



Minnesota Legislative Commission on Pensions and Retirement

Replication of the July 1, 2015 Actuarial Valuation of the
Public Employees Retirement Association of Minnesota
General Employees Retirement Plan

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Actuarial Valuation Opinion

This report presents the results of the actuarial valuation replication of the Public Employees Retirement Association of Minnesota (“PERA”) General Employees Retirement Plan (“the Plan”) as of July 1, 2015 in accordance with Minnesota Statutes, Section 356.214, Subdivision 4, as directed by the Minnesota Legislative Commission on Pensions and Retirement (“LCPR” or “the Commission”).

This actuarial valuation replication has been prepared based upon participant data and financial information provided by PERA and their retained actuary as of July 1, 2015. We have analyzed the data and other information provided for reasonableness, but we have not independently audited the data. We have no reason to believe the data or other information provided is not complete and accurate, and know of no further information that is essential to the preparation of the actuarial valuation.

All costs, liabilities, rates of interest, and other factors underlying these actuarial computations have been determined on the basis of the same actuarial assumptions and methods used by the retained actuary. It is our opinion that these assumptions and methods are reasonable (or consistent with authoritative guidance) for the purposes described herein.

Future actuarial measurements may differ significantly from 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 operations 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.

Our scope for this replication report did not include analyzing the potential range of such future measurements, and we did not perform that analysis.

This report is prepared solely for the benefit and internal use of the LCPR and the State of Minnesota. This report is not intended for the benefit of any other party and may not be relied upon by any third party for any purpose, and Deloitte Consulting accepts no responsibility or liability with respect to any party other than the LCPR and the State of Minnesota in accordance with its statutory and regulatory requirements.

The undersigned with actuarial credentials collectively meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

To the best of our knowledge, no employee of the Deloitte U.S. Firms (Deloitte & Touche LLP, Deloitte Consulting LLP, Deloitte Financial Advisory Service LLP, and Deloitte Tax LLP) is an officer or director of PERA. In addition, we are not aware of any relationship between the Deloitte U.S. Firms and PERA that may impair or appear to impair the objectivity of the work detailed in this report.

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Executive Summary

Replication Overview

Process and Scope

This actuarial replication report has been prepared per Minnesota Statute Section 356.214, Subdivision 4. The LCPR has engaged Deloitte Consulting, LLP to perform a replication of the July 1, 2015 actuarial valuation of the General Employees Retirement Plan administered by PERA.

The primary purpose of this report is to test the census and financial data, plan provisions, and actuarial assumptions and methods being used by the retained actuary in its July 1, 2015 valuation report by independently performing an actuarial valuation based on the same source data and the statutory plan provisions.

The replication valuation is initially performed without consideration of the retained actuary's report or sample lives. We program the valuation model based on our understanding of applicable assumptions and plan provisions. Once complete, we compare our liability and normal cost results to those of the retained actuary. We also request detailed sample life output to reconcile any differences in the results. If appropriate, we made modifications to our valuation model based on this analysis.

The result of our calculations and the retained actuary's are compared in this report. Because actuarial valuations are complex and rely upon the actuary's chosen actuarial valuation software, differences are expected. Differences greater than 2% of Present Value of Benefits or 5% of Actuarial Accrued Liability are specifically addressed; although some differences that do not meet this threshold are also discussed. We understand, as noted above, that the valuation process is sufficiently complex as to result in variations of this magnitude among actuaries valuing identical benefits and assumptions.

In addition to our independent determination of liabilities and costs, we reviewed the retained actuary's report for completeness and potential improvements. The process by which actuarial valuations are completed is highly technical and not every step can be documented in a valuation report. Where we believe additional documentation may be beneficial to the reader, we've suggested a more robust disclosure. In addition to process oriented commentary, we've considered industry best practices in communicating complex financial concepts to key stakeholders. Additional recommendations have been made based on our research with the goal of providing information that would be valuable to the reader within acknowledged time and resource constraints.

All of the steps above have been completed in accordance with the requirements of Minnesota Statutes and the Standards for Actuarial Work adopted by the LCPR. Our work is also governed by applicable actuarial standards of practice published by the Actuarial Standards Board.

Replication Overview

Summary of Key Findings

In general, we found the actuarial liability and contribution calculations completed by the retained actuary to be consistent with ours within a reasonable threshold. Minor differences are identified below. We are satisfied with the aggregate July 1, 2015 actuarial valuation results as reported by the retained actuary. We believe that they represent a reasonable estimate of the present value of future benefits, accrued liability, and normal cost of the Plan.

The following key findings were identified during the process of our review:

- **Census Data:** PERA directly provided us with the census data. We made modifications that we deemed necessary and appropriate. Later in the process, we received the retained actuary's modified database, which matched ours. Therefore, we identified no errors in the data collection and reconciliation process. Since the PERA census data did not provide projected benefit amounts for vested terminated members, we calculated the projected benefit amounts based on the census data provided. As shown on page 17 of this report, differences in the average projected annual benefit were within a reasonable threshold.
- **Plan Provisions:** The plan provisions as identified in state statute were programmed into our valuation software and compared to those valued by the retained actuary. All benefits appear consistent, with the following exception:
 - The death benefit provided to participants hired prior to July 1, 1989. Our understanding of Minnesota Statutes, Sections, 353.32 and 353.30 is that these participants receive a benefit based on the maximum of two separate benefit formulas; however, the retained actuary valued only one of these formulas. Our results reflect our understanding of state statutes and had a very small impact on Present Value of Benefits and Actuarial Accrued Liability. The simplification used by the retained actuary is a reasonable method to value the death benefit for this group of participants.
- **Actuarial Assumptions and Methods:** The actuarial assumptions and methods prescribed by state statute were programmed into our valuation software along with those assumptions chosen by the Fund and disclosed in the report. We did not identify any assumption that is inconsistent with state statute or documented assumptions.
- **Actuarial Value of Assets:** We calculated the Fund's Actuarial Value of Assets independent of the retained actuary, and our results matched.
- **Liability Results:** Our valuation results were reasonably close to the retained actuary's valuation results. We were 0.4% higher on the basis of Present Value of Future Benefits and 0.1% higher on the basis of the Actuarial Accrued Liability. As is typical, differences do exist in how those liabilities are split by decrement and status group. The differences in attribution methodology explained in the normal cost section below also impact the liability splits, especially deferred retirements and refunds, which have shorter attribution periods. The results in this report reflect the combination of the Basic, Coordinated, and MERF plans.
- **Normal Cost Results:** Our valuation results produced a normal cost that is 7.1% lower than that of the retained actuary. The cause of this difference is primarily due to a difference in applying the attribution period. Specifically, the retained actuary uses a normal cost methodology that excludes attribution after decrement, which is assumed to occur at mid-year, whereas our methodology includes the full decrement

year. Another cause of this difference is due to the difference in the methodology used to calculate rounded age and service. The retained actuary calculates rounded age and service at the middle of the year while our valuation system calculates these values at the beginning of the year. We were able to confirm that for all decrements our differences in normal cost were less than 5%, when adjusting for this difference in methodology.

- Valuation Report: The actuarial valuation was reviewed in its entirety, and we have found the report to satisfy the requirements of ASOP No. 41 and Minnesota Statutes, Section 356.215.

We recommend the System and the retained actuary consider making the following additions to the report:

- We recommend demonstrating the sensitivity of the discount rate assumption by providing the following key metrics using a discount rate 1% higher and 1% lower than the prescribed rate:
 - Actuarial Accrued Liability
 - Unfunded Actuarial Accrued Liability
 - Funded Ratio
 - Contribution Sufficiency/Deficiency
- We recommend also showing the sensitivity of the threshold year for higher post-retirement benefit increases by showing the same metrics listed above if the threshold is reached immediately and if the threshold is never reached.

Summary of Results

	As of July 1, 2015		
	GRS Valuation	Deloitte Replication Valuation	Percent Difference
Contributions (% of Payroll)			
Statutory Contributions – Chapter 353	14.66%	14.66%	0.00%
Required Contributions – Chapter 356	15.89%	15.57%	(0.32%)
Sufficiency / (Deficiency)	(1.23%)	(0.91%)	0.32%
Funding Ratios (Dollars in Thousands)			
Assets			
Current assets (AVA)	\$17,974,439	\$17,974,439	0.00%
Current assets (MVA)	\$18,581,795	\$18,581,795	0.00%
Accrued Liability Funding Ratio			
Actuarial accrued liability	\$23,560,951	\$23,573,467	0.05%
Funding ratio (AVA)	76.29%	76.25%	(0.04%)
Funding ratio (MVA)	78.87%	78.83%	(0.04%)
Plan Participation			
Active Participants			
Number	145,650	145,650	0.00%
Projected annual earnings (Dollars in Thousands)	\$5,616,092	\$5,536,082	(1.42%)
Average projected annual earnings	\$38,559	\$38,009	(1.43%)
Average age	46.7	46.7	0.00%
Average service	10.4	10.4	0.00%
Service Retirements	78,372	78,372	0.00%
Survivors	8,419	8,419	0.00%
Disability Retirements	3,801	3,801	0.00%
Deferred Retirements	51,605	51,605	0.00%
Terminated Other Non-Vested	125,366	125,366	0.00%
Total	413,213	413,213	0.00%

Supporting Information

Inventory of Market Value of Assets as of June 30, 2015

The following table shows an inventory of assets for the current year.

Table 1 (Dollars in Thousands)

	Market Value as of June 30, 2015	
	GRS Valuation	Deloitte Replication Valuation
Cash, cash equivalents, short term securities	\$355,041	\$355,041
Debt securities	4,364,607	4,364,607
Equity securities	11,528,261	11,528,261
SBI Alternative	2,288,787	2,288,787
Other investments	7,382	7,382
Contributions receivable	46,518	46,518
Amounts Payable	(8,801)	(8,801)
Market Value of Assets	\$18,581,795	\$18,581,795

Reconciliation of Market Value of Assets as of June 30, 2015

The following table contains a summary of transactions during the year and develops an approximate actual rate of return on the Market Value of Assets.

Table 2 (Dollars in Thousands)

	GRS Valuation	Deloitte Replication Valuation
1. Market Value of Assets as of July 1, 2014	\$17,404,822	\$17,404,822
Income		
2. Employer contributions made during the Plan Year 2015	\$435,115	\$435,115
3. Employee contributions	\$353,765	353,765
4. Investment income including interest, dividends, realized and unrealized appreciation (depreciation)		
a. Investment income / (loss)	\$803,212	803,212
b. Investment expenses	(\$25,708)	(25,708)
c. Net investment income / (loss)	\$777,504	\$777,504
5. Other	\$278	278
6. Total Income: (2) + (3) + (4c) + (5)	\$1,566,662	\$1,566,662
Disbursements		
7. Benefit payments		
a. Annuity benefits	(\$1,235,303)	(1,235,303)
b. Refunds	(\$35,655)	(35,655)
c. Total benefit payments	(\$1,270,958)	(\$1,270,958)
8. Expenses and fees		
a. Other	\$0	\$0
b. Administrative	(\$10,367)	(10,367)
c. Total expenses and fees	(\$10,367)	(\$10,367)
9. Total disbursements: (7c) + (8c)	(\$1,281,325)	(\$1,281,325)
10. Transfer between funds	\$891,636	\$891,636
11. Market Value of Assets as of June 30, 2015: (1) + (6) + (9) + (10)	\$18,581,795	\$18,581,795
12. Approximate return on market value of assets	4.40%	4.40%

Actuarial Value of Assets as of June 30, 2015

The following table shows the development of the Actuarial Value of Assets.

Table 3 (Dollars in Thousands)

Development of Actuarial Value of Assets			GRS Valuation	Deloitte Replication Valuation
1 Market Value of Assets as of June 30, 2015			\$18,581,795	\$18,581,795
2 Determination of average balance				
a. Total assets available at beginning of year			\$17,404,822	\$17,404,822
b. Total assets available at end of year			\$18,581,795	\$18,581,795
c. Net investment income for fiscal year			\$777,504	\$777,504
d. Average balance: [(2a) + (2b) - (2c)] / 2			\$17,604,557	\$17,604,557
3 Expected Return: 8.0% x (2d)			\$1,408,365	\$1,408,365
4 Net investment income for fiscal year			\$777,504	\$777,504
5 Current year asset Gain / (Loss): (4) – (3)			(\$630,861)	(\$630,861)
6 Asset Gain/(Loss) not recognized in Actuarial Value of Assets				
Period Ending	Gain / (Loss)	Portion Not Recognized	Amount Not Recognized	Amount Not Recognized
6/30/2015	(\$630,861)	80%	(\$504,689)	(\$504,689)
6/30/2014	\$1,571,711	60%	\$943,027	\$943,027
6/30/2013	\$833,405	40%	\$333,362	\$333,362
6/30/2012	(\$821,722)	20%	(\$164,344)	(\$164,344)
6/30/2011	<u>\$1,657,793</u>	0%	<u>\$0</u>	<u>\$0</u>
Total	\$2,610,326		\$607,356	\$607,356
7 Actuarial Value of Assets as of June 30, 2015: (1) – (6)			\$17,974,439	\$17,974,439
8 Approximate actual rate of return on the Actuarial Value of Assets			12.10%	12.34%
9 Ratio of actuarial value of assets to market value of assets			0.97	0.97

Determination of Unfunded Actuarial Accrued Liability and Supplemental Contribution Rate

Table 4 (Dollars in Thousands)

	Actuarial Present Value of Projected Benefits		Actuarial Present Value of Future Normal Costs		Actuarial Accrued Liability	
	GRS Valuation	Deloitte Replication Valuation	GRS Valuation	Deloitte Replication Valuation	GRS Valuation	Deloitte Replication Valuation
1. Determination of Actuarial Accrued Liability (AAL)						
a. Active Members						
i. Retirement annuities	\$ 10,805,715	\$ 10,804,334	\$ 2,217,043	\$ 2,378,904	\$ 8,588,672	\$ 8,425,430
ii. Disability benefits	384,404	392,804	137,201	145,913	247,203	246,891
iii. Survivor's benefits	200,687	195,264	55,136	52,777	145,551	142,486
iv. Deferred retirements	558,436	579,269	527,001	463,213	31,435	116,056
v. Refunds*	62,795	71,817	181,331	162,770	(118,536)	(90,952)
vi. Total	\$ 12,012,037	\$ 12,043,488	\$ 3,117,712	\$ 3,203,577	\$ 8,894,325	\$ 8,839,911
b. Deferred retirements with future augmentation	2,513,778	2,525,903	-	-	2,513,778	2,525,903
c. Former members without vested rights	60,183	60,990	-	-	60,183	60,990
d. Annuitants	12,092,665	12,146,663	-	-	12,092,665	12,146,663
f. Total	\$ 26,678,663	\$ 26,777,044	\$ 3,117,712	\$ 3,203,577	\$ 23,560,951	\$ 23,573,467
2. Determination of Unfunded Actuarial Accrued Liability (UAAL)						
a. Actuarial accrued liability					\$ 23,560,951	\$ 23,573,467
b. Current assets (AVA)					<u>17,974,439</u>	<u>17,974,439</u>
c. Unfunded actuarial accrued liability					\$ 5,586,512	\$ 5,599,028
3. Determination of Supplemental Contribution Rate						
a. Present value of future payrolls through the amortization date of June 30, 2033					\$ 69,175,431	\$ 68,295,234
b. Supplemental contribution rate					8.08%	8.20%

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

Determination of Contribution Sufficiency/ (Deficiency)

Table 5 (Dollars in Thousands)

	Percent of Payroll		Dollar Amount	
	GRS Valuation	Deloitte Replication Valuation	GRS Valuation	Deloitte Replication Valuation
1. Statutory contributions – Chapter 353				
a. Employee contributions	6.50%	6.50%	\$365,125	\$359,845
b. Employer contributions	7.50%	7.50%	421,273	415,206
c. Employer supplemental contributions	0.55%	0.55%	31,000	31,000
d. State contributions	<u>0.11%</u>	<u>0.11%</u>	<u>6,000</u>	<u>6,000</u>
e. Total	14.66%	14.66%	\$823,398	\$812,051
2. Required contributions – Chapter 356				
a. Normal Cost				
i. Retirement benefits	5.59%	5.51%	\$313,912	\$305,265
ii. Disability benefits	0.32%	0.31%	18,011	17,304
iii. Survivors	0.14%	0.13%	7,865	6,966
iv. Deferred retirement benefits	1.14%	0.88%	64,063	48,797
v. Refunds*	<u>0.43%</u>	<u>0.35%</u>	<u>24,159</u>	<u>19,114</u>
vi. Total	7.62%	7.18%	\$428,010	\$397,446
b. Supplemental contribution amortization of Unfunded Actuarial Accrued Liability by June 30, 2033	8.08%	8.20%	\$453,780	\$453,863
c. Allowance for expenses	<u>0.19%</u>	<u>0.19%</u>	<u>10,671</u>	<u>10,671</u>
d. Total	15.89%	15.57%	\$892,461	\$861,980
3. Contribution Sufficiency/(Deficiency): (1e) – (2d)	(1.23%)	(0.91%)	(\$69,063)	(\$49,929)

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

Basis for the Valuation

Membership Data – Active Members

The following table displays the distribution of active participants valued by Deloitte by age and service* and includes average compensation (in dollars) as of June 30, 2015.

Table 6

Years of Service	≤ 3		3-4		5-9		10-14		15-19		20-24		25-29		30-34		35+		Total	
	Age Group	No.	Avg. Comp.	No.	Avg. Comp.	No.	Avg. Comp.	No.	Avg. Comp.	No.	Avg. Comp.	No.	Avg. Comp.	No.	Avg. Comp.	No.	Avg. Comp.	No.	Avg. Comp.	No.
0 – 24	5,420	14,537	228	23,047	17	17,669	0	-	0	-	0	-	0	-	0	-	0	-	5,665	14,889
25 – 29	8,405	22,843	1,908	32,074	1,076	34,339	21	33,978	0	-	0	-	0	-	0	-	0	-	11,410	25,491
30 – 34	6,573	26,563	2,059	36,853	3,512	42,679	849	45,480	23	44,493	0	-	0	-	0	-	0	-	13,016	33,805
35 – 39	5,506	25,516	1,849	35,684	3,328	43,838	2,413	53,240	750	53,777	6	63,470	0	-	0	-	0	-	13,852	37,651
40 – 44	4,725	23,314	1,820	30,179	3,313	38,576	2,454	51,494	2,107	59,227	426	55,945	11	53,382	0	-	0	-	14,856	38,265
45 – 49	4,159	22,463	1,787	28,145	4,131	33,582	3,183	43,254	2,584	54,883	1,634	60,706	623	58,810	21	60,045	0	-	18,122	38,574
50 – 54	3,451	22,339	1,583	28,679	4,254	31,496	4,068	36,776	3,533	45,459	2,317	56,230	2,007	63,030	856	61,126	55	59,951	22,124	39,735
55 – 59	2,886	21,926	1,294	30,262	3,174	32,364	3,746	36,736	4,077	40,336	3,117	46,656	2,537	59,343	1,599	65,296	882	60,675	23,312	41,229
60 – 64	1,865	18,576	883	26,509	2,001	32,937	2,280	37,175	2,580	39,534	2,510	43,223	2,056	51,964	1,019	62,275	1,210	65,721	16,404	40,784
65 – 69	942	12,573	370	16,192	796	23,935	672	33,382	589	38,698	550	40,856	441	49,403	198	56,068	286	68,156	4,844	32,404
70+	480	8,348	217	11,246	490	12,588	385	17,980	165	25,314	116	30,974	71	37,733	48	43,706	73	56,125	2,045	17,693
Total	44,412	22,074	13,998	30,714	26,092	35,543	20,071	41,511	16,408	46,440	10,676	49,988	7,746	57,524	3,741	62,724	2,506	63,817	145,650	36,434

*Annualized in first year of service.

Membership Data – Service Retirements

The following table displays the distribution of service retirees valued by Deloitte by age and years since retirement and includes average benefits (in dollars) as of June 30, 2015.

Table 7

<u>Years Retired</u>	<u>< 1</u>		<u>1-4</u>		<u>5-9</u>		<u>10-14</u>		<u>15-19</u>		<u>20-24</u>		<u>25+</u>		<u>Total</u>	
<u>Age Group</u>	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.
< 50	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
50 – 54	10	13,849	26	10,535	1	12,690	0	-	0	-	0	-	0	-	37	11,489
55 – 59	671	16,319	1,671	12,933	80	19,838	12	35,210	0	-	0	-	0	-	2,434	14,203
60 – 64	1,770	16,383	6,076	15,253	2,661	12,945	195	30,234	12	31,331	0	-	0	-	10,714	15,157
65 – 69	1,560	14,964	9,717	13,904	6,373	14,376	2,877	14,173	184	40,365	10	39,399	0	-	20,721	14,413
70 – 74	244	10,794	2,484	11,189	6,107	12,249	4,766	13,546	2,384	14,790	21	44,519	4	34,490	16,010	12,875
75 – 79	62	6,743	569	8,488	1,398	9,335	4,329	10,792	4,183	14,842	1,217	20,067	30	39,209	11,788	12,954
80 – 84	31	6,769	195	5,238	412	6,016	895	8,168	3,551	12,843	2,630	20,527	674	21,679	8,388	14,929
85 – 89	5	6,424	53	6,176	132	4,907	259	5,920	658	11,167	2,389	17,094	1,734	24,202	5,230	17,723
90+	1	4,581	5	9,526	25	4,021	65	6,650	114	6,803	411	14,830	2,429	20,047	3,050	18,410
Total	4,354	15,326	20,796	13,641	17,189	12,726	13,398	12,513	11,086	14,331	6,678	18,968	4,871	21,882	78,372	14,405

Membership Data – Survivors

The following table displays the distribution of survivors valued by Deloitte by age and years since member death and includes average benefits (in dollars) as of June 30, 2015.

Table 8

<u>Years Since Death</u>	<u>< 1</u>		<u>1-4</u>		<u>5-9</u>		<u>10-14</u>		<u>15-19</u>		<u>20-24</u>		<u>25+</u>		<u>Total</u>	
	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.
< 45	18	8,127	71	6,990	52	4,652	17	4,301	15	8,860	5	7,806	4	20,494	182	6,656
45 – 49	3	12,018	35	5,824	29	5,793	14	9,498	8	8,060	3	9,320	3	3,961	95	6,791
50 – 54	19	8,906	51	7,132	40	8,661	15	5,345	9	11,478	10	12,953	5	10,732	149	8,363
55 – 59	35	14,591	153	10,238	88	9,876	39	8,358	22	13,899	11	9,579	5	13,244	353	10,622
60 – 64	44	13,488	222	10,674	184	11,257	90	11,416	49	15,352	22	20,706	14	18,420	625	12,044
65 – 69	73	11,649	284	12,740	235	11,798	130	11,754	59	19,332	29	25,217	24	14,206	834	13,168
70 – 74	72	13,310	295	12,791	234	12,147	143	12,421	92	15,173	62	19,228	70	20,031	968	13,782
75 – 79	80	18,016	332	14,155	230	15,447	197	15,100	144	19,593	105	21,926	105	25,619	1,193	17,168
80 – 84	77	19,657	321	19,426	242	16,096	213	18,195	177	19,260	129	19,203	187	24,690	1,346	19,334
85 – 89	60	25,205	305	19,879	247	18,032	240	19,594	177	20,995	172	20,616	310	24,944	1,511	20,997
90+	32	24,008	134	20,985	188	16,330	164	17,476	134	19,450	150	17,598	361	22,036	1,163	19,534
Total	513	16,569	2,203	14,617	1,769	13,727	1,262	15,343	886	18,564	698	19,550	1,088	23,171	8,419	16,588

Membership Data – Disability Retirements

The following table displays the distribution of service disability retirements valued by Deloitte by age and years disabled and includes average benefits as of June 30, 2015.

Table 9

<u>Years Disabled</u>	<u>< 1</u>		<u>1-4</u>		<u>5-9</u>		<u>10-14</u>		<u>15-19</u>		<u>20-24</u>		<u>25+</u>		<u>Total</u>	
	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.	No.	Avg. Ben.
< 45	4	9,668	16	5,932	6	4,392	3	3,300	0	-	0	-	0	-	29	5,856
45 – 49	3	8,619	31	8,280	20	6,700	12	4,496	0	-	0	-	0	-	66	7,128
50 – 54	21	15,422	62	9,243	66	8,550	34	6,558	5	5,351	8	6,410	0	-	196	8,991
55 – 59	23	18,648	186	14,755	144	10,801	105	9,621	42	6,193	19	6,909	4	6,673	523	11,772
60 – 64	27	16,311	290	15,073	283	12,646	158	11,203	87	11,121	32	10,159	7	5,080	884	12,996
65 – 69	160	12,611	585	13,196	73	11,848	36	8,100	20	18,746	7	16,767	16	23,261	897	13,109
70 – 74	0	-	83	9,445	458	13,008	12	14,127	8	27,917	5	43,690	6	36,872	572	13,241
75+	0	-	0	-	40	14,080	297	14,845	169	16,104	69	17,462	59	20,592	634	15,952
Total	238	13,762	1,253	13,203	1,090	12,151	657	12,081	331	13,819	140	14,631	92	20,332	3,801	13,021

Membership Data – Terminated Members

The following table displays statistics for terminated members as of June 30, 2015.

Table 10

	<u>Deferred Vested</u>		<u>Other Non-Vested</u>		<u>Total</u>	
	<u>GRS Valuation</u>	<u>Deloitte Replication Valuation</u>	<u>GRS Valuation</u>	<u>Deloitte Replication Valuation</u>	<u>GRS Valuation</u>	<u>Deloitte Replication Valuation</u>
1. Number*	51,605	51,605	125,366	125,366	176,971	176,971
2. Average age	50.6	50.6	47.1	47.3	48.1	48.2
3. Average service	7.5	7.5	1.0	0.9	2.9	2.8
4. Average annual benefit, with augmentation to Normal Retirement Date and 60% CSA load**	\$9,558	\$ 9,308	N/A	N/A	\$9,558	\$9,308
5. Average refund value, with 60% CSA load	\$15,313	15,321	\$1,007	\$1,007	\$5,179	\$5,181

* Includes 37 deferred MERF members

**30% CSA load for deferred MERF members

Statement of Actuarial Methods

The actuarial methods below were documented by the retained actuary, and we agree with their application without any changes. They are documented here for illustrative purposes only, and reflect exactly what was provided in the retained actuary's report.

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.

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.

Statement of Actuarial Methods

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 Assumptions

The actuarial assumptions below were documented by the retained actuary, and we agree with their application without any changes. They are documented here for illustrative purposes only, and reflect exactly what was provided in the retained actuary's report. Different assumptions were used for salary increases, retirement, withdrawal, disability, allowance for combined service annuity, commencement of deferred benefits, percentage married, age of spouse and form of payment for MERF participants, as documented by the retained actuary.

1. Investment Return	8.00% per annum.																																												
2. Benefit Increases after Retirement	1.00% per annum through 2034 and 2.5% per annum thereafter.																																												
3. Salary increases	<p>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.</p> <table border="1"> <thead> <tr> <th colspan="4">Salary Scale</th> </tr> <tr> <th>Year</th> <th>Increase</th> <th>Year</th> <th>Increase</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>11.78%</td> <td>10</td> <td>4.17%</td> </tr> <tr> <td>2</td> <td>8.65</td> <td>11</td> <td>3.99</td> </tr> <tr> <td>3</td> <td>7.21</td> <td>12</td> <td>3.83</td> </tr> <tr> <td>4</td> <td>6.33</td> <td>13</td> <td>3.69</td> </tr> <tr> <td>5</td> <td>5.72</td> <td>14</td> <td>3.57</td> </tr> <tr> <td>6</td> <td>5.27</td> <td>15</td> <td>3.45</td> </tr> <tr> <td>7</td> <td>4.91</td> <td>16</td> <td>3.35</td> </tr> <tr> <td>8</td> <td>4.62</td> <td>17</td> <td>3.26</td> </tr> <tr> <td>9</td> <td>4.38</td> <td>18+</td> <td>3.25</td> </tr> </tbody> </table>	Salary Scale				Year	Increase	Year	Increase	1	11.78%	10	4.17%	2	8.65	11	3.99	3	7.21	12	3.83	4	6.33	13	3.69	5	5.72	14	3.57	6	5.27	15	3.45	7	4.91	16	3.35	8	4.62	17	3.26	9	4.38	18+	3.25
Salary Scale																																													
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9	4.38	18+	3.25																																										
4. Inflation	2.75% per year.																																												
5. Payroll Growth	3.50% per year.																																												
6. Mortality Rates																																													
a. Healthy Post-Retirement	<p>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.</p> <table border="1"> <thead> <tr> <th rowspan="2">Age</th> <th colspan="2">Healthy Post-Retirement Mortality</th> </tr> <tr> <th>Male</th> <th>Female</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>0.03%</td> <td>0.02%</td> </tr> <tr> <td>25</td> <td>0.04</td> <td>0.02</td> </tr> <tr> <td>30</td> <td>0.04</td> <td>0.02</td> </tr> <tr> <td>35</td> <td>0.06</td> <td>0.04</td> </tr> <tr> <td>40</td> <td>0.09</td> <td>0.06</td> </tr> <tr> <td>45</td> <td>0.13</td> <td>0.08</td> </tr> <tr> <td>50</td> <td>0.60</td> <td>0.13</td> </tr> <tr> <td>55</td> <td>0.54</td> <td>0.29</td> </tr> </tbody> </table>	Age	Healthy Post-Retirement Mortality		Male	Female	20	0.03%	0.02%	25	0.04	0.02	30	0.04	0.02	35	0.06	0.04	40	0.09	0.06	45	0.13	0.08	50	0.60	0.13	55	0.54	0.29															
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Actuarial Assumptions

a. Healthy Post-Retirement (Continued)	60	0.66	0.47
	65	1.16	0.74
	70	1.93	1.24
b. Healthy Pre-Retirement	<p>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.</p> <p>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.</p>		
	Healthy Pre-Retirement Mortality		
	Age	Male	Female
	20	0.04%	0.02%
	25	0.04%	0.02%
	30	0.06%	0.02%
	35	0.09%	0.04%
	40	0.13%	0.05%
	45	0.20%	0.08%
	50	0.27%	0.12%
	55	0.43%	0.19%
	60	0.67%	0.28%
	65	0.98%	0.45%
	70	3.36%	0.70%
c. Disabled	<p>RP-2000 disabled mortality table set back 4 years for males and set forward 7 years for females.</p>		
	Disability Mortality		
	Age	Male	Female
	20	2.26%	0.75%
	25	2.26%	0.75%
	30	2.26%	0.75%
	35	2.26%	0.75%
	40	2.26%	0.90%
	45	2.26%	1.35%
	50	2.38%	1.87%
	55	3.03%	2.41%
	60	3.67%	3.13%
	65	4.35%	4.29%
70	5.22%	5.95%	

Actuarial Assumptions

7. 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.

Age	Retirement	
	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

8. 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%

Withdrawal Rates After Third Year		
Age	Male	Female
20	8.40%	8.40%
25	6.90%	6.90%
30	5.40%	5.40%
35	3.90%	4.20%
40	3.00%	3.50%
45	2.50%	3.00%

Actuarial Assumptions

8. Withdrawal (Continued)	50	2.00%	2.50%
	55	0.00%	0.00%
	60	0.00%	0.00%
	65	0.00%	0.00%
	70	0.00%	0.00%
9. Disability	Age-related rated based on experience.		
	Disability Retirement		
	Age	Male	Female
	20	0.01%	0.01%
	25	0.01	0.01
	30	0.02	0.02
	35	0.05	0.04
	40	0.09	0.06
	45	0.14	0.09
	50	0.23	0.16
	55	0.49	0.26
	60	0.82	0.46
	65	0.00	0.00
70	0.00	0.00	
10. 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.		
11. Administrative Expenses	Prior year administrative expenses expressed as percentage of prior year projected payroll.		
12. 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.		
13. Commencement of Deferred Benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at Normal Retirement.		
14. 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.		
15. 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.		
16. Eligible Children	Retiring members are assumed to have no dependent children.		

Actuarial Assumptions

17. Form of Payment	<p>Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows:</p> <p>Males:</p> <ul style="list-style-type: none"> • 5% elect 25% Joint & Survivor option • 15% elect 50% Joint & Survivor option • 10% elect 75% Joint & Survivor option • 30% elect 100% Joint & Survivor option <p>Females:</p> <ul style="list-style-type: none"> • 5% elect 25% Joint & Survivor option • 5% elect 50% Joint & Survivor option • 5% elect 75% Joint & Survivor option • 15% elect 100% Joint & Survivor option <p>Remaining married members and unmarried members are assumed to elect the Straight Life option.</p> <p>Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.</p>
18. Eligibility Testing	<p>Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.</p>
19. Decrement Operation	<p>Withdrawal decrements do not operate during retirement eligibility.</p>
20. Service Credit Accruals	<p>It is assumed that members accrue one-year of service credit per year.</p>
21. Unknown data for certain members	<p>In cases where submitted data was missing or incomplete, the following assumptions were applied:</p> <p><u>Data for active members:</u></p> <p>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.</p> <p>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.</p> <p><u>Data for terminated members:</u></p> <p>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.</p> <p>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</p> <p><u>Data for Retired members:</u></p> <p>There were seven members reported with an invalid date of birth. We assumed a date of birth of July 1, 1945.</p>

Actuarial Assumptions

22. 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.

Plan Provisions Summary

The plan provisions below were documented by the retained actuary, and we agree with their application without any changes. They are documented here for illustrative purposes only, and reflect exactly what was provided in the retained actuary's report. Different plan provisions apply for Basic and MERF participants, as documented by the retained actuary.

1. Plan year	July 1 through June 30.						
2. 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.						
3. Contributions	Shown as a percent of salary: <table border="1"> <thead> <tr> <th>Effective Date</th> <th>Member</th> <th>Employer</th> </tr> </thead> <tbody> <tr> <td>January 1, 2015</td> <td>6.50%</td> <td>7.50%</td> </tr> </tbody> </table> <p>Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).</p>	Effective Date	Member	Employer	January 1, 2015	6.50%	7.50%
Effective Date	Member	Employer					
January 1, 2015	6.50%	7.50%					
4. Allowable service	Service during which member contributions are deducted. May also include certain leaves of absence and military service.						
5. 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.						
6. 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.						
7. 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.						
8. Retirement							
a. Normal retirement benefit							
i. Age/service requirement	<u>First hired before July 1, 1989:</u> <ol style="list-style-type: none"> Age 65 and vested. Proportionate retirement annuity is available at age 65 and one year of Allowable Service. <u>First hired after June 30, 1989:</u> <ol style="list-style-type: none"> The greater of age 65 or the age eligible for full Social Security retirement benefits but no later than age 66 and vested. Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service. 						
ii. Amount	1.70% of Average Salary for each year of Allowable Service.						
9. Early retirement benefit							
i. Age/service requirement	<u>First hired before July 1, 1989:</u> <ol style="list-style-type: none"> Age 55 and vested. Any age with 30 years of Allowable Service. Rule of 90: Age plus Allowable Service totals 90. <u>First hired after June 30, 1989:</u> <ol style="list-style-type: none"> Age 55 and vested. 						

Plan Provisions Summary

<p>ii. Amount</p>	<p><u>First hired before July 1, 1989:</u></p> <p>The greater of (a) or (b):</p> <ol style="list-style-type: none"> 1. 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. 2. 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. <p><u>First hired after June 30, 1989:</u></p> <p>(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.</p>
<p>iii. Form of payment</p>	<p>Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are:</p> <p>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.</p>
<p>iv. Benefit increases</p>	<p>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%.</p> <p>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.</p> <p>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.</p>
<p>10. Disability</p>	
<p>a. Disability benefit</p>	
<p>i. Age/service requirement</p>	<p>Total and permanent disability before normal retirement age if vested.</p>
<p>ii. Amount</p>	<p>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.</p> <p>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%.</p> <p>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.</p>
<p>iii. Form of payment</p>	<p>Same as for retirement.</p>

Plan Provisions Summary

iv. Benefit increases	Same as for retirement.
b. Retirement after disability	
i. Age/service requirement	Normal retirement age.
ii. 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.
iii. Benefit increases	Same as for retirement.
11. Death	
a. Surviving spouse optional annuity	
i. Age/service requirement	Member of former Member who dies before retirement or disability benefits commence.
ii. Amount	<p>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.</p> <p>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%.</p>
iii. Benefit increases	Same as for retirement.
b. Refund of contributions	
i. Age/service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
ii. 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.
12. Termination	
a. Refund of contributions	
i. Age/service requirement	Termination of public service.
ii. Amount	<p>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.</p> <p>A deferred annuity may be elected in lieu of a refund if vested.</p>
b. Deferred benefit	
i. Age/service requirement	Fully vested.

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<p>ii. Amount</p>	<p>Benefit computed under law in effect at termination and increased by the following percentage (augmentation) compounded annually for terminations prior to 2012:</p> <ul style="list-style-type: none"> (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. <p>Members who terminate after 2011 will receive no future augmentation.</p> <p>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.</p> <p>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%.</p>
<p>iii. Form of payment</p>	<p>Same as for retirement.</p>
<p>13. Actuarial equivalent factors</p>	<p>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.</p>
<p>14. Combined service annuity</p>	<p>Members are eligible for combined service benefits if they:</p> <ul style="list-style-type: none"> 1. Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or 2. Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010). <p>Other requirements for combined service include:</p> <ul style="list-style-type: none"> 1. Member must have at least six months of allowable service credit in each plan worked under; 2. Member may not be in receipt of a benefit from another plan. <p>Members who meet the above requirements must have their benefit based on the following:</p> <ul style="list-style-type: none"> (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

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15. Contribution Stabilizer	<p>The following is a summary of contribution stabilizer provisions in Minnesota Statute 353.27:</p> <ul style="list-style-type: none"> • 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.
16. Changes in Plan Provisions	<p>The Contribution Stabilizer statutes were revised to make changes to contribution rates less prescriptive and more flexible.</p>