79	71	78	156	**537**
Avg. Benefit	37,450	32,289	26,324	26,745	30,212	24,631	19,216	**25,503**
Total	**91**	**389**	**355**	**326**	**278**	**269**	**433**	**2,141**
Avg. Benefit	**36,073**	**30,139**	**29,012**	**31,694**	**32,607**	**28,791**	**24,580**	**29,468**

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 Survivors (Coordinated)

	Years Since Death as of June 30, 2015							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<45	20	68	51	16	15	4	2	**176**
Avg. Benefit	8,688	6,329	4,602	4,215	8,860	4,653	13,456	**6,163**
45 - 49	3	34	29	13	8	1	3	**91**
Avg. Benefit	12,018	4,571	5,790	9,882	8,060	2,370	3,961	**6,226**
50 - 54	19	52	37	13	9	7	5	**142**
Avg. Benefit	7,695	7,405	7,623	5,615	11,190	8,568	10,732	**7,751**
55 - 59	35	148	86	35	17	10	3	**334**
Avg. Benefit	14,591	9,753	9,563	6,971	7,030	9,631	4,944	**9,734**
60 - 64	46	214	176	80	34	15	7	**572**
Avg. Benefit	12,440	10,087	10,675	10,940	10,068	14,168	10,080	**10,682**
65 - 69	77	249	216	113	39	15	9	**718**
Avg. Benefit	8,477	10,915	11,002	8,889	12,837	13,763	7,434	**10,481**
70 - 74	63	245	200	115	71	34	18	**746**
Avg. Benefit	8,707	9,622	10,145	8,872	10,689	9,833	8,118	**9,644**
75 - 79	59	252	165	148	92	49	28	**793**
Avg. Benefit	9,692	9,400	8,876	8,680	9,677	9,792	8,189	**9,192**
80 - 84	53	193	166	136	109	73	48	**778**
Avg. Benefit	10,100	10,363	9,668	10,202	10,505	9,395	8,573	**9,987**
85 - 89	39	166	156	143	85	82	74	**745**
Avg. Benefit	12,019	9,197	9,817	9,750	9,385	9,694	9,458	**9,683**
90+	18	68	108	86	67	68	72	**487**
Avg. Benefit	11,409	8,797	9,062	9,179	7,623	10,282	9,804	**9,214**
Total	**432**	**1,689**	**1,390**	**898**	**546**	**358**	**269**	**5,582**
Avg. Benefit	**10,235**	**9,557**	**9,619**	**9,208**	**9,823**	**10,029**	**9,061**	**9,601**

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 Survivors (MERF)

	Years Since Death as of June 30, 2015							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<45								
Avg. Benefit								
45 - 49		2						**2**
Avg. Benefit		26,503						**26,503**
50 - 54		1	1			1		**3**
Avg. Benefit		9,021	32,496			30,753		**24,090**
55 - 59		7	1	2	3		1	**14**
Avg. Benefit		20,966	31,552	36,450	51,531		14,535	**30,025**
60 - 64	1	5	4	4	13	4	1	**32**
Avg. Benefit	41,901	30,543	45,277	21,226	28,139	33,400	14,125	**30,443**
65 - 69	3	18	3	11	11	7	6	**59**
Avg. Benefit	50,178	33,298	43,608	30,760	35,018	31,559	19,527	**32,921**
70 - 74	5	17	1	2	9	9	24	**67**
Avg. Benefit	31,728	34,488	16,785	25,327	29,410	28,584	22,104	**27,833**
75 - 79	9	16		4	14	22	30	**95**
Avg. Benefit	39,551	40,952		33,245	37,307	38,352	35,275	**37,563**
80 - 84	6	20		1	5	17	69	**118**
Avg. Benefit	21,981	41,690		43,471	29,317	26,192	32,807	**32,751**
85 - 89	7	27		2	2	8	114	**160**
Avg. Benefit	53,951	37,113		11,932	14,026	35,800	33,466	**34,582**
90+	2	11			1	2	130	**146**
Avg. Benefit	41,577	33,534			18,346	49,059	31,576	**32,009**
Total	**33**	**124**	**10**	**26**	**58**	**70**	**375**	**696**
Avg. Benefit	**39,386**	**35,541**	**39,277**	**28,736**	**32,510**	**33,086**	**31,782**	**32,998**

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 (Total)

	Years Disabled* as of June 30, 2015							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
< 45	4	16	6	3				**29**
Avg. Benefit	9,668	5,932	4,392	3,300				**5,856**
45 - 49	3	31	20	12				**66**
Avg. Benefit	8,619	8,280	6,700	4,496				**7,128**
50 - 54	21	62	66	34	5	8		**196**
Avg. Benefit	15,422	9,243	8,550	6,558	5,351	6,410		**8,991**
55 - 59	23	186	144	105	42	19	4	**523**
Avg. Benefit	18,648	14,755	10,801	9,621	6,193	6,909	6,673	**11,772**
60 - 64	27	292	281	158	87	32	7	**884**
Avg. Benefit	16,311	14,998	12,708	11,203	11,121	10,159	5,080	**12,996**
65 - 69	174	571	72	36	20	7	16	**896**
Avg. Benefit	12,426	13,211	11,980	8,100	18,746	16,767	23,261	**13,085**
70 - 74		100	444	11	8	5	6	**574**
Avg. Benefit		9,979	13,038	14,618	27,917	43,690	36,872	**13,259**
75+			46	292	168	68	59	**633**
Avg. Benefit			13,288	14,961	16,171	17,641	20,592	**15,973**
Total	**252**	**1,258**	**1,079**	**651**	**330**	**139**	**92**	**3,801**
Avg. Benefit	**13,571**	**13,187**	**12,154**	**12,117**	**13,847**	**14,698**	**20,332**	**13,021**

** 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

Distribution of Disability Retirements (Basic)

	Years Disabled* as of June 30, 2015							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
< 45								
Avg. Benefit								
45 - 49								
Avg. Benefit								
50 - 54								
Avg. Benefit								
55 - 59								
Avg. Benefit								
60 - 64								
Avg. Benefit								
65 - 69		7						**7**
Avg. Benefit		45,230						**45,230**
70 - 74			14			1		**15**
Avg. Benefit			43,725			72,150		**45,620**
75+			3	23	32	15	18	**91**
Avg. Benefit			31,535	45,392	35,798	36,701	28,870	**36,861**
Total		**7**	**17**	**23**	**32**	**16**	**18**	**113**
Avg. Benefit		**45,230**	**41,574**	**45,392**	**35,798**	**38,917**	**28,870**	**38,542**

** 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

Distribution of Disability Retirements (Coordinated)

	Years Disabled* as of June 30, 2015							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
< 45	4	16	6	3				**29**
Avg. Benefit	9,668	5,932	4,392	3,300				**5,856**
45 - 49	3	31	20	12				**66**
Avg. Benefit	8,619	8,280	6,700	4,496				**7,128**
50 - 54	21	62	66	34	5	8		**196**
Avg. Benefit	15,422	9,243	8,550	6,558	5,351	6,410		**8,991**
55 - 59	23	186	144	104	42	19	4	**522**
Avg. Benefit	18,648	14,755	10,801	9,453	6,193	6,909	6,673	**11,743**
60 - 64	26	280	281	158	87	32	7	**871**
Avg. Benefit	15,975	14,719	12,708	11,203	11,121	10,159	5,080	**12,865**
65 - 69	174	564	72	36	11	4	1	**862**
Avg. Benefit	12,426	12,814	11,980	8,100	5,712	7,136	1,173	**12,338**
70 - 74		100	430	7				**537**
Avg. Benefit		9,979	12,039	8,889				**11,615**
75+			43	269	134	49	13	**508**
Avg. Benefit			12,015	12,359	11,495	10,888	6,582	**11,812**
Total	**251**	**1,239**	**1,062**	**623**	**279**	**112**	**25**	**3,591**
Avg. Benefit	**13,525**	**12,926**	**11,683**	**10,784**	**10,242**	**9,551**	**5,960**	**11,866**

** 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

Distribution of Disability Retirements (MERF)

	Years Disabled* as of June 30, 2015							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
< 45								
Avg. Benefit								
45 - 49								
Avg. Benefit								
50 - 54								
Avg. Benefit								
55 - 59				1				**1**
Avg. Benefit				27,112				**27,112**
60 - 64	1	12						**13**
Avg. Benefit	25,040	21,505						**21,777**
65 - 69					9	3	15	**27**
Avg. Benefit					34,676	29,608	24,733	**28,589**
70 - 74				4	8	4	6	**22**
Avg. Benefit				24,643	27,917	36,575	36,872	**31,338**
75+					2	4	28	**34**
Avg. Benefit					15,472	28,891	21,775	**22,242**
Total	**1**	**12**		**5**	**19**	**11**	**49**	**97**
Avg. Benefit	**25,040**	**21,505**		**25,137**	**29,809**	**31,881**	**24,529**	**26,060**

** 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
GERP Members on 7/1/2014	**143,343**	**48,505**	**121,019**	**71,740**	**3,704**	**7,690**	**396,001**
New members	18,407	0	0	0	0	0	**18,407**
Return to active	2,709	(925)	(1,780)	0	(4)	0	**0**
Terminated non-vested	(7,782)	0	7,782	0	0	0	**0**
Service retirements	(3,134)	(2,561)	0	5,695	0	0	**0**
Terminated deferred	(5,484)	5,484	0	0	0	0	**0**
Terminated refund/transfer	(2,122)	(895)	(1,198)	0	0	0	**(4,215)**
Deaths	(194)	(120)	(297)	(1,952)	(142)	(508)	**(3,213)**
New beneficiary	0	0	0	0	0	576	**576**
Disabled	(103)	0	0	0	103	0	**0**
Data adjustments	(19)	2,080	(160)	82	43	(35)	**1,991**
Net change	2,278	3,063	4,347	3,825	0	33	**13,546**
GERP Members on 6/30/2015	**145,621**	**51,568**	**125,366**	**75,565**	**3,704**	**7,723**	**409,547**
MERF Members on 6/30/2015	**29**	**37**	**0**	**2,807**	**97**	**696**	**3,666**
Total Members on 6/30/2015	**145,650**	**51,605**	**125,366**	**78,372**	**3,801**	**8,419**	**413,213**

Terminated Member Statistics	**Deferred Retirement**	**Other Non-Vested**	**Total**
Number*	51,605	125,366	176,971
Average age	50.6	47.1	48.1
Average service	7.5	1.0	2.9
Average annual benefit, with augmentation to Normal Retirement Date and 60% CSA load**	$ 9,558	N/A	$ 9,558
Average refund value, with 60% CSA load	$ 15,313	$1,007	$ 5,179

** Includes 37 deferred MERF members*

*** 30% CSA load for deferred MERF members*

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 14.66% 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, 2015
A. Actuarial Value of Assets			$ 17,974,439
B. Expected Future Assets			
1. Present value of expected future statutory supplemental contributions*			4,738,517
2. Present value of future normal cost contributions			3,117,712
3. Total expected future assets: *(1.) + (2.)*			$ 7,856,229
C. Total Current and Expected Future Assets *(A.+ B.3)*			$ 25,830,668
D. Current Benefit Obligations**			
1. Benefit recipients	**Non-Vested**	**Vested**	**Total**
a. Service retirements	$ 0	$ 10,657,481	$ 10,657,481
b. Disability retirements	0	429,812	429,812
c. Survivors	0	1,005,372	1,005,372
2. Deferred retirements with augmentation	0	2,513,778	2,513,778
3. Former members without vested rights	60,183	0	60,183
4. Active members	203,579	7,633,650	7,837,229
5. Total Current Benefit Obligations	$ 263,762	$ 22,240,093	$ 22,503,855
E. Expected Future Benefit Obligations			$ 4,174,808
F. Total Current and Expected Future Benefit Obligations***			$ 26,678,663
G. Unfunded Current Benefit Obligations: *(D.5.) - (A.)*			$ 4,529,416
H. Unfunded Current and Future Benefit Obligations: *(F.) - (C.)*			$ 847,995
I. Accrued Benefit Funding Ratio: *(A.)/(D.)*			79.87%
J. Projected Benefit Funding Ratio: *(C.)/(F.)*			96.82%

* *Per the LCPR Standards for Actuarial Work, calculated assuming the current contribution toward the unfunded liability continues for the entire amortization period.*

** *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	$ 10,805,715	$ 2,217,043	$ 8,588,672
b. Disability benefits	384,404	137,201	247,203
c. Survivor's benefits	200,687	55,136	145,551
d. Deferred retirements	558,436	527,001	31,435
e. Refunds*	62,795	181,331	(118,536)
f. Total	$ 12,012,037	$ 3,117,712	$ 8,894,325
2. Deferred retirements with future augmentation	2,513,778	0	2,513,778
3. Former members without vested rights	60,183	0	60,183
4. Annuitants	12,092,665	0	12,092,665
5. Total	$ 26,678,663	$ 3,117,712	$ 23,560,951
B. Determination of Unfunded Actuarial Accrued Liability (UAAL)			
1. Actuarial accrued liability			$ 23,560,951
2. Current assets (AVA)			17,974,439
3. Unfunded actuarial accrued liability			$ 5,586,512
C. Determination of Supplemental Contribution Rate			
1. Present value of future payrolls through the amortization date of June 30, 2033			$ 69,175,431
2. Supplemental contribution rate: *(B.3.) / (C.1.)*			8.08 % **

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

** *The amortization factor as of June 30, 2015 is 12.3174.*

Development of Costs

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

	Year Ending June 30, 2015		
	Actuarial Accrued Liability	**Current Assets**	**Unfunded Actuarial Accrued Liability**
A. At beginning of year	$ 21,282,504	$ 15,644,540	$ 5,637,964
B. Changes due to interest requirements and current rate of funding			
1. Normal cost, including expenses	$ 408,342	$ 0	$ 408,342
2. Benefit payments	(1,270,958)	(1,270,958)	0
3. Contributions	0	788,880	(788,880)
4. Interest on A., B.1., B.2., and B.3.	1,753,586	1,232,280	521,306
5. Total *(B.1. + B.2. + B.3. + B.4.)*	890,970	750,202	140,768
C. Expected unfunded actuarial accrued liability at end of year *(A. + B.5.)*			$ 5,778,732
D. Increase (decrease) due to actuarial losses (gains) because of experience deviations from expected			
1. Age and service retirements			$ 3,377
2. Disability retirements			(16)
3. Death-in-service benefits			(7,948)
4. Withdrawals			(36,499)
5. Salary increases			(63,597)
6. Investment income			(659,528)
7. Mortality of annuitants			(9,191)
8. Other items			150,921
9. Total			(622,481)
E. Unfunded actuarial accrued liability at end of year before plan amendments and changes in actuarial assumptions *(C. + D.9.)*			$ 5,156,251
F. Change in unfunded actuarial accrued liability due to changes in plan provisions			$ 218,509
G. Change in unfunded actuarial accrued liability due to changes in actuarial assumptions			$ 211,752
H. Change in unfunded actuarial accrued liability due to changes in miscellaneous methodology			$ 0
I. Unfunded actuarial accrued liability at end of year *(E. + F. + G. + H.)**			$ 5,586,512

** The unfunded actuarial accrued liability on a market value of assets basis is $4,979,156.*

Development of Costs

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

The required contribution is defined in Minnesota 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	6.50%	$ 365,125
2. Employer contributions	7.50%	421,273
3. Employer supplemental contributions	0.55%	31,000
4. State contributions	0.11%	6,000
5. Total	14.66%	$ 823,398
B. Required Contributions - Chapter 356		
1. Normal cost		
a. Retirement benefits	5.59%	$ 313,912
b. Disability benefits	0.32%	18,011
c. Survivors	0.14%	7,865
d. Deferred retirement benefits	1.14%	64,063
e. Refunds*	0.43%	24,159
f. Total	7.62%	$ 428,010
2. Supplemental Contribution amortization of Unfunded Actuarial Accrued Liability by June 30, 2033	8.08%	$ 453,780
3. Allowance for Expenses	0.19%	10,671
4. Total	15.89% **	$ 892,461
C. Contribution Sufficiency/(Deficiency) *(A.3. - B.4.)*	(1.23)%	$ (69,063)

Note: Projected annual payroll for fiscal year beginning on the valuation date: $5,616,092.

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

** *The required contribution on a market value of assets basis is 15.01% of payroll.*

Development of Costs

Determination of Normal Cost – Basic *(Dollars in Thousands)*

This exhibit compares statutory contributions to normal cost for the group of Basic Plan active members.

	Percent-of-Payroll	Dollar Amount
A. Statutory contributions - Chapter 353		
1. Employee contributions	9.10%	$ 41
2. Employer contributions	11.78%	53
3. Total	20.88%	$ 94
B. Required contributions - Chapter 356		
1. Normal cost		
a. Retirement benefits	2.81%	$ 13
b. Disability benefits	0.24%	1
c. Survivors	0.10%	0
d. Deferred retirement benefits	3.30%	15
e. Refunds*	0.57%	3
f. Total	7.02%	$ 32

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

Note: Projected annual payroll for fiscal year beginning on the valuation date: $452.

Development of Costs

This exhibit compares statutory contributions to normal cost for the group of Coordinated Plan active members.

Determination of Normal Cost – Coordinated *(Dollars in Thousands)*

	Percent-of-Payroll	Dollar Amount
A. Statutory contributions - Chapter 353		
1. Employee contributions	6.50%	$ 364,882
2. Employer contributions	7.50%	421,018
3. Total	14.00%	$ 785,900
B. Required contributions - Chapter 356		
1. Normal cost		
a. Retirement benefits	5.59%	$ 313,798
b. Disability benefits	0.32%	17,963
c. Survivors	0.14%	7,859
d. Deferred retirement benefits	1.14%	63,995
e. Refunds*	0.43%	24,138
f. Total	7.62%	$ 427,753

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

Note: Projected annual payroll for fiscal year beginning on the valuation date: $5,613,568.

Development of Costs

This exhibit compares statutory contributions to normal cost for the MERF Plan active members.

Determination of Normal Cost – MERF *(Dollars in Thousands)*

	Percent of Payroll	Dollar Amount
A. Statutory contributions - Chapter 353		
1. Employee contributions	9.75%	$ 202
2. Employer contributions	9.75%	202
3. Employer supplemental contributions	1496.14%	31,000
4. State contributions	289.58%	6,000
5. Total	1805.22%	$ 37,404
B. Required contributions - Chapter 356		
1. Normal cost		
a. Retirement benefits	4.88%	$ 101
b. Disability benefits	2.25%	47
c. Survivors	0.31%	6
d. Deferred retirement benefits	2.54%	53
e. Refunds*	0.86%	18
f. Total	10.84%	$ 225

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

Note: Projected annual payroll for fiscal year beginning on the valuation date: $2,072.

Development of Costs

Special Groups – Minneapolis Employees Retirement Fund (MERF)

The MERF Division merged with PERA on January 1, 2015. Former members of the MERF Division are now members of this plan.

Year Ending June 30, 2015

Group	Number	Average Annual Benefits	Average Age	Actuarial Accrued Liability (000's)
Active Members	29	N/A	63.1	$ 18,984
Deferred Retirements	37	N/A	62.5	6,522
Service Retirements	2,807	$ 36,862	75.7	931,449
Disability Retirements	97	26,060	72.7	20,713
Survivors	696	32,998	81.1	161,009
Total	**3,666**	**$35,824**	**76.4**	**$1,138,677**

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 be different.

Actuarial Cost Method

Actuarial Accrued Liability and required contributions in this report are computed using the Entry Age Normal Cost Method. This method is prescribed by Minnesota Statute. 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.

Valuation of Future Post-Retirement Benefit Increases

If the plan has reached the funding ratio threshold required to pay a 2.5% benefit increase, Minnesota statutes require the 2.5% benefit increase rate to be reflected in the liability calculations. If the plan has not yet reached the funding ratio threshold required to pay a 2.5% benefit increase, Minnesota statutes require a projection to be performed to determine the expected attainment of the funding ratio threshold, and the expected reversion to a 2.5% benefit increase rate must be reflected in the liability calculations.

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; and
- 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.

Payment on the Unfunded Actuarial Accrued Liability

Payment equals a level percentage-of-payroll each year to the statutory amortization date of June 30, 2033 assuming payroll increases of 3.50% per annum (3.50% for MERF). 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

Based on direction from the LCPR's actuary, the July 1, 2014 entry age normal accrued liability and normal cost were calculated using an equivalent single interest rate of 8.41% due to the statutory select and ultimate discount rate structure. This method is no longer needed since the discount rate was changed from the select and ultimate assumptions to 8.00% for all years effective July 1, 2015.

Actuarial Basis

Summary of Actuarial Assumptions – Basic and Coordinated

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 experience study dated August 2009, prepared by a former actuary, and an economic assumption review dated September 11, 2014. An experience study for the 2008-2014 period was issued on June 30, 2015. This report recommended many changes to demographic assumptions, expected to be effective at a future date.

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	8.00% per annum.
Benefit increases after retirement	1.00% per annum through 2034 and 2.5% per annum thereafter.
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.
Inflation	2.75% per year.
Payroll growth	3.50% per year.
Mortality rates	
Healthy Pre-retirement	RP-2000 employee generational mortality table, projected with mortality improvement scale AA, white collar adjustment, set forward 5 years for males and set back 3 years for females.
Healthy Post-retirement	RP-2000 annuitant generational mortality table, projected with mortality improvement scale AA, white collar adjustment, no adjustment for males and set back 2 years for females. 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 disabled mortality table set back 4 years for males and set forward 7 years for 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.

Actuarial Basis

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

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 — 40.00% 2 — 15.00% 3 — 10.00%
Disability	Age-related rates based on experience; see table of sample rates.
Allowance for combined service annuity	Liabilities for active members are increased by 0.80% and liabilities for former members are increased by 60.00% 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 dates 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 Normal Retirement.
Percentage married	75% of male and 70% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Males are assumed to have a beneficiary 3 years younger, while females are assumed to have a beneficiary 2 years older. 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: 5% elect 25% Joint & Survivor option 15% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 30% elect 100% Joint & Survivor option Females: 5% elect 25% Joint & Survivor option 5% 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 – Basic and Coordinated (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 2,257 members reported with zero salary. We used prior year salary (1,491 members), if available; otherwise high five salary with a 10% load to account for salary increases (692 members). If neither prior year salary or high five salary was available, we assumed a value of $35,000. There were also 1,922 members reported without a gender and 135 members reported with an invalid date of birth. We assumed a date of birth based on an entry age of 38 (the average age of new entrants in the 2014 valuation) and female gender. <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 (251 members), we assumed a value of $24,000. If credited service was not reported (125 members), we assumed credited service was elapsed time from hire to termination date (84 members); otherwise nine years. If termination date was not reported (115 members), we assumed the termination date was equal to hire date plus credited service; otherwise the valuation date unless they are noted as a pre-July 1, 1989 hire, then June 30, 1989. If reported termination date occurs prior to reported hire date, the two dates were swapped. There were 37 members reported with an invalid date of birth and 223 members reported without a gender. We assumed a date of birth of July 1, 1967 and female gender. <u>Data for retired members:</u> There were seven members reported with an invalid date of birth. We assumed a date of birth of July 1, 1945.
Changes in actuarial assumptions	The discount rate was changed from 8.0% through June 30, 2017 and 8.5% thereafter to 8.0% for all years. The inflation assumption was changed from 3.00% to 2.75% The payroll growth assumption was changed from 3.75% to 3.50%. Assumed increases in member salaries were decreased by 0.25% at all ages. The assumed post-retirement benefit increase rate was changed from 1.0% per year through 2026 and 2.5% thereafter to 1.0% per year through 2034 and 2.5% per year thereafter. See page 4 for additional detail about this assumption.

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%	0.04%	0.02%	2.26%	0.75%
25	0.04	0.02	0.04	0.02	2.26	0.75
30	0.04	0.02	0.06	0.02	2.26	0.75
35	0.06	0.04	0.09	0.04	2.26	0.75
40	0.09	0.06	0.13	0.05	2.26	0.90
45	0.13	0.08	0.20	0.08	2.26	1.35
50	0.60	0.13	0.27	0.12	2.38	1.87
55	0.54	0.29	0.43	0.19	3.03	2.41
60	0.66	0.47	0.67	0.28	3.67	3.13
65	1.16	0.74	0.98	0.45	4.35	4.29
70	1.93	1.24	3.36	0.70	5.22	5.95

* *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 we note that although the prescribed assumption is reasonable in total, it 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	8.40%	8.40%	0.01%	0.01%
25	6.90	6.90	0.01	0.01
30	5.40	5.40	0.02	0.02
35	3.90	4.20	0.05	0.04
40	3.00	3.50	0.09	0.06
45	2.50	3.00	0.14	0.09
50	2.00	2.50	0.23	0.16
55	0.00	0.00	0.49	0.26
60	0.00	0.00	0.82	0.46
65	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00

Actuarial Basis

Summary of Actuarial Assumptions (Concluded)

	Retirement	
Age	Rule of 90 Eligible	Other
55	20%	6%
56	20	6
57	20	6
58	20	7
59	20	8
60	20	8
61	25	12
62	35	20
63	25	16
64	25	18
65	35	35
66	25	25
67	20	20
68	20	20
69	20	20
70	20	20
71+	100	100

Salary Scale	
Year	Increase
1	11.78%
2	8.65
3	7.21
4	6.33
5	5.72
6	5.27
7	4.91
8	4.62
9	4.38
10	4.17
11	3.99
12	3.83
13	3.69
14	3.57
15	3.45
16	3.35
17	3.26
18+	3.25

Actuarial Basis

Summary of Actuarial Assumptions - MERF

The following assumptions were used in valuing the liabilities and benefits under the plan for MERF members only. Assumptions regarding investment return, mortality, and benefit increases are the same as shown in the Basic and Coordinated Plan assumption summary.

Salary increases	Total reported pay for prior calendar year increased 1.86% (half year of 3.75%, compounded) to prior fiscal year and 3.75% annually for each future year.
Retirement	Active members are assumed to retire at age 61, or immediately if currently age 61 or older.
Withdrawal	Rates are shown in rate table.
Disability	Age-related rates based on experience; see table of sample rates.
Allowance for combined service annuity	Liabilities for active members are increased 0.20% and liabilities for former members are increased by 30.00% to account for the effect of some participants having eligibility for a Combined Service Annuity.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 60.
Percentage married	66.67% of active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Females are assumed to be three years younger than their male spouses. 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	Members are assumed to elect a life annuity.
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: There were no members with missing genders or dates of birth. <u>Data for active members:</u> There were no active members with missing salary or service. <u>Data for terminated members:</u> Benefits were provided by PERA for 8 members. For the remaining members, we calculated benefits using the reported Average Salary, credited service and termination date from the 2014 valuation data file. <u>Data for Retired members:</u> There was one survivor reported with an expired benefit. This member was excluded from the valuation and the enclosed exhibits. There were no members reported with missing benefits.

Actuarial Basis

Summary of Actuarial Assumptions – MERF (Concluded)

	Withdrawal		Disability Retirement	
Age	Male	Female	Male	Female
20	21.00%	21.00%	0.21%	0.21%
25	11.00	11.00	0.21	0.21
30	5.00	5.00	0.23	0.23
35	1.50	1.50	0.30	0.30
40	1.00	1.00	0.41	0.41
45	1.00	1.00	0.61	0.61
50	1.00	1.00	0.93	0.93
55	1.00	1.00	1.60	1.60
60	1.00	1.00	0.00	0.00
65	0.00	0.00	0.00	0.00

Actuarial Basis

Summary of Plan Provisions - Basic

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	A public employee who is not covered under the Social Security Act. General exceptions are employees covered by other public funds, certain part-time employees and full-time students under age 23.
Contributions	Shown as a percent of salary: <u>Member</u> 9.10% of salary <u>Employer</u> 11.78% of salary Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
Allowable service	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 and employer-paid deferred compensation deposits, 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 annual 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: 100% vested after 5 years of Allowable Service. (Not applicable since all Basic members were hired before 1968.)
Retirement	
<u>Normal retirement benefit</u>	
Age/service requirement	Age 65 and vested. Proportionate retirement annuity is available at age 65 and one-year of Allowable Service.
Amount	2.70% of Average Salary for each year of Allowable Service.
<u>Early retirement benefit</u>	
Age/service requirement	(a.) Age 55 and vested. (b.) Any age with 30 years of Allowable Service. (c.) Rule of 90: Age plus Allowable Service totals 90.

Actuarial Basis

Summary of Plan Provisions – Basic (Continued)

Retirement (Continued)

Early retirement benefit (Continued)

Age/service requirement	The greater of (a) or (b):
Amount	(a.) 2.20% of Average Salary for each of the first ten years of Allowable Service and 2.70% of Average Salary for each subsequent year with reduction of 0.25% for each month if the Member is under age 65 at time of retirement and has less than 30 years of Allowable Service or if the Member is under age 62 and has 30 or more years of Allowable Service. No reduction if age plus years of Allowable Service totals 90. (b.) 2.70% of Average Salary for each year of Allowable Service assuming augmentation to age 65 at 3.00% per year and actuarial reduction for each month the Member is under age 65.
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. If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant's benefit increases to the Life Annuity amount. This "bounce back" is subsidized by the plan.
Benefit increases	Benefit recipients receive a future annual 1.0% post-retirement benefit increase. If the funding ratio reaches 90% for two consecutive years, the benefit increase will revert to 2.5%. If, after reverting to a 2.5% benefit increase, the funding ratio declines to less than 80% for one-year or less than 85% for two consecutive years, the benefit increase will decrease 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. 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 – Basic (Continued)

Disability	
Disability benefit	
Age/service requirement	Total and permanent disability before normal retirement age if vested. Since all remaining active Basic members are over normal retirement age, none are eligible for disability benefits.
Amount	Normal Retirement benefit based on Allowable Service and Average Salary at disability without reduction for commencement before Normal Retirement Age. Supplemental benefit of \$25 per month payable to the later of the normal retirement age or the five-year anniversary of commencement of disability. The disability benefit is reduced to that amount which, when added to Workers' Compensation, does not exceed the salary the disabled Member received as of the date of the disability or the salary currently payable for the same employment position substantially similar to the one the person held as of the date of the disability, whichever is greater. If a member becomes 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 at the time the Member became disabled and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%. Payments stop earlier if disability ceases. If death occurs prior to age 65, or within five years of disability, the surviving spouse can receive a refund or a survivor benefit. Dependent children are entitled to dependent child benefits subject to the 70.00% family maximum. Payments revert to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.
Retirement after disability	
Age/service requirement	Normal retirement age
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.
Benefit increases	Same as for retirement.

Actuarial Basis

Summary of Plan Provisions - Basic (Continued)

Death

Surviving spouse benefit

Age/service requirement	Active Member with 18 months of Allowable Service or while Member is receiving a disability benefit.
Amount	50.00% of salary averaged over last six months. Family benefit is maximum of 70.00% and minimum of 50.00% of average salary. 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 benefit as of 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 may be elected in lieu of this benefit.
Benefit increases	Same as for retirement.

Surviving dependent children's benefit

Age/service requirement	Active Member with 18 months of Allowable Service or while Member is receiving a disability benefit.
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 average salary. Benefits paid until child marries, dies, or attains age 18 (age 22 if full-time student). If a member becomes deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor 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 the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.

Actuarial Basis

Summary of Plan Provisions - Basic (Continued)

Death (Continued)	
Surviving spouse optional annuity	
Age/service requirement	Member or former Member who dies before retirement benefits commence and other survivor annuity is waived by spouse.
Amount	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced the same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer. If a member becomes deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit as of 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.
Refund of contributions with interest	
Age/service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	The excess of the Member's contributions with 6.00% interest until June 30, 2011; 4.00% interest thereafter over any disability or survivor benefits paid.
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 three or more years of Allowable Service.

Actuarial Basis

Summary of Plan Provisions - Basic (Continued)

Termination (Continued)	
Deferred benefit	
Age/service requirement	Fully vested.
Amount	Benefit computed under law in effect at termination and increased by the following "augmentation" percentage 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% thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (d.) 5.00% 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. Members active with a public employer the day prior to the privatization of the employer become vested immediately and receive enhanced augmentation (unless the enhancement results in a net loss to the Plan). Amount is payable at a normal or early retirement. Augmentation equals 2% compounded annually, unless the enhancement results in a net loss to the Plan, in which case augmentation equals 1% compounded annually. If privatization occurred prior to January 1, 2011, augmentation occurs at the rate of 4.0% compounded annually through the year the Member turns age 55 and 6.0% thereafter until the annuity begins. If privatization occurred prior to January 1, 2007 (or January 1, 2008 for Hutchinson Area Health Care), augmentation occurs at the rate of 5.5% compounded annually through the year the Member turns age 55 and 7.5% thereafter until the annuity begins. 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 the RP-2000 mortality table for healthy annuitants, white collar adjustment, projected to 2025, females set back two years and no setback for males, blended 45% males, 7.5% post-retirement interest, and 8.5% pre-retirement interest.

Actuarial Basis

Summary of Plan Provisions - Basic (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; and (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	None.

Actuarial Basis

Summary of Plan Provisions - Coordinated

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	A public employee who is covered under the Social Security Act. General exceptions are employees covered by other public funds, certain part-time employees and full-time students under age 23. City managers and persons holding certain elective office positions may choose to become Members.
Contributions Effective date	Shown as a percent of salary: **Member** / **Employer**
January 1, 2015	6.50% / 7.50% Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
Allowable service	Service during which member contributions are deducted. 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 leave and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts and employer-paid deferred compensation deposits, 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 annual salary. Average salary is based on all Allowable Service if less than five years.
Vesting	Hired before July 1, 2010: 100% vested after three years of Allowable Service. Hired after June 30, 2010: 100% vested after five years of Allowable Service.
Retirement Normal retirement benefit Age/service requirement	First hired before July 1, 1989: (a.) Age 65 and vested. (b.) Proportionate retirement annuity is available at age 65 and one year of Allowable Service.
Amount	1.70% of Average Salary for each year of Allowable Service.

Actuarial Basis

Summary of Plan Provisions – Coordinated (Continued)

Retirement (Continued)

Normal retirement benefit (Continued)

Age/service requirement

First hired after June 30, 1989:

(a.) The greater of age 65 or the age eligible for full Social Security retirement benefits but no later than age 66 and vested.
(b.) Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service.

Amount

1.70% of Average Salary for each year of Allowable Service.

Early retirement benefit

Age/service requirement

First hired before July 1, 1989:

(a.) Age 55 and vested.
(b.) Any age with 30 years of Allowable Service.
(c.) Rule of 90: Age plus Allowable Service totals 90.

First hired after June 30, 1989:

(a.) Age 55 and vested.

Amount

First hired before July 1, 1989:

The greater of (a) or (b):

(a.) 1.20% of Average Salary for each of the first ten years of Allowable Service and 1.70% of Average Salary for each subsequent year with reduction of 0.25% for each month the Member is under age 65 at time of retirement or under age 62 if 30 years of Allowable Service. No reduction if age plus years of Allowable Service totals 90.
(b.) 1.70% of Average Salary for each year of Allowable Service assuming augmentation to age 65 at 3.00% per year and actuarial reduction for each month the Member is under age 65.

First hired after June 30, 1989:

(a.) 1.70% of Average Salary for each year of Allowable Service assuming augmentation to normal retirement age at 3.00% per year (2.50% if hired after June 30, 2006) and actuarial reduction for each month the Member is under normal retirement age.

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 . If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant's benefit increases to the Life Annuity amount. This "bounce back" is subsidized by the plan.

Actuarial Basis

Summary of Plan Provisions – Coordinated (Continued)

Retirement (Continued)	
Benefit increases	Benefit recipients receive a future annual 1.0% post-retirement benefit increase. If the funding ratio reaches 90% for two consecutive years, the benefit increase will revert to 2.5%. If, after reverting to a 2.5% benefit increase, the funding ratio declines to less than 80% for one-year or less than 85% for two consecutive years, the benefit increase will decrease 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. 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 $25 times each full year of Allowable Service. 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.
Disability	
Disability benefit	
Age/service requirement	Total and permanent disability before normal retirement age if vested.
Amount	Normal Retirement benefit based on Allowable Service and Average Salary at disability without reduction for commencement before normal retirement age. The disability benefit is reduced to that amount which, when added to Workers' Compensation, does not exceed the salary the disabled Member received as of the date of the disability or the salary currently payable for the same employment position substantially similar to the one the person held as of the date of the disability, whichever is greater. If a Member becomes 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 the post-retirement interest rates from 5.00% to 6.00%. Payments stop if disability ceases or death occurs. Payments change to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.

Actuarial Basis

Summary of Plan Provisions – Coordinated (Continued)

Disability (Continued)	
Retirement after disability	
Age/service requirement	Normal retirement age.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.
Benefit increases	Same as for retirement.
Death	
Surviving spouse optional annuity	
Age/service requirement	Member or former Member who dies before retirement or disability benefits commence.
Amount	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced the same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer. If a member becomes deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor 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 the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.
Refund of contributions	
Age/service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	The excess of the Member's contributions with 6.00% interest until June 30, 2011; 4.00% interest thereafter over any disability or survivor benefits paid.
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.

Actuarial Basis

Summary of Plan Provisions – Coordinated (Continued)

Termination (Continued)	
Deferred benefit	
Age/service requirement	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; or (e.) 1.00% from January 1, 2012 to when the benefit begins. Members who terminate after 2011 will receive no future augmentation. Members active with a public employer the day prior to the privatization of the employer become vested immediately and receive enhanced augmentation (unless the enhancement results in a net loss to the Plan). Amount is payable at a normal or early retirement. Augmentation equals 2% compounded annually, unless the enhancement results in a net loss to the Plan, in which case augmentation equals 1% compounded annually. If privatization occurred prior to January 1, 2011, augmentation occurs at the rate of 4.0% compounded annually through the year the Member turns age 55 and 6.0% thereafter until the annuity begins. If privatization occurred prior to January 1, 2007 (or January 1, 2008 for Hutchinson Area Health Care), augmentation occurs at the rate of 5.5% compounded annually through the year the Member turns age 55 and 7.5% thereafter until the annuity begins. 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.
Actuarial equivalent factors	Actuarially equivalent factors based on the RP-2000 mortality table for healthy annuitants, white collar adjustment, projected to 2025, females set back two years and no setback for males, blended 45% males, 7.5% post-retirement interest and 8.5% pre-retirement interest. The post-retirement interest rate will change to 6.5% on the earlier of the effective date of the next mortality adjustment or July 1, 2017.

Actuarial Basis

Summary of Plan Provisions – Coordinated (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
Contribution Stabilizer	The following is a summary of contribution stabilizer provisions in Minnesota Statute 353.27: • If a contribution sufficiency of more than 1.0% exists, member and employer contributions may be adjusted by the Board of Directors to a level necessary to maintain a 1.0% sufficiency. Member and employer contributions may not be less than the sum of normal cost and administrative expenses. • If a contribution deficiency of at least 0.5% exists, the member and employer contribution rates may be increased by the Board of Directors to eliminate the deficiency. • Any adjustment to the contribution rates must be reported to the Legislative Commission on Pensions and Retirement (LCPR) by January 15 following the most recent valuation report. If the LCPR does not recommend against or alter the change in rates, the adjustment becomes effective on the salary paid after the next January 1st.
Changes in Plan Provisions	The Contribution Stabilizer statutes were revised to make changes to contribution rates less prescriptive and more flexible.

Actuarial Basis

Summary of Plan Provisions of Minneapolis Employees Retirement Fund (MERF)

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/employee rule	An employee of the City of Minneapolis, the Metropolitan Airports Commission, the Met Council/Environmental Services, the Municipal Employees Retirement Fund, and Special School District No. 1 if covered prior to July 1, 1978. Employees covered July 1, 1978 or later are covered by the Public Employees Retirement Association (PERA) Plan. Effective July 1, 1992, licensed peace officers and firefighters who are employed by the Metropolitan Airports Commission and covered by the Minneapolis Employees Retirement Fund will receive the greater of retirement, disability, or survivor benefits under: a) The Minneapolis Employees Retirement Fund; or b) The Public Employees Retirement Association (PERA) Police & Fire Plan.
Full consolidation	The MERF Division fully merged with PERA's General Employees Retirement Plan, effective January 1, 2015. Upon consolidation, state and employer contributions were revised as shown herein.
Contributions Member	 9.75% of salary
Employer	9.75% of salary (Employer Regular Contributions) Employer Regular and Additional Contributions will be paid as long as there are active members. Employer Supplemental Contribution equals $31,000,000 in calendar years 2015 and 2016 and 21,000,000 in calendar years 2017 to 2031.
Contribution Allocation	Employer Supplemental Contributions are allocated to the employers in proportion to their share of the actuarial accrued liability of MERF on July 1, 2009, as follows:

Employer	Allocation
City of Minneapolis	54.78%
Minneapolis Park Board	10.33%
Met Council	1.74%
Metropolitan Airport Commission	5.76%
Municipal Building Commission	1.08%
Minneapolis School District No. 1	23.04%
Hennepin County	3.17%
MnSCU	0.10%
Total	100.00%

Actuarial Basis

Summary of Plan Provisions of Minneapolis Employees Retirement Fund (MERF) (Continued)

State contributions	The State's contribution equals $6,000,000 in 2015 and 2016, and $16,000,000 thereafter. The State's contributions are payable by September 30 each year and end on September 15, 2031.
Allowable service	Service during which member contributions were made. Allowable Service may also include certain leaves of absence, military service and service prior to becoming a member. Allowable service also includes time on duty disability provided that the member returns to active service if the disability ceases.
Salary	All amounts of salary, wages or compensation.
Average salary	Average of the five highest calendar years of salary out of the last ten calendar years.
Retirement	
Normal retirement benefit	
Age/service requirement	Age 60 and 10 years of employment. Any age with 30 years of employment. Proportionate retirement annuity is available at age 65 and 1 year allowable service.
Amount	2.00% of average salary for the first 10 years of allowable service plus 2.50% of average salary for each subsequent year of allowable service.

Actuarial Basis

Summary of Plan Provisions of Minneapolis Employees Retirement Fund (MERF) (Continued)

Disability

Disability benefit	
Age/service requirement	Total and permanent disability before age 60 with five years of allowable service, or no allowable service if a work-related disability.
Amount	2.00% of average salary for the first 10 years of disability service plus 2.50% of average salary for each subsequent year of disability service. Disability service is the greater of (a) or (b) where: (a.) equals allowable service plus service projected to age 60, subject to a maximum of 22 years, and (b.) equals allowable service. Benefit is reduced by Workers' Compensation benefits. Payments stop at age 60 or earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.
Disability after separation	
Age/service requirement	Total and permanent disability after electing to receive a retirement benefit but before age 60.
Amount	Actuarial equivalent of total credit to member's account.
Retirement after disability	
Age/service requirement	Total and permanent disability after electing to receive a retirement benefit but before age 60. Employee is still disabled after age 60.
Amount	Benefit continues according to the option selected.

Actuarial Basis

Summary of Plan Provisions of Minneapolis Employees Retirement Fund (MERF) (Continued)

Death	
Pre-retirement survivor's spouse benefit	
Age/service requirement	Active member with 18 months of allowable service.
Amount	30% of salary averaged over the last six months to the surviving spouse plus 10% of salary averaged over the last six months to each surviving child. Maximum benefit is $900 per month.
Pre-retirement survivor's spouse annuity	
Age/service requirement	Active member or former member who dies before retirement with 20 years of allowable service.
Amount	Actuarial equivalent of a single life annuity which would have been paid as a retirement benefit on the date of death without regard to eligibility age for retirement benefit. If there is no surviving spouse, the designated beneficiary may be a dependent child or dependent parent.
Refund of accumulated city contributions	
Age/service requirement	Active member or former member dies after 10 years of allowable service and prior to retirement.
Amount	Present value of the City's annual installments of $60 or, in the case of a former member, the net accumulation of city deposits. This benefit is not payable if survivor's benefits are paid.
Lump sum	
Age/service requirement	Death prior to service or disability retirement without an eligible surviving beneficiary.
Amount	$750 with less than 10 years allowable service, or $1,500 with 10 or more years of allowable service.
Refund of member contributions at death	
Age/service requirement	Active member or former member dies before retirement.
Amount	The excess of the member's contributions (exclusive of the contributions to the survivor's account) plus interest to the date of death.

Actuarial Basis

Summary of Plan Provisions of Minneapolis Employees Retirement Fund (MERF) (Concluded)

Termination	
<u>Deferred benefit</u>	
Age/service requirement	Three years of allowable service.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation), compounded annually: (a.) 0.00% prior to July 1, 1971, (b.) 5.00% from July 1, 1971 to January 1, 1981, and (c.) 3.00% thereafter until the annuity begins. Amount is payable at or after age 60.
<u>Refund of member contributions upon termination</u>	
Age/service requirement	Termination of public service.
Amount	Member's contributions with interest. A deferred annuity may be elected in lieu of a refund if vested.
Form of payment	▪ Life annuity. ▪ Life annuity with 3, 5, 10 or 15 years guaranteed. ▪ Life annuity with lump sum death benefit. ▪ Joint & Survivor (with or without bounce back feature).
Optional form conversion factors	1986 PET mortality table with a one-year setback, blended 50% male and 50% female, and 5% interest.
Two dollar bill and annuity	Optional Two Dollar Bill money purchase annuity available at age 55 with 20 years of service if member had service prior to June 28, 1973. According to PERA, this option is rarely utilized. We have assumed that remaining active members will not elect this optional benefit.
Benefit increases	Benefit recipients receive future annual 1.0% benefit increases. If the accrued liability funding ratio of the General Employees Retirement Plan reaches 90% (on a market value of assets basis) for two consecutive years, the benefit increase will change to 2.5%. If, after reverting to a 2.5% benefit increase, the funding ratio declines to less than 80% for one-year or less than 85% for two consecutive years, the benefit increase will decrease to 1.0%.
Changes in plan provisions	The MERF Division was fully merged with PERA's General Employees Retirement Plan effective January 1, 2015. Upon consolidation, state and employer contributions were revised.

Additional Schedules

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)
7-1-1993	$ 4,374,459	$ 5,784,318	$ 1,409,859	75.63 %	$ 2,403,558	58.66 %
7-1-1994	4,747,128	6,223,622	1,476,494	76.28	2,557,522	57.73
7-1-1995	5,138,461	6,622,069	1,483,608	77.60	2,679,069	55.38
7-1-1996	5,786,398	7,270,073	1,483,675	79.59	2,814,126	52.72
7-1-1997	6,658,410	8,049,666	1,391,256	82.72	2,979,260	46.70
7-1-1998	7,636,668	8,769,303	1,132,635	87.08	3,271,737	34.62
7-1-1999	8,489,177	9,443,678	954,501	89.89	3,302,808	28.90
7-1-2000	9,609,367	11,133,682	1,524,315	86.31	3,437,954	44.34
7-1-2001	10,527,270	12,105,337	1,578,067	86.96	3,466,587	45.52
7-1-2002	11,017,414	12,958,105	1,940,691	85.02	3,809,864	50.94
7-1-2003	11,195,902	13,776,198	2,580,296	81.27	4,387,649	58.81
7-1-2004	11,477,961	14,959,465	3,481,504	76.73	3,968,034	87.74
7-1-2005	11,843,936	15,892,555	4,048,619	74.53	4,096,138	98.84
7-1-2006	12,495,207	16,737,757	4,242,550	74.65	4,247,109	99.89
7-1-2007	12,985,324	17,705,627	4,720,303	73.34	4,448,954	106.10
7-1-2008	13,048,970	17,729,847	4,680,877	73.60	4,722,432	99.12
7-1-2009	13,158,490	18,799,416	5,640,926	69.99	4,778,708	118.04
7-1-2010	13,126,993	17,180,956	4,053,963	76.40	4,804,627	84.38
7-1-2011	13,455,753	17,898,849	4,443,096	75.18	5,079,429 [2]	87.47
7-1-2012	13,661,682	18,598,897	4,937,215	73.45	5,142,592 [3]	96.01
7-1-2013	14,113,295	19,379,769	5,266,474	72.82	5,246,928 [3]	100.37
7-1-2014	15,644,540	21,282,504	5,637,964	73.51	5,351,920 [3]	105.34
7-1-2015	17,974,439	23,560,951	5,586,512	76.29	5,549,255 [4]	100.67

[1] *Information prior to 2012 provided by prior actuaries. See prior reports for additional detail.*
[2] *Assumed equal to actual member contributions divided by 6.125%.*
[3] *Assumed equal to actual member contributions divided by 6.25%.*
[4] *Assumed equal to actual member contributions divided by 6.375%.*

Additional Schedules

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

(Dollars in Thousands)

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[2] (e)	Percentage Contributed (e)/(d)
1993	9.95 %	$ 2,403,558	$ 106,359	$ 132,795	$ 113,183	85.23%
1994	9.58	2,557,522	112,940	132,071	119,390	90.40
1995	9.76	2,679,069	115,986	145,491	123,984	85.22
1996	9.61	2,814,126	121,525	148,913	129,738	87.12
1997	9.75	2,979,260	128,234	162,244	136,686	84.25
1998	9.62	3,271,737	140,385	174,356	151,499	86.89
1999	9.63	3,302,808	158,475	159,585	173,370	108.64
2000	9.22	3,437,954	171,073	145,906	186,637	127.92
2001	11.84	3,466,587	173,380	237,064	188,208	79.39
2002	11.85	3,809,864	191,422	260,047	206,982	79.59
2003	11.52	4,387,649	205,963	299,494	221,689	74.02
2004	12.25	3,968,034	215,697	270,387	225,745	83.49
2005	12.72	4,096,138	216,701	304,328	232,963	76.55
2006	13.26	4,247,109	235,901	327,266	255,531	78.08
2007	13.41	4,448,954	260,907	335,698	283,419	84.43
2008	13.86	4,722,432	280,007	374,522	303,304	80.98
2009	14.22	4,778,708	298,381	381,151	328,603	86.21
2010	15.55	4,804,627	303,571	443,548	342,678	77.26
2011	12.46	5,079,429 [3]	311,115	321,782	357,596	111.13
2012	13.47	5,142,592 [4]	321,412	371,295	368,037	99.12
2013	14.46	5,246,928 [4]	327,933	430,773	372,652	86.51
2014	15.15	5,351,920 [4]	334,495	476,321	382,251	80.25
2015	15.80	5,549,255 [5]	353,765	523,017	435,115	83.19
2016	15.89					

1 Information prior to 2012 provided by prior actuary. See prior reports for additional detail.
2 Includes contributions from other sources (if applicable).
3 Assumed equal to actual member contributions divided by 6.125%.
4 Assumed equal to actual member contributions divided by 6.25%.
5 Assumed equal to actual member contributions divided by 6.375%.

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, 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.
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.